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FRONTIERS OF DIGITAL INNOVATION

Textbook

for IT Students

KYIV 2026

УДК 811.111:004](075.8)

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This textbook is designed for second- and third-year undergraduate students majoring in Cybersecurity, Computer Science, Information Systems and Technologies, Applied Programming, and Software Engineering. Intended for Intermediate to Upper-Intermediate learners, it fosters the development of professional communicative competence through an integrated-skills approach that combines speaking, reading, listening, and writing.

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PREFACE

In the contemporary world of rapid technological advancement, English has become the primary language of global innovation, research, and professional communication in the IT field. Students pursuing degrees in Cybersecurity, Computer Science, Information Systems and Technologies, and Software Engineering must therefore develop not only technical expertise but also strong professional communication skills. "*Frontiers of Digital Innovation"* has been tailored to support this goal by integrating language learning with relevant, cutting-edge technological content.

This textbook is intended for second- and third-year undergraduate students with intermediate to upper-intermediate proficiency who need English for academic and professional purposes in the field of information technology. It adopts an integrated-skills approach that systematically develops speaking, reading, listening, and writing competencies through authentic contexts and task-based learning.

The structure of the textbook reflects key trends shaping today's digital world. The units cover a wide range of topics, including: Everyday Science and Modern Technology, Virtual Reality, The Rise of Chatbots, Social Media and Risk-Taking, Deepfake Technology, Nanotechnology, Digital Art and NFTs, Cryptocurrency in the Digital World, Cybersecurity and Biohacking. By exploring these themes, students enhance their language proficiency, strengthen their analytical thinking, and learn to discuss complex innovations clearly and confidently in English.

Each unit follows a consistent framework designed to support gradual skill development and learner engagement. Units include lead-in activities featuring quotations and visual prompts that encourage reflection and discussion, reading comprehension tasks based on topical texts, focused vocabulary practice, video-based activities, communicative exercises, and collaborative teamwork tasks. This structure enables students to actively apply language in realistic contexts, fostering interaction, critical thinking, and problem-solving skills.

In addition to the core units, the textbook provides supplementary reading materials, video-based activities, and a reference section, which together provide opportunities for independent study, classroom discussion, and skills reinforcement. These components enable educators to adapt the material to different teaching formats, including traditional classroom instruction, blended learning, and self-directed study.

The authors hope that *Frontiers of Digital Innovation* will serve as a practical and engaging resource that prepares students to participate confidently in international academic and professional environments. By combining language learning with relevant technological content, this textbook aims to equip learners with the linguistic competence and conceptual understanding necessary to navigate and contribute to the ever-evolving digital landscape.

UNIT 1. EVERYDAY SCIENCE AND MODERN TECHNOLOGY. VIRTUAL REALITY

Task 1. Match each picture to the correct technology: *Biotechnology & Gene Editing, Clean Energy & Smart Materials, Artificial Intelligence & Generative AI, Extended Reality (AR / VR / MR), Cybersecurity & Privacy Tech, Brain-Computer Interface, Robotics & Human-Robot Collaboration, Quantum Computing, Autonomous Systems & Smart Mobility, Space Technology.* **Briefly explain what future impact and applications each technology has in everyday life and industry.**

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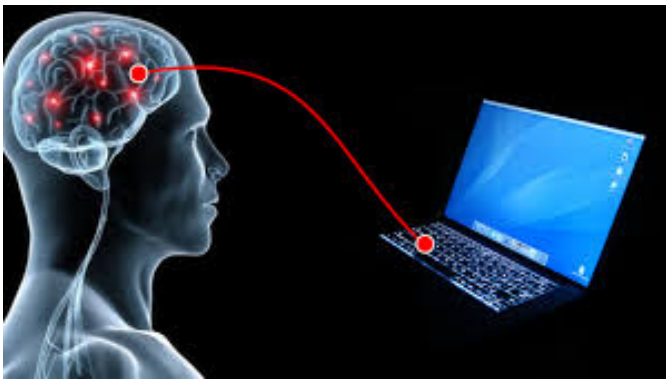

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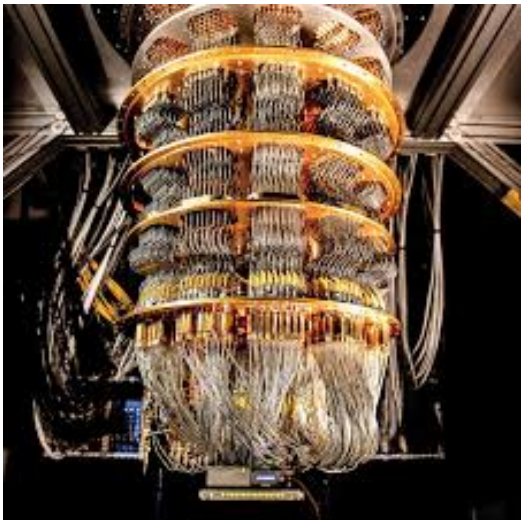

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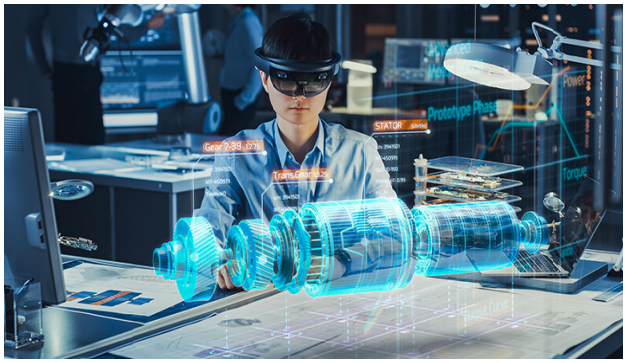


I

J

Task 2. Read the text and answer the questions below.

Unlocking Growth by Embracing the Paradoxes of the Intelligent Age

The Intelligent Age is marked by rapid technological progress, societal shifts and complex paradoxes. We're more connected yet more isolated; flooded with information but uncertain of truth; empowered and threatened by technology.

As companies and governments face challenges around sovereignty, security and competitiveness, they need to embrace approaches that initially appear contradictory: investing boldly despite limited resources, sharing data while protecting it and competing while collaborating. These are not contradictions — this is the new operating model.

Against this backdrop, it becomes clear that organisations must adopt a three-pillar approach to navigate this new normal of paradoxes. First, they must ground themselves in flexible digital foundations; second, embed AI deeply and responsibly into their operations; and third, view collaboration as a *strategic* advantage rather than a compromise.

These principles form the backbone of a sustainable way of working in The Intelligent Age, where progress depends on navigating paradoxes with agility and shared purpose.

Laying the foundation for flexibility

Progress is moving at breakneck speed. Technologies that seemed futuristic yesterday are mainstream today, and by tomorrow, they could even be obsolete. To keep pace, organisations need a foundation that is rigid but adaptable — a platform that can evolve as quickly as the world around it.

The foundation is the cloud. A cloud migration is more than an IT project: it is the digital foundation for a thorough modernisation of the entire enterprise, for moving from “good” to “great”.

Modern cloud infrastructure enables data, applications and AI to interoperate seamlessly, creating an environment where innovation can flourish. It accelerates the deployment of software updates and new applications, reduces complexity and provides the scalability needed to respond to shifting demands.

True flexibility, however, goes beyond technology. Organisations must foster a mindset that embraces change, encourages experimentation and prioritises resilience over perfection. This means empowering teams to adapt quickly, learn continuously and view change as an opportunity rather than a threat.

Drive AI innovation on your terms

As AI rapidly reshapes how we live, study and work, no organisation can afford to ignore it, yet many still have questions about how to apply it.

In the business-to-business realm, AI cannot be treated as a standalone technology. To unleash its full potential, AI must be deeply embedded in business processes. This requires three pillars:

- Modern cloud software
- Advanced data management
- A consistent stack of AI technologies.

Companies that move from legacy on-premises software to integrated cloud applications unlock AI's ability to access, understand and facilitate transactions across the enterprises. This enables AI agents to function as digital coworkers, capable of executing complex workflows spanning the business.

The power AI offers is undeniable, and in today's volatile world, this often leads to questions around digital sovereignty. True digital sovereignty is about maintaining control over critical data and assets while leveraging the best technologies available in line with national interests.

Data protection and compliance are non-negotiable. Companies and governments must ensure that sensitive information remains under appropriate jurisdictional control.

Internationally aligned sovereignty standards — such as ISO (International Organisation for Standardisation) and IEC (International Electrotechnical Commission) – would enable secure, compliant scaling across borders, unlocking the full potential of AI without compromising trust.

Not all data requires the same level of protection. Information essential to national security or public safety requires the highest levels of control. At the same time, less sensitive data can be managed in trusted cloud environments that comply with recognised cybersecurity standards.

The nuanced approach allows organisations to balance innovation with responsibility.

Compete with collaboration

The paradox of competition and collaboration is perhaps the most striking of all. In a hyperconnected world, no company or government can tackle today's challenges alone. Cybersecurity threats, climate change and economic inequality are global issues that demand collective solutions.

The competitive advantage now lies in partnerships — across industries, sectors and borders. Public-private collaboration is essential to co-create AI use cases, build open ecosystems and invest in digital education. Such partnerships are strategic imperatives that strengthen our society and our economy for long-term growth.

Collaboration also extends to governance. Establishing shared frameworks for ethical AI, data privacy and sustainability will require dialogue among stakeholders with competing interests. Yet, this dialogue is the cornerstone of progress.

Dialogue ─ the operating principle

While the opportunities AI provides are immense, they are by no means guaranteed. The determining factor will be our ability to engage in meaningful dialogue — as companies and governments, technology experts and policy-makers, innovators and citizens.

In the Intelligent Age, the question is not whether we will face paradoxes, but how we face them. Dialogue must be our operating principle – the means through which we reconcile paradoxes, build trust and chart a course toward shared prosperity. The future will belong to those who embrace complexity, act with courage and collaborate across divides.

(Klein, Ch. (2026). Unlocking growth by embracing the paradoxes of the Intelligent Age. *https://www.weforum.org/stories/2026/01/new-digital-paradoxes-intelligent-age/*)

1. How can you describe the Intelligent Age according to the text? What paradoxes define it?

2. What is meant by the "three-pillar approach" for organisations in the Intelligent Age?

3. Why is the cloud described as a critical foundation for organisations ─ not just an IT solution?

4. How can organisations foster a mindset that embraces change and resilience?

5. What is the potential of AI for organisations, and why must it be embedded into business processes?

6. What three elements are required to fully embed AI into business processes?

7. How do integrated cloud applications enhance the effectiveness of AI agents?

8. What does “digital sovereignty” mean in the context of AI and data?

9. Why are international standards like ISO and IEC important for AI and data governance?

10. How should organisations treat different types of data in terms of protection and control?

11. Why is collaboration presented as a competitive advantage rather than a compromise?

12. Why is dialogue considered the key operating principle of the Intelligent Age, according to the text?

13. Which paradox mentioned in the text do you find most difficult for organisations to manage, and why?

14. How can organisations balance innovation with responsibility?

 **Task 3. Write down the highlighted words or phrases that have the following meanings.**

1. To grow or develop successfully; to do very well —

2. The most important basic part of something; the foundation, key element –

3. To encourage or support the development of something (promote, nurture) —

4. To deal with a problem or challenge directly —

5. The general situation or context in which something happens —

6. To follow rules, laws, or standards —

7. Very noticeable or impressive (remarkable, eye-catching) —

8. To find a way to make opposing ideas or sides agree; to resolve differences —

9. Extremely fast, very rapidly —

10. Smoothly and without problems or interruption —

11. Extremely large or great (huge, enormous) —

12. In a brave and confident way, taking risks —

13. Clearly true and impossible to reject —

14. To release or allow something powerful to act freely —

15. Using something effectively to gain an advantage —

16. In agreement or working toward the same goal —

Task 4. Fill in the gaps using the highlighted words or phrases from the text.

1. Artificial intelligence is developing … , transforming industries faster than ever before.

2. Secure cloud infrastructure has become the … of modern digital systems.

3. Governments must … global cybersecurity threats through international cooperation.

4. When data systems work … , users don't notice the complex processes behind them.

5. Many startups … when they gain access to open innovation ecosystems.

6. Research institutions must … ethical standards when working with genetic technologies.

7. The growth potential of quantum computing is … , even if practical use is still emerging.

8. The benefits of automation in manufacturing are … productivity has doubled in some sectors.

9. Companies are … big data to improve prediction models and decision-making.

10. A supportive innovation culture helps … creative experimentation inside tech teams.

11. Scientists must … share findings while still protecting sensitive data.

12. Climate change forms the global … for many modern technology policies.

13. International AI regulations should be … across countries to ensure safe deployment.

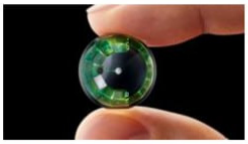
14. The new humanoid robot made a … impression at the technology expo.

15. Open-source platforms can … innovation by giving developers powerful tools.

16. Organizations must … rapid AI innovation with ethical and legal responsibility.

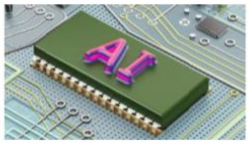
Task 5. How do science and technology, and knowledge about them, affect your day-to-day life? Discuss the questions below:

Special reports



Technology of Business

CEO Secrets



Artificial Intelligence

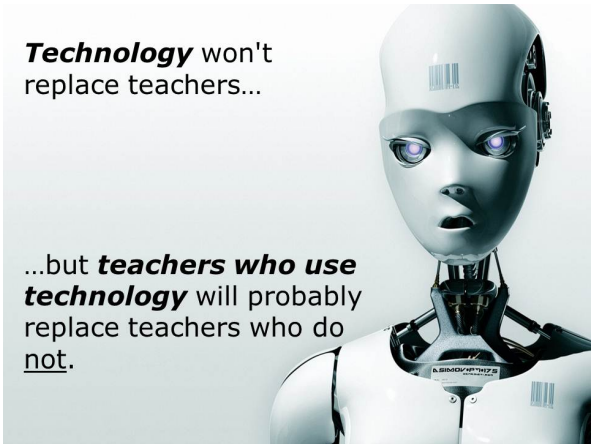
New Tech Economy

Global Cost of Living

Technology of Business	CEO Secrets	Artificial Intelligence	New Tech Economy	Global Cost of Living
How easy is it to keep up with tech at work ?	Do CEO's have a duty to uphold moral standards in the company ? How prevalent is corruption in the upper echelons of industry ?	Will this phenomenon make people's jobs easier ? What do you think of automation, from a customer's perspective ?	Do you think 'old-school' technology could make a comeback in certain fields ?	Has the cost of living risen in recent times ? Have people had to cut out certain expenditures ?

Task 6. To what extent do you agree with the following statements?

- Technology becomes increasingly obsolete rapidly.
- It's better to combine social sciences and humanities with subjects such as mathematics, chemistry, physics, and computer science.
- Computer languages, i.e. coding, are devoid of emotion, self-expression.
- Mastering technology is an indispensable prerequisite to success in the modern world.
- The harder you study, the better job you'll get and the higher paid you'll be.
- The more facilities there are in our locality, the more enjoyable life is.
- The more competition there is in the sector, the more businesses will thrive; that is to say, the more successful they'll become.



Task 7. Do the mini-test.

1. What overlays computer-generated 3D content in the real world? **VR or AR**
2. Users can't clearly distinguish between the virtual and real world. **VR or AR**
3. What can be achieved by smartphones, tablets or AR wearables? **VR or AR**
4. What visually immerses the user with simulated objects and environments? **VR or AR**
5. Which technology replaces the real environment completely with a digital one? **VR or AR**
6. Which technology adds digital elements on top of the physical environment instead of replacing it? **VR or AR**

7. Which technology is more commonly used for training simulations and fully virtual experiences? **VR or AR**

8. Which technology is often used in navigation, retail preview, and real-world interactive filters? **VR or AR**

Task 8. Comment on the memes about VR, using the DAR technique (describe, analyse, relate).

A

B

C

D

Task 9. Watch the video "*How Virtual Reality Tricks Your Brain*" by following the link: *https://www.youtube.com/watch?v=ybyib5pAq7Y*

How virtual reality tricks your brain

Answer the following questions.

1. Have you ever experienced VR? Share your impressions.
2. VR systems are gaining traction these days. Are you excited about their potential? Are you concerned? Why?
3. What game do participants try in the video?
4. How does VR trick the human brain?
5. How many screens do you look at in VR?
6. Why can people distinguish between computer-generated content and the real world?
7. How much of the information we perceive from our environment is based on vision?
8. What are the potential benefits and drawbacks of using VR in education or training?
9. What concerns or fears might people have about using VR technology?

TASK 10. Explain the meaning of the following expressions and make up sentences with them.

Groundbreaking visuals, diffused things, to convey depth, subtle effects, virtual stimuli, to fill in blanks, exposure therapy, to be tethered to a system.

Task 11. Read some amazing facts about VR/ AR and share your thoughts with your groupmates:

- VR technology has been around since the 1960s, but it wasn't until the mid-2010s that it became more widely available and affordable.
- The first VR headset was called the "Sword of Damocles" and was created by Ivan Sutherland in 1968. It was so heavy that it had to be suspended from the ceiling.
- Jaron Lanier created a virtual reality device in the 1980's (EyePhone 1/HRX) and cost up to $49,000 for the goggles and gloves.
- VR technology can be used for a variety of applications beyond gaming, such as education and training, mental health treatment, architecture and design, and even therapy for phobias and rehabilitation after strokes.
- NASA has used VR technology to train astronauts and simulate spacewalks.
- VR technology can be used to simulate experiences that would be difficult or impossible to have in real life, such as flying a plane, exploring space, or interacting with dinosaurs.
- VR technology is being used by researchers to study empathy and help people better understand the experiences of others.
- AR improves shopping decisions: customers can preview furniture, clothes, and makeup on themselves before buying.
- Engineers use AR glasses to see repair instructions directly overlaid on machines while working.
- Museums use AR to "bring history to life". Visitors can point their phones at artefacts and see reconstructions, animations, or historical scenes.
- 57% of users say that they are more likely to buy from a brand if they offer augmented reality experiences.

Task 12. Here are some article headlines about various fields of science. Which of these sounds interesting to you and why?

CLIMATE ACTION AND WASTE...

Why making AI sustainable by design is key to a greener future

Feb 05, 2026

CLIMATE ACTION AND WASTE...

This is how the transport industry can harness AI for decarbonization

Feb 04, 2026

EMERGING TECHNOLOGIES

Building foundations for Sudan's recovery through digital identity

Jan 29, 2026

HEALTH AND HEALTHCARE SYSTEMS

Why digital solutions and AI in healthcare fail to scale

Jan 29, 2026

TECHNOLOGICAL INNOVATION

We asked leaders at Davos 2026, how can we deploy innovation and technology at scale and responsibly? Here's what they said

CYBERSECURITY

Quantum-safe migration: Why now is an opportunity to modernize cryptography for the new age

Jan 26, 2026

ARTIFICIAL INTELLIGENCE

Davos 2026: Leaders on why scaling AI still feels hard - and what to do about it

Jan 23, 2026

ARTIFICIAL INTELLIGENCE

Nvidia CEO Jensen Huang on how AI is becoming the next great infrastructure build

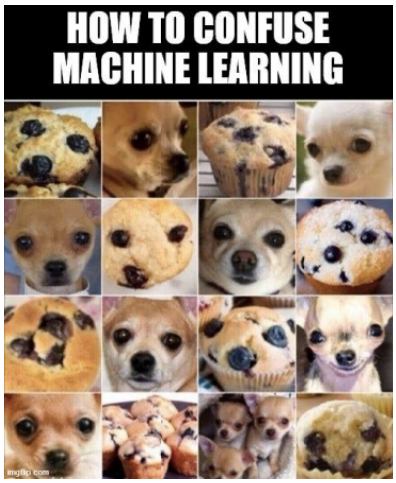
Jan 23, 2026

Follow the link: *https://www.weforum.org/stories/emerging-technologies/*

Read the article and share your insights with your groupmates.

UNIT 2. THE RISE OF CHATBOTS

Task 1. Comment on AI memes created by humans:



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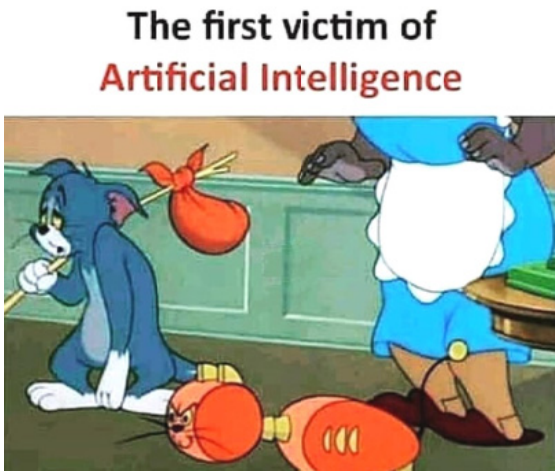

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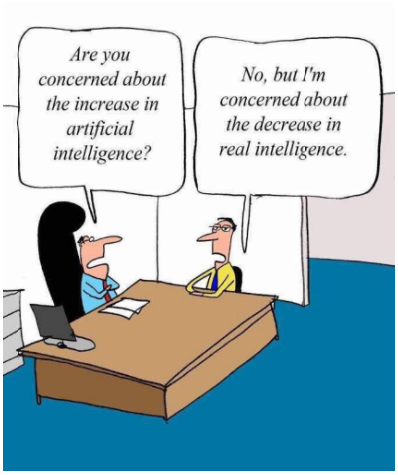

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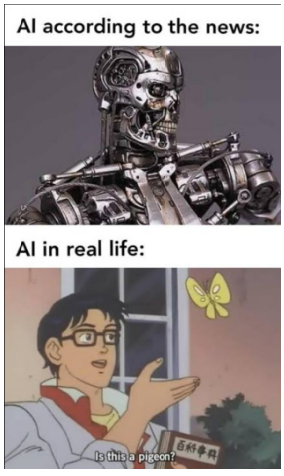

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Task 2. A. Answer the following questions before watching the video.

1. What is a chatbot? What is it used for?
2. Have you ever dealt with a chatbot? How do you feel about that experience?
3. What do you know about ChatGPT?
4. How far do you agree with the following quotation: "Chatbots represent a new trend in how people access information, make decisions and communicate"? (Christie Pitts)

B. Study the following words to better understand the context.

akin *(adj)*	similar to, to have some of the same qualities
sift through *(ph. v.)*	to examine things to find smth
backer *(n)*	smb who gives financial support to smth
bandwidth *(n)*	a measurement of the amount of information that can be sent between computers, through a phone line
swirl *(v)*	to move quickly with a twisting, circular movement, or to make smth do this
brief *(n)*	a document or set of documents containing the details about a court case (law)
preclude *(v)*	to prevent smth or make it impossible

Task 3. Watch the first part of the video *"Why OpenAI's ChatGPT is such a big deal?" (6:43)* and complete the sentences, following the link: *https://www.youtube.com/watch?v=pOmpqdlVCoo*

1. OpenAI opened ChatGPT up for public testing in … .
2. By the end of January, Chat GPT was averaging about … … visitors per day.
3. ChatGPT is really good at … .
4. There are a number of … concerns.
5. The chatbot has been trained on a massive … … of text, which allows it to generate texts.
6. OpenAI was launched in … by Elon Musk.
7. Language model is the underlying technology that … the chatbot.
8. ChatGPT is more … thanks to the wide sweeping data on which it was trained.
9. ChatGPT is part of a growing field of … AI.
10. Microsoft has been investing in OpenAI since … .
11. OpenAI trained the models that power ChatGPT on … , Microsoft's public cloud infrastructure.
12. Microsoft, … , … have all developed their own language models to power their version of conversational chatbots.

Task 4. Answer the following questions.

1. What have you learnt about ChatGPT?
2. What questions do people usually ask the chatbot?
3. What does the concept of Generative AI mean?
4. Can this tool spread false information?
5. How do you evaluate the answers of ChatGPT?
6. What content can Generative AI create?
7. Are chatbots cheap software programs?

Task 5. Watch the second part of the video *"Why OpenAI's ChatGPT is such a big deal?"* and complete the sentences.

1. Microsoft takes some OpenAI products because … .
2. AI products are not perfect as … .
3. AI technology is considered to be biased and toxic because … .
4. Cleaning up a large dataset can come at a real human cost as … .
5. There is some evidence that ChatGPT is capable of detecting inappropriate information. For example, … .
6. Some schools ban this tool because … .
7. DALL-E is about … .

Task 6. Explain the meaning of underlined words or phrases.

1. Over the next fortnight, the term will again be **on everyone's lips**.
2. The AI model **amassed** over a million users.
3. A message says that ChatGPT is **at capacity** and can't **handle** any more **queries**.
4. OpenAI **declined** to be interviewed as part of this documentary.
5. **To figure out** what ChatGPT is and how it works, CNBC decided to ask the chatbot itself.
6. Most of the chatbots have been **tailored** towards very specific tasks.
7. While the average cost per query is a few cents, the compute costs are **eye-watering**.

8. We have lots of work to do on **robustness** and fruitfulness.

9. Many databases do have some kind of cleaning that removes content that is **deemed** offensive or unacceptable.

10. Generative AI is **exceedingly** good at investigative reporting.

11. The product's success was due to its unique features, not just **a gimmick.**

12. ChatGPT is **ultimately** an **iterative** step forward in how people can see the capabilities of AI in the world of language.

13. Responsible usage is crucial **to ensure** the positive impact.

Task 7. Fill in the gaps with words in the correct form.

to ensure, to amass, on everyone's lips, robustness, hyped, ultimately, deem, to figure out, exceedingly, at capacity

1. The company … the advertising campaign offensive and decided to pull it.
2. The organisation implemented strict policies … the impact of their actions was positive.
3. I need some time … the solution to this problem.
4. The new smartphone's … technology turned out to be disappointing.
5. … , the success of a technology product depends on how well it meets the needs of its users.
6. The data centre was … , so the company had to expand its infrastructure to accommodate more servers.
7. … of the security system prevented any unauthorised access to sensitive data.
8. The new smartphone's camera was … impressive, allowing users to take professional-quality photos.
9. The social media platform was able … millions of users within its first year of launch.
10. The latest innovation in AI is … and has the potential to revolutionise multiple industries.

Task 8. Work in teams.

A. Discuss different opinions about chatbots presented below. Which opinion about chatbots resonates with you most?

B. Explain why you agree or disagree. Support your view with examples or personal experience.

Jake: "I think chatbots are a waste of time. I tried using one to solve an issue with my phone bill, and it kept giving me irrelevant answers. It just frustrated me even more. I prefer talking to a real person who can understand my problem and provide effective solutions."

Emma: "I'm totally in favour of chatbots. They have made my online shopping experience so much easier. Whenever I have questions about a product or need assistance, I can simply ask the chatbot and get instant responses. It saves me time and effort, and I feel more confident making purchasing decisions".

Alex: "Honestly, I'm torn on this. Sometimes chatbots can be helpful, but other times they can be completely unhelpful and irritating. For simple queries, they can provide quick information, but for complex issues, they often fail to understand and cannot give proper support. So, it really depends on the situation."

Sarah: "Oh my gosh, I absolutely love chatbots! They're like little virtual friends that are always there for you. Whenever I feel lonely, I can just chat with a chatbot, and it makes me feel better. It may sound silly, but they can actually bring comfort and cheer into my life."

Task 9. Web Research Activity: Make up a table of pros and cons of AI language models. Compare your ideas with your partner's answers.

Pros	Cons

Task 10. Discuss the following questions.

1. Is it better to embrace new technology or reject it? Why?
2. What is the future of AI language models? How will they shape our world in the future? What impact can AI language models have on employment, education, and other aspects of society, and how can these impacts be harnessed for positive outcomes?
3. Do you share the idea mentioned in the video "There's no replacing the human brain"? Is there any evidence that ChatGPT will replace human workers? Which jobs might be at risk?
4. What ethical considerations should be considered when using AI language models like ChatGPT?
5. How can AI language models like ChatGPT be used to support and enhance learning, and what challenges must be overcome to do so effectively?
6. How can AI language models be improved?

Task 11. Work in teams.

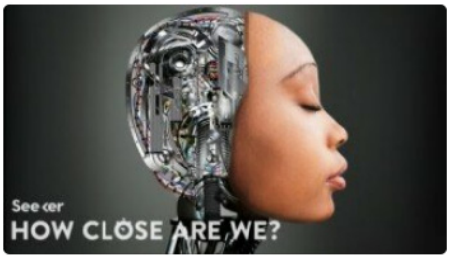
A. Express your opinion on the following futuristic news in teams.

B. Agree on a common team position (support / oppose / mixed view) and prepare 3 strong arguments to defend your decision.

FUTURISTIC NEWS

How Close Are We to Farming Human Body Parts?

A

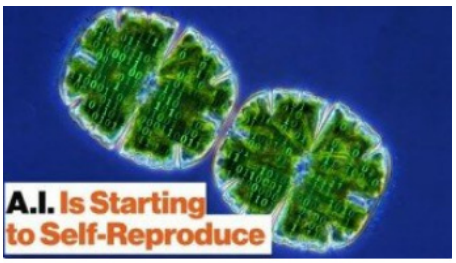


How Close Are We to Replacing Humans With Robots?

B

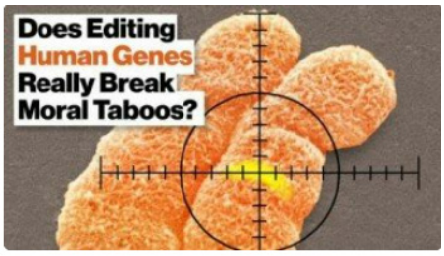
The Robot That's Roaming San Francisco's Streets to Deliver Food

C



Eric Weinstein: AI Can Now Self-Reproduce – Should Humans Be Worried?

D



Richard Dawkins: The Dangers of CRISPR, Designer Babies, and Artificial Genetic Mutation

E

Silicon Valley Start-Up 'Zume' Makes Pizza Economical With Robots

F

(Source: *https://futuristicnews.com/category/future-trends/*)

UNIT 3. SOCIAL MEDIA AND RISK-TAKING

Task 1. A. Study the icons of the most popular social media platforms. What platforms do they represent? Which other social media platforms would you add to the list?

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B. Answer the following questions:

1. Do you actively use any social media platforms? Which of them are the most interesting for you?

2. Can users of social media platforms do anything to protect their data?

3. What is the role of social media companies in protecting users' privacy?

4. What are the pros and cons of getting news from social media platforms such as X and Facebook?

5. How do social media algorithms affect the spread of information?

6. How do technological advancements like AI and VR/AR change social media?

7. What might social media look like in 10 or 20 years? Which current platforms might still be around?

C. Work in teams. Prepare and deliver a presentation analysing one of the social media platforms. Compare it with at least two other platforms in terms of:

- **Target audience** (age group, profession, interests)
- **Content type** (photos, videos, articles, etc.)
- **Privacy and security features** (data control, account security, moderation tools)
- **Positive and negative aspects of using the platform** (community building, misinformation, mental health, etc.).

 **Task 2. Read the text and answer the questions below.**

The 'Ultimate Selfie' Craze — Not Going Away Anytime Soon

To the list of the world's most dangerous activities, it seems we must add a very 21st-century pursuit: selfie-taking.

The Grand Canyon is one of the world's deadliest selfie spots

The number of people who have lost their lives while trying to get that perfect shot has spiked sharply in recent years. For a time, Wikipedia kept a running total, estimating 379 people had died in selfie-related accidents between 2008 and 2021, with hundreds more sustaining serious injuries.

Since then, other sources suggest the toll had risen to as many as 480 fatalities by the end of 2024. Many of those incidents occur in the world's most picturesque spots, or those made famous by popular movies or TV shows.

The allure of social media recognition

Steve Cole, policy director at the Royal Society for the Prevention of Accidents (RoSPA), reports that, according to a recent study, falls from height are the most common injury mechanism in selfie-related incidents, followed by drowning. "This trend of taking selfies in hazardous locations, such as on the edge of cliffs or during extreme weather conditions, is a concerning behaviour."

He adds: "The allure of social media recognition often drives individuals to take these unnecessary risks, underestimating the potential dangers involved." RoSPA urges the public to respect safety warnings and barriers, be mindful of their environment, and use common sense.

Survivalist Ray Mears told *The Times* recently that he is now forced to instruct his clients not to step backwards off a cliff while taking a selfie, "which was never the case in the past". He's not alone. In 2023, Oldham Mountain Rescue instructed hikers not to take selfies on the striking but precarious Trinnacle, a highly dramatic

and extremely photogenic exposed rock formation, near Saddleworth in the Peak District, while the Environment Agency has advised against taking so-called "storm selfies" during extreme weather events.

The precarious rock formation near Saddleworth in the Peak District is a popular spot for selfie seekers

Similar pleas have come from the UK Coastguard, which issued a warning in 2017 against selfie-taking on the eroding cliffs at Seaford Head in East Sussex. Maritime Commander Mark Rodway commented: "People take great risks to get a dramatic photograph of themselves on a dangerous cliff edge. No selfie is worth risking your life for."

However, for many social media influencers, cool selfie-taking is big business, and getting a daring shot is one sure way to stand out in a crowded market. After all, everyone now snaps pictures with their smartphones.

Travel writer Siân Anna Lewis, who runs the blog *The Girl Outdoors* and frequently posts striking shots on her Instagram @sianannalewis, says: "It is much more competitive now — it's harder to get started and create a social media platform than it was 10 years ago. You need to have an angle. People are clicking through images quickly, so you only have a couple of seconds to be eye-catching."

'It's a kind of bravado or machismo'

Mark Griffiths, Distinguished Professor of Behavioural Addictions at Nottingham Trent University, ran a study on "selfitis" (or selfie addiction) in 2018. He believes that the psychology of those who take risks for selfies is actually similar

to that of risk-takers through the ages. “It’s not a new phenomenon — we’ve had storm-chasers for years. It’s a kind of bravado or machismo. The difference is now you can record it.”

However, he notes that taking and sharing selfies is also tied to self-esteem, especially in adolescents and young people. “You get a feeling of validation when your selfie gets hundreds of likes. That motivates people to compete with one another for attention and look for something which gives them the edge.

“Risk-taking often translates into higher numbers of likes, especially if you’re doing something extreme that no one else has done. You want to provoke a reaction. It’s constant one-upmanship.”

But such a contest can have deadly consequences. In 2015, an English hiker in the Brecon Beacons was struck by lightning — it’s suspected that his extended metal selfie stick actually acted as a lightning rod. Meanwhile in Pamplona, David Gonzalez Lopez was gored to death while trying to take a selfie in the midst of the Running of the Bulls. Taking selfies during the event is now illegal.

Spanish authorities have cracked down on daredevils who shoot camera footage with fighting bulls at the annual San Fermin festival

Another fatal selfie trend is scaling vertiginous buildings.

In 2017, Chinese “rooftopper” Wu Yongning, who often posted dramatic images and videos of himself dangling from skyscrapers (without safety equipment), died after falling from a 62-story building in Changsha.

A fairytale visit turned into a horror story for Czech gymnast Natalie Stichova in 2024. While taking a selfie at Neuschwanstein Castle in Bavaria, the impressive

edifice that reportedly inspired Walt Disney's *Sleeping Beauty*, Stichova slipped from the cliff edge and plunged 260 feet. The gymnast had previously posted pictures of herself doing handstands on mountaintops.

Taking and sharing selfies is often tied to self-esteem

There is some backlash to risk-taking images, perhaps as a result of this spate of fatalities. American travel influencer couple Kody Workman and Kelly Castille, who post on the Instagram account @positravelty, faced criticism for a photo taken in Ubud, Bali, in which they kiss while Workman holds Castille over the edge of an infinity pool — with a terrifying sheer drop beneath her. "That's why so many people die taking a selfie!" fumed one commenter.

But the picture still got plenty of attention: it's as aspirational as it is alarming. It seems plenty of people would rather risk death for a perfect image than risk being ignored.

(Swain, M. (2025). The "Ultimate Selfie" has Claimed Up to 480 Lives — Yet the Craze Shows No Signs of Ending. *https://www.yahoo.com/lifestyle/ultimate-selfie-claimed-480-lives-133625749.html*)

1. Where do many selfie-related incidents occur?
2. What are the most common causes of selfie-related fatalities?
3. Why do people take dangerous selfies despite the risks?
4. What does Steve Cole from RoSPA say about selfie-related accidents?

5. What warnings have been issued regarding selfie-taking in dangerous locations?

6. What does Professor Mark Griffiths suggest about the psychology of selfie enthusiasts, and how does he compare it to past behaviours?

7. Why did the influencer couple Kody Workman and Kelly Castille face criticism for their selfie in Bali?

8. How do some people react to extreme selfies on social media?

 **Task 3. Comment on the following statements.**

1. Maritime Commander Mark Rodway: "People take great risks to get a dramatic photograph of themselves on a dangerous cliff edge. No selfie is worth risking your life for."

2. For many social media influencers, cool selfie-taking is big business, and getting a daring shot is one sure way to stand out in a crowded market.

3. It seems plenty of people would rather risk death for a perfect image than risk being ignored.

 **Task 4. Read the text and write down words or phrases that have the following meanings.**

1. Casualty, victim, death, loss —
2. Dangerous, hazardous, perilous, risky —
3. Brave, courageous —
4. A person who enjoys doing dangerous things —
5. A sense of approval or recognition —
6. To provide an advantage or a competitive boost —
7. Competitive superiority —
8. To pierce lethally, (*in a figurative sense*) severely damaged or destroyed —
9. Extremely high or steep —

10. A building (large and impressive), structure, construction —

11. A strong negative reaction by a large number of people —

Task 5. Fill in the gaps using the highlighted words or phrases from the text.

1. Mastering cybersecurity trends can … IT professionals … in today's job market.

2. Storing sensitive customer data without proper encryption is a … decision that invites cyberattacks.

3. The constant … between Apple and Samsung leads to rapid innovation in smartphone technology.

4. The startup's … approach to artificial intelligence disrupted the entire industry.

5. Only a true … developer would push major code changes directly to production without testing.

6. The … growth of AI-powered tools has left many businesses struggling to keep up.

7. The social media platform faced intense … after implementing a privacy policy that compromised user data.

8. A single security breach can be a … for a company's reputation and user trust.

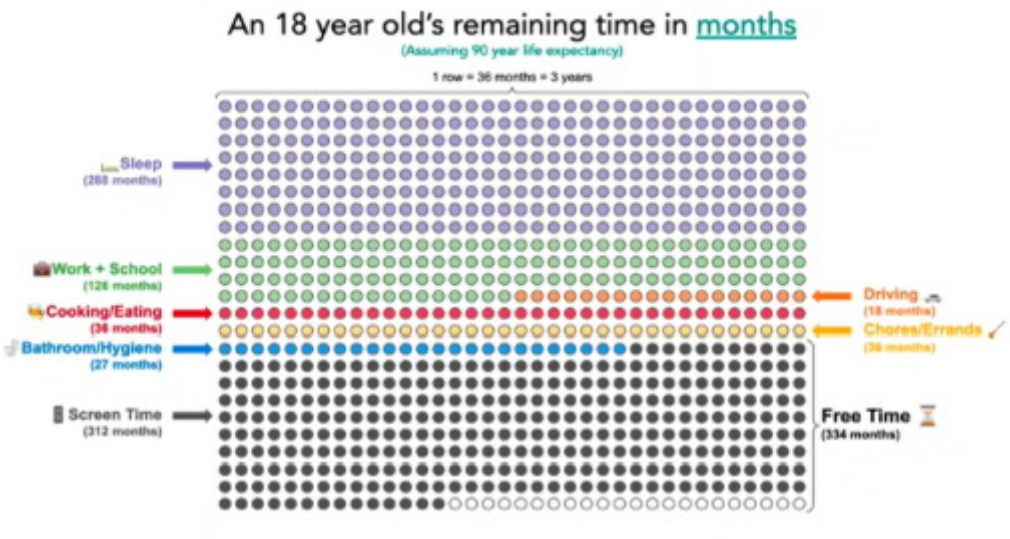
9. A single bug in the system managed to … the entire project … , forcing a full rewrite.

10. Seeing his open-source project gain thousands of contributors gave him … for his years of effort.

11. The company's cloud infrastructure serves as the digital … that supports its global operations, ensuring seamless data processing and storage.

Task 6. Watch the video with Dino Ambrosi *"The Battle for Your Time: Exposing the Costs for Social Media"* by following the link:

https://www.youtube.com/watch?v=4TMPXK9tw5U



Answer the following questions.

1. Would you agree with the opinion that how you spend your free time determines the quality of your life?

2. What do you think about the statistic that the average 18-year-old in the United States is on track to spend 93% of their free time looking at a screen? Do we have similar statistics for Ukraine? What is your opinion on the amount of time Ukrainian youth spend looking at a screen?

3. What happens to your attention when you regularly stare at the screen of your gadgets?

4. Would you pay for your favourite social media platform if it charged you a monthly subscription fee?

5. What value do these services provide? How much of your time is that value worth?

 **Task 7. Comment on the following statements.**

1. The body, mind, and character that you will have in the future are being actively shaped by how you choose to use your time today.

2. Every social media platform carries a message that affects what we believe. They influence the way we see ourselves and the way we see the world purely based on how they are designed.

3. (Twitter says) it's more important to be updated about everything than to be deeply informed about anything.

4. When you start to compare the messages these platforms are sending with those of technologies from the past, you begin to get a sense of what we might be losing.

5. You're the product that social media sells.

6. Social media is free because you pay for it with your time.

7. Social media can be an incredibly powerful tool.

 **Task 8. A. Study the acronym FOMO used in the video. What does it stand for?**

Dino Ambrosi: *Don't let yourself get to the age of 90, only to look back on your life and realize that while you were trying to avoid* ***FOMO****, you actually missed out on living.*

FOMO —

B. Write a short paragraph about a time when you experienced FOMO. How did it affect your decisions or emotions? Do you think FOMO is always negative, or can it sometimes be motivating?

Task 9. Watch the video and fill in the gaps with appropriate words and phrases.

1. Scrolling through TikTok, … Netflix, and playing video games are not the best way to spend your free time.
2. We have recently started to … the cognitive consequences of excessive tech use.
3. It is well established that there is a link between … and mental health issues such as depression and anxiety.
4. Instagram … says that your worth is largely defined by what you look like and what you do on vacations.
5. It … you to capture all the most meaningful moments of your life on camera and share them with your entire social network.
6. It implicitly says that it's more valuable to have a thousand people who will give you … social approval than a few who deeply care about you.
7. Twitter says that anything worth saying can and should be reduced to an … number of characters.
8. (A book) forces us to focus on one … for an extended period of time, which … our attention.
9. So when you … all that in, it quickly becomes clear that the opportunity cost of this screen time is impossible to calculate.
10. There is a … difference between how much time we say our screens are worth and how much time we actually give them.
11. It's a consequence of a business model that has … which are fundamentally misaligned with your wellbeing.
12. When you start to do this kind of analysis, it becomes clear that most of us are … overpaying for social media.
13. We need to learn to use social media in … .

UNIT 4. DEEPFAKE TECHNOLOGY

Task 1. Watch and discuss.

Pre-watching activities:

1. Define the term ‘a deepfake.’
2. Is it easy to spot fake videos?
3. How easy is it to create deepfakes?

Post-watching task:

Watch the videos by following the links:

https://www.youtube.com/watch?v=iyiOVUbsPcM

https://www.youtube.com/watch?v=G1wsCworwWk

https://www.youtube.com/watch?v=cQ54GDm1eL0

https://www.youtube.com/watch?v=yJzjyYL8l5Y

https://www.youtube.com/watch?v=oxXpB9pSETo

https://www.youtube.com/watch?v=avABSo6xpqg

For each video:

1. Decide whether the content is real or fake.

2. Explain your reasoning with specific evidence from the video or external sources.

A

B

A

B

A

B

Task 2. Watch the video *"What is a deepfake? How does it work, and what can it be used for?"* by following the link:

https://www.youtube.com/watch?v=cZFqcvhHkcI

Answer the questions focusing on the information presented in the video.

1. What is a deepfake, according to the BBC's disinformation expert, Marianna Spring?
2. Is it easy to create deepfakes?
3. What can indicate that a video is fake?
4. How much time is needed to create a clone?
5. How can a picture of a real person be turned into a talking video?
6. What manipulations are necessary to make the picture come to life?
7. What was wrong with the deepfake of Dr Jennifer Williams from the University of Southampton?
8. Why would someone want to create a deepfake?
9. What are the benefits of deepfake technology?

Task 3. Fill in the gaps with words from the box.

malicious intricate blur encountering cutting-edge safeguards verify emerged sophisticated impersonating altering

In an age where technology continues to **1)** … the lines between reality and fiction, the term 'Deepfake' has **2)** … as a powerful and sometimes concerning symbol of the digital age. Deepfakes are the product of **3)** … artificial intelligence techniques, capable of seamlessly **4)** … visual and auditory content to a point where distinguishing the real from the fabricated becomes an **5)** … puzzle. These

6) … and often deceptive creations have not only captured the imagination of the digital world but also raised profound questions about the boundaries of truth, the potential for misinformation, and the need for new **7)** … in the era of AI-driven media manipulation…

Deepfakes have raised significant concerns due to their potential for misuse. They have been used to spread disinformation, fake news and for **8)** … purposes, such as **9)** … individuals in compromising or damaging situations. In response, there have been efforts to develop tools for detecting and mitigating Deepfakes, as well as increased attention to the ethical and legal issues surrounding their use.

It's important to be cautious when **10)** … digital content, particularly in the age of Deepfakes, and to **11)** … the authenticity of media, especially when it has the potential to impact individuals or society at large.

 **Task 4. Read the text and answer the questions below.**

Exploring Deepfake Technology

Edgar Allen Poe once warned us to *"Believe half of what you see and nothing of what you hear."* His advice was ahead of its time in light of the recent proliferation of what is known as deepfake technology.

Origins and Evolution of Deepfakes

The roots of deepfake technology date back to the 1990s, when CGI (computer-generated imagery) was being explored to create realistic human likenesses. However, it wasn't until the 2010s that deepfakes became much more advanced, thanks to the availability of large datasets, improved machine learning algorithms, and enhanced computing power. A significant turning point came in 2014 when Ian Goodfellow and his team introduced the concept of Generative Adversarial Networks (GANs), a machine learning model that enabled the creation of more sophisticated deepfake images, videos, and audio.

In 2017, the term “deepfake” was coined by a Reddit user who popularised a subreddit dedicated to creating and sharing deepfake videos, specifically those that used AI techniques to swap celebrity faces into adult content. Although the forum was later banned, the term stuck and became associated with the rise of AI-generated fake media.

By 2018, concerns over deepfakes were growing rapidly due to their increasingly realistic nature and potential for misuse. This led major tech companies to roll out policies aimed at moderating and detecting deepfakes on their platforms. Reality Defender, initially a nonprofit, also emerged during this time as a key player in deepfake detection.

The following year, in 2019, saw further developments. Countries like the United States began exploring legislative measures to regulate deepfakes. At the same time, deepfake technology spread globally, with AI-generated ads and websites, which created entirely synthetic but realistic human faces, further fueling concerns about the misuse of the technology.

By 2022, deepfake audio also became more advanced, allowing for highly realistic voice impersonations. In 2024, deepfakes have become so sophisticated that real-time deepfake generation is possible, where images of individuals can be manipulated almost instantly, demonstrating how far the technology has progressed.

Today, deepfakes are prevalent across a wide range of industries:

- *Entertainment:* Filmmakers and content creators use deepfakes to de-age actors or create realistic digital doubles, allowing for seamless visual effects.

- *Medicine:* In healthcare, deepfakes can simulate complex medical procedures for training purposes, offering life-like, hands-on learning experiences for medical students.
- *Education and Training:* In both fields, deepfakes help simulate real-world scenarios that allow learners to practice complex tasks in a safe, controlled environment.

Key deepfake technologies include:

Face replacement / Face swap — a deepfake technique that copies a facial image and places it on another body.

Face generation creates facial images that do not exist in reality.

Speech synthesis uses AI to generate realistic human speech.

Generative adversarial networks (GANs) employ deep learning to analyse data patterns — such as those found in real videos — and use them to generate new content.

How dangerous are deepfakes for companies?

Because deepfakes are so difficult to tell apart from their original counterparts, they are extremely popular among cybercriminals. Politicians, celebrities, and companies are common targets. For example, cybercriminals can create videos in which the CEO of a company is making controversial statements about confidential or sensitive issues. The financial and reputational damage that this can cause, if undetected, is immense and often irreversible.

In 2020, cybercriminals stole 35 million dollars from a bank in Dubai by contacting one of the directors with a fake phone call. The criminals used voice

swapping to pose as the CEO of a major company who had an account with the bank. The director believed the call was genuine, judging by the realistic audio and approved the 35-million-dollar transaction. Such incidents that involve money being the central motive are reminiscent of ransomware attacks and "big game hunting in which cybercriminals often dupe organisations for large sums of money. Cases like this show us how dangerous deepfakes can be, not just for individuals, but for larger corporations as well.

Will they undermine trust?

The more insidious impact of deepfakes, along with other synthetic media and fake news, is to create a zero-trust society, where people cannot, or no longer bother to, distinguish truth from falsehood. And when trust is eroded, it is easier to raise doubts about specific events.

As the technology becomes more accessible, deepfakes could mean trouble for the courts, particularly in child custody battles and employment tribunals, where faked events could be entered as evidence. But they also pose a personal security risk: deepfakes can mimic biometric data, and can potentially trick systems that rely on face, voice, vein or gait recognition. The potential for scams is clear. Phone someone out of the blue and they are unlikely to transfer money to an unknown bank account. But what if your "mother" or "sister" sets up a video call on WhatsApp and makes the same request?

The deepfake detection market is still in its early stages, with many tools showing promise but struggling to deliver consistent accuracy. The fast pace of advancements in deepfake creation technology means that detection tools are constantly playing catch-up, making it crucial for developers to continue improving their solutions.

As deepfakes become harder to detect, educating the public about the potential dangers and how to critically assess digital content will be essential. Just as digital

literacy became crucial in navigating the internet age, deepfake literacy will help individuals discern between real and manipulated media in the era of AI.

Ultimately, deepfakes are dangerous, but with continued research and investment, detection tools can improve. By addressing the challenges identified in this survey, the field can develop reliable solutions capable of effectively combating the risks posed by manipulated data.

(A Survey on Deepfake Technologies. 2024. *https://www.lawyershub.org/news/post/a-survey-on-deepfake-technologies*
Farley, J. Deepfake Technology: The Frightening Evolution of Social Engineering. 2023. *https://www.ajg.com/news-and-insights/deep-fake-technology-the-frightening-evolution-of-social-engineering/*)

1. When was the term "deepfake" coined?
2. What factors contributed to the advancement of deepfake technology in the 2010s?
3. Who introduced Generative Adversarial Networks (GANs), and why were they significant for deepfake technology?
4. How did deepfake technology evolve globally by 2019?
5. What milestone in real-time deepfake generation was achieved by 2024?
6. How are deepfakes being used across various industries?
7. What are the key technologies used in deepfake creation?
8. Why are deepfakes popular among cybercriminals?
9. Who are the common targets of deepfakes?
10. What example is provided to illustrate the financial damage caused by deepfakes?
11. What is a "zero-trust society," and how do deepfakes contribute to it?
12. How could deepfakes pose a threat to courts?
13. Why might people be more likely to comply with a request if it comes from a "trusted" deepfake impersonation?
14. Why is it crucial for developers to continuously improve deepfake detection tools?

15. How does the concept of deepfake literacy compare to digital literacy in the internet age?

 **Task 5. Read the text and write down words or phrases that have the following meanings.**

1. Critical/decisive moment —
2. Create, make, invent —
3. Exchange —
4. Launch (officially), introduce —
5. Widespread, common —
6. Distinguish, differentiate —
7. Evocative, similar to, comparable to —
8. Cheat, deceive, trick —
9. Treacherous, deceptive, misleading —
10. Without warning, unexpectedly —

 **Task 6. Fill in the gaps using the highlighted words or phrases from the text.**

1. The company plans to … a major software update next month, introducing new security features.

2. The new user interface is … of older operating systems, giving it a nostalgic feel.

3. Malware can be … , hiding in a system for months before executing its malicious payload.

4. The introduction of artificial intelligence in cybersecurity marked a … in how companies defend against cyber threats.

5. Hackers often use phishing emails to … unsuspecting employees into revealing their login credentials.

6. It is becoming harder to … AI-generated content from human-written text.

7. Developers often … new terms to describe emerging technologies.

8. The server crashed … , causing unexpected downtime for all users.

9. The system administrator had to … the faulty RAM module with a new one to restore server performance.

10. Cyberattacks have become increasingly … , making cybersecurity a top priority for IT professionals.

Task 7. Watch the video *"Trump deepfakes on social media…"* by following the link: *https://www.youtube.com/watch?v=4GDvuMkMOXM*

Answer the following questions.

1. What is needed, according to an AI specialist, to create a high-quality deepfake video?

2. What AI tools could be used to create convincing machine-generated text, images, audio, and video?

3. Do you share the opinion of more than 2000 industry experts and executives to pause for at least 6 months the training of AI systems more powerful than Chat GPT-4, citing profound risks to society and humanity?

4. What are the clues on how to spot a fake picture generated by AI?

5. What is the political impact of photos generated by AI?

6. What does the AI Bill of Rights regulate?

7. What can be done to reduce the impact of deepfakes on individuals and society?

Task 8. Comment on the following statements.

1. President Biden: "Social media has already shown us the harm that powerful technologies can do without the right safeguards in place… AI can help deal with some very difficult challenges like disease and climate change, but also has to address the potential risk to our society, to our economy, to our national security."

2. It's becoming easier not to believe things that are true and say, "Look, you know, I don't know how to trust anything because anything could be generated by AI." And it undermines this sense of a shared truth that is already under threat.

3. We as technologists have to take more responsibility for the technologies that we are developing and unleashing in the world.

4. Sam Altman, OpenAI CEO, says that society needs time to adapt to this technology. "They need time to feel the technology, to see how it's used, and to go through a few iterations so that we can get to the right set of regulations."

5. Emmanuelle Saliba, a senior reporter: "At one point, AI couldn't really quite get human hands correctly, but a week later, it figured it out. So something I could tell you today is not gonna be a visual cue in a week."

Task 9. Study the acronym VFX. What does it stand for? What are the duties of a VFX artist?

VFX —

VFX artist —

Task 10. Watch the video and fill in the gaps with appropriate words and phrases.

1. This is an entirely new era of … .

2. Fake imagery is going to be really dangerous if there are no … and … around them.

3. Disinformation as technology has … and … to the point where experts say it's getting harder to figure out what's … and … .

4. Nowadays, ordinary people are taking these tools and playing around with them, creating all kinds of … and … images, but also some images that could be … or … .

5. Some platforms, like Reddit, banned deep fakes, calling them … content.

6. The faces in the crowd are not clear; it's not a … image. They look … .

7. If we zoom into his hand, it's not particularly well-defined; there's something a little bit … about it.

8. For those of us at home scrolling through our phones, sometimes it's easy to … to the dangers of AI-generated photos.

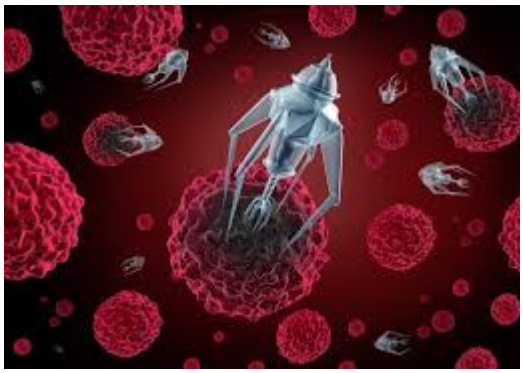
Many experts said the … really should not be on the individuals to try to figure out whether something is real or not; we need to put it on companies.

UNIT 5. NANOTECHNOLOGY

Task 1. Study the following pictures and speak about the use of nanotechnologies and nanomaterials in different fields.

A

B



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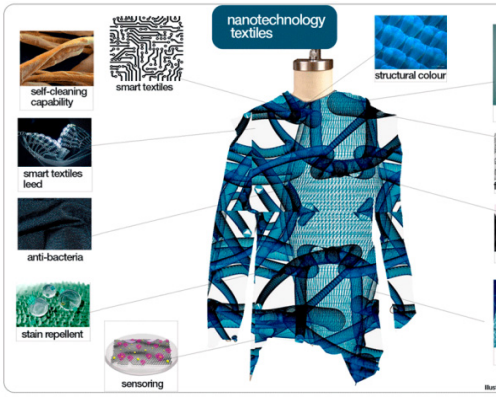

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Task 2. Comment on the following ethical issue.

Ethical issue

The use of nanotechnology in sports raises ethical considerations regarding the balance between technology and athletic skill.

The advantages of nanotechnology are numerous — high strength, stiffness, reduced weight, and abrasion resistance. These qualities are transforming sports equipment, including baseball bats, tennis racquets, hockey sticks, golf balls, skis, and more, enabling athletes to push their limits and excel in their respective sports.

The use of full-body swimsuits, for example, sparked controversy, particularly regarding whether such technology was fair. In the 1992 Olympic Games, Speedo introduced the S2000 fabric, which reduced swimmer drag by 15% compared to more traditional fabrics. Later designs, such as the "X-Glide" by Arena and the "LZR" by Speedo, further improved performance by reducing the swimmer's cross-sectional area, which in turn lowered the drag coefficient.

After 168 world records were broken by competitive swimmers wearing such suits, FINA (Federation Internationale de Natation), the sport's international governing body, banned "non-textile" suits in 2010 for being a technical aid that gave competitors an unfair advantage — so-called "technology doping."

Moreover, a coating of ultrahard nanoceramics could keep the edges of ice skates super sharp, for example, while buckypaper (a sheet of nanotubes) or graphene oxide might be incorporated into or coated onto canoes or raceboat masts and hulls to make them lighter, stronger and more efficient in terms of glide. If these applications are not yet regulated by the International Olympic Committee, could they be considered technology doping?

Does nanotechnology offer athletes more than just a sporting advantage? Should athletes be allowed to use emerging advanced technologies (in equipment and facilities) to enhance their performance?

(Dorey, E. Does nanotechnology offer athletes more than a sporting chance? 2012. *https://www.theguardian.com/nanotechnology-world/does-nanotechnology-offer-athletes-more-than-a-sporting-chance*

Jennings, S. Enhancing Sports Gear with Nanotechnology. 2023. *https://www.nanomuscle.com/nanotech-in-sports-gear/*

Lawal Yazid Ibrahim. Ethical Considerations in the Use of Advanced Technologies in Sports. 2016. *https://www.researchgate.net/publication/315099247_ETHICAL_CONSIDERATIONS_IN_THE_USE_OF_ADVANCED_TECHNOLOGIES_IN_SPORTS*)

Task 3. Define the following terms and use them in sentences of your own.

nanomaterial —

nanoparticle —

nanotube —

nanobot —

nanoscale —

nanoinformatics —

nanocomposites —

Task 4. Read the text and fill in the gaps with words from the box. Answer the questions below.

utilising impeded surveillance novel robust yield repercussions newness incorporating in vitro

What is Nanotechnology?

Nanotechnology is a field of science and engineering that focuses on the design and manufacture of extremely small devices and structures.

It is generally agreed that advances in nanotechnology will drive the next paradigm shift in science and technology. These advances are beginning to have **1)** _____ across all areas of technology, and many products containing nanoparticles are already on the market. Nanotechnology provides seemingly endless opportunities, from manufacturing tremendously powerful yet incredibly small computers to developing new sustainable energy sources and devising personalised cures for cancer. Once a concept of science fiction, nanotechnology is now a remarkable field that has transformed various industries. It combines the elements of molecular chemistry, physics, and engineering to create a paradigm shift in treatment and diagnosis.

The benefits of nanotechnology, both current and future, are hard to exaggerate. Nanotechnology is used now to make car bodies stronger and lighter, to make batteries and solar panels more efficient, to make glass that never needs cleaning and neckties that are stainproof, and to deliver medicines to individual cells in the body. In the future, assuming that the technology is not **2)** _____ by public opposition, "nano" will bring us materials that can make objects invisible, revolutionary new types of computers, and medicines that will cure many major diseases.

Improved Products and Processes

There exists a large and rapidly growing number of products and process that have been or that are capable of being improved by **3)** _____ nanotools or **4)** _____ nanomaterials. Nanotools are increasingly being used to establish the relationship between the structure of the materials used to manufacture a product and the performance and cost of the product. They are also increasingly being used to optimise and control the processes that are employed to manufacture different products.

Nanomaterials, possessing **5)** _____ properties, are increasingly being used to improve the performance of a product. Such materials include nanoparticles, nanofilms and nanocomposites of organic (drugs and biopolymers) and inorganic (metal and ceramic) materials. In the future, the assembly and organisation of nanomaterials to **6)** _____ nanodevices and nanosystems possessing increasingly complex functions will be important. Examples of improved products and processes include secure printing inks (nanoparticle), self-cleaning windows (nanostructured film) and harder wearing tyres (nanocomposite).

What are the risks of nanotechnology?

There are potential risks associated with nanotechnology, including:

- *Health and environmental risks.* We don't yet fully understand the long-term health effects of exposure to nanomaterials. There are concerns that nanotechnology

in food, for instance, could be harmful to humans and the environment. The use of nanotechnology in pesticides adds another threat to humans and the environment.

- *Economic risks.* There is potential for nanotechnology to disrupt traditional industries and create economic inequality. A functioning nanocomputer would be hundreds of times more computationally powerful than the most powerful conventional computers. It could give those who have access to the technology a significant advantage in areas such as stock trading, financial modeling and other data-intensive industries. A nanocomputer could also lead to job displacement as certain tasks and industries become automated by the powerful technology.
- *Ethical risks.* There are also ethical concerns surrounding the use of nanotechnology, such as the potential for it to be used for military or **7)** _____ purposes. In the healthcare industry, the introduction of nanotechnology could lead to harmful side effects and raise questions around data privacy as well.
- *Existential risks.* The most pessimistic scenario depicts a nightmare reality where self-replicating nanotechnology is able to reproduce rapidly, eventually consuming the rest of the planet. While this situation is largely considered to be science fiction, the development of self-replicating nanobots may reignite fears of a nanotechnology takeover.

Challenges and considerations in developing nanotechnology innovations

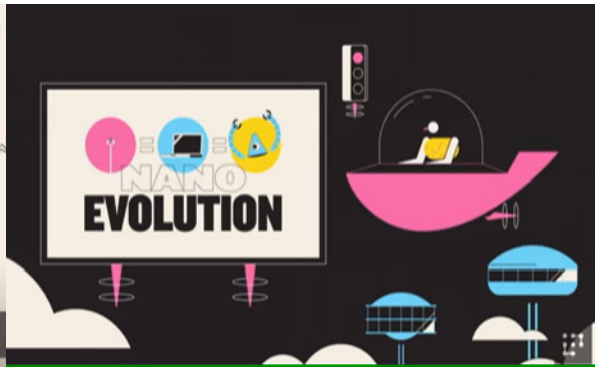
Despite the exciting prospect of breakthrough nanotechnology innovations, its relative **8)** _____ means that there are many safety considerations and regulatory challenges that must be satisfied during the research and development process.

Nanotechnology is becoming increasingly regulated worldwide. Government agencies in the United States like the Food and Drug Administration (FDA) form committees like the *Nanotechnology Task Force and Nanotechnology Interest Group* to ensure the safety of nanotechnology research and development. Similarly, in Europe the *Joint Research Centre* work with the European Commission on the safety

assessment of nanomaterials, the development and optimization of **9)** _____ methods, the physico-chemical characterization of nanomaterials, all the way down to the implementation of ingredient labeling. Thus, for an exciting new nanotechnology innovation to be brought out of the lab and into the world to have societal impact, it first must pass today's **10)** _____ testing standards.

1. Can nanotechnology be considered an interdisciplinary subject?
2. What are the main advantages of nanotechnology?
3. What are nanomaterials used for?
4. What are the challenges and concerns with nanotechnology?
5. Who regulates nanotechnology?
6. Why might some people be against nanotechnology?

Task 5. Watch the video *"The Tiny Guide to Nanotechnology"* by following the link: *https://www.youtube.com/watch?v=YYxRi5rs2Gw*



Answer the following questions.

1. How often do we encounter nanomaterials in our everyday life?
2. Does it sound credible that the legendary steel blades produced in Damascus around the 12th century owed their strength to nanotechnology?
3. What is used today as one of the fundamental building blocks of nanotechnology?
4. What are carbon nanotubes, and what makes them unique?

5. Why is nanotechnology described as “exciting, experimental, and potentially disruptive”?

6. Which inventions related to nanotechnology seem quite futuristic?

7. What concerns are associated with nanotechnology?

Task 6. Watch the video with George Tulevski *“The Next Step in Nanotechnology”* by following the link:

https://www.youtube.com/watch?v=Ds_rzoyyfF0

Answer the following questions.

1. Why can nanotechnology be compared to creating a statue? In what way does the speaker’s work resemble that of a sculptor?"

2. What comparisons and metaphors does the speaker use to explain nanomaterials and nanotechnology as a whole? Do they help in understanding the nature of nanotechnology?

3. What problems were young scientists, who were interested in nanotechnology, working on about 15 years ago?

4. Comment on the following statement: *“Nanomaterials are like a double-edged sword.”*

5. Agree or disagree with the following opinions:

“We just come to expect the pace of computing advancements to go on indefinitely… . The point is the progress — it’s not gradual. The progress is relentless. It’s exponential. It compounds on itself year after year.”

"We know this progress may not last forever. By many metrics, like speed and performance, the progress has already slowed to a halt."

6. What do scientists try to employ in computing? How could it contribute to the improvement in performance?

7. What problems do scholars need to overcome to achieve their aim?

8. What does the speaker mean by referring to one of the scenes from "The Godfather" and asking, 'What's the Fredo in our problem?'

9. How would you interpret the following quote: *"(Nature) — she's already at the nano. She's been there for hundreds of millions of years. We're the ones that are late to the party."*?

10. What is the role of chemistry in nanotechnology?

 **Task 7. Watch the video again and write down words or phrases that have the following meanings.**

1. Strangely enough, though it may seem unusual —
2. Continuous, lasting, non-stop —
3. To use —
4. Puzzle, dilemma, problem —
5. To collect, gather —
6. To force, urge —
7. Variety —
8. Accurate, exact —

 **Task 8. Fill in the gaps with the appropriate words or phrases from Task 7.**

1. Writing … code is crucial to prevent bugs and ensure software runs smoothly.

2. The biggest … in software development is balancing speed with security and efficiency.

3. … cyberattacks force security teams to constantly update their defence strategies.

4. Many tech firms … artificial intelligence to optimise customer service and automate repetitive tasks.

5. The … of programming languages allows developers to choose the best tool for each project.

6. … some companies still rely on outdated software from the early 2000s to manage their critical operations.

7. Regulatory requirements … businesses to adopt stricter data protection measures.

8. Engineers must … various hardware components carefully to build a high-performance computer system.

Task 9. Work in teams. Prepare presentations on the use of nanotechnologies in different fields or industrial sectors. Your presentation should include current advancements, examples of applications, benefits and challenges, and the future potential of nanotechnology in the chosen sector (*Aerospace, Automotive, Construction, Electronics, Environmental Protection, Food, Healthcare, Military, Sports, etc.).*

Nano Facts

- According to the *Oxford English Dictionary* (OED), the word *nano* originates from the classical Latin *nanus* or its ancient Greek etymon *nanos*, meaning 'dwarf'. It is a prefix used to describe "one billionth" of something.
- A nanometre (nm) is a billionth of a metre, or a millionth of a millimetre.
- 1 nanometre is about 8 times the radius of an atom and 100 times smaller than a bacterial cell.
- A human hair is 80,000 nm in diameter.
- Nanoscience is not just one science. It is a platform that includes biology, chemistry, physics, materials science and engineering.
- Nanoscience works on a scale 1000 times smaller than anything that can be seen with an optical microscope.
- Nanotechnology was first introduced in 1959 by Nobel Prize-winning physicist Richard Feynman. He proposed using normal-sized robots to construct smaller replicas of themselves and then using the new set to manufacture an even smaller set, and so on, until the molecular scale is reached.
- Nanoelectronics continues from the development in microelectronics, especially for computers, but now at significantly smaller size-scales.

(https://www.tcd.ie/nanoscience/whatisnano/nanofacts/#:~:text=It%20is%20a%20prefix%20used,smaller%20than%20a%20bacterial%20cell.)

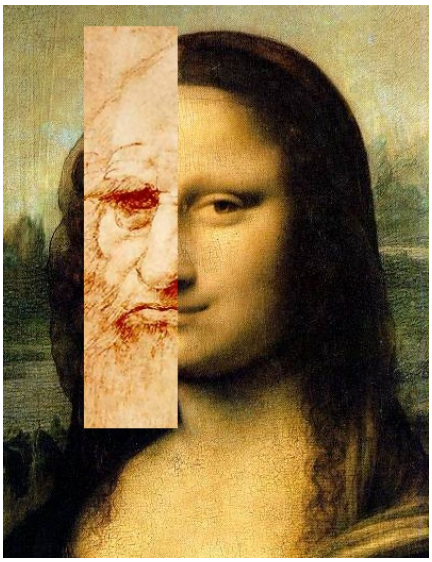
UNIT 6. DIGITAL ART. NFTs

Task 1. Look at the images below. Then describe them and share your impressions.

A

B

C



D

Answer the following questions:

1. What is digital art? Why is it so popular nowadays?
2. Should digital art be valued the same as traditional art?
3. Is the digital age killing real art?
4. What makes digital art unique?

5. Can digital art be considered the future of art? Give your reasons.
6. What elements of art are present in digital art?

Task 2. Read the text and fill in the table with information about each type of digital art mentioned. Include details about techniques, tools, software, and typical uses.

Types of Digital Art

Digital art blends art with technology, offering artists several ways to express their ideas, including different types of digital art such as digital painting, vector art, pixel art, digital collages, and 3D modeling. Each type of Digital art uses different techniques and tools, so even though they all start from the same digital canvas, the final products can be vastly different.

Digital Painting

Digital painting is a form of digital art where artists use a paint program, a digital canvas, and traditional drawing and painting techniques to make paintings, some of which might look like traditional artworks but are made using digital tools.

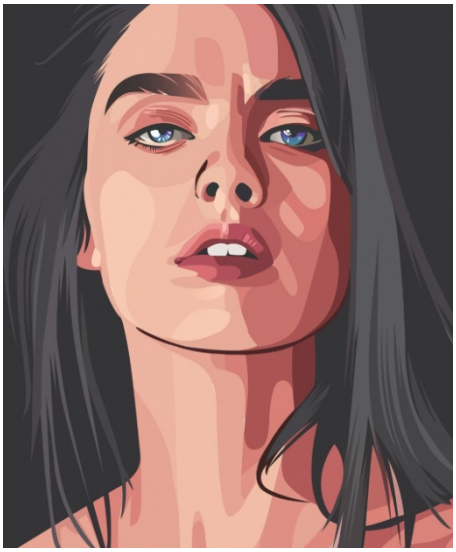
Making digital paintings involves using a stylus with pressure sensitivity and a graphics tablet (or a tablet, or a pen display) to draw and paint on, this setup mimics the feeling of painting with a real brush but is made with digital strokes instead.

Software like Adobe Photoshop, Corel Painter, CLip Studio Paint and Procreate are very popular choices due to their selection of digital brushes and tools that simulate the different painting mediums like oil paint, watercolors, gouache or charcoal.

You can make portraits, landscapes, character designs, and pretty much anything you'd do in your normal sketchbook or canvas, even abstract art. This versatility is what makes digital art the favourite of many artists as they can freely experiment without needing to buy new materials or deal with fumes and afterwards-cleaning that traditional mediums require.

Vector Art

Vector art is a type of digital art that uses mathematical equations to create graphics composed of points, lines and shapes, which are called vectors. Unlike the "traditional" images, which are made of pixels and called "raster" images, Vector graphics can be scaled to any size without losing quality or pixelating. This makes them great for things like logos, illustrations and designs that need to be used in several sizes and formats.



To make vector art, special computer software is needed. Software like Adobe Illustrator, Inkscape, Affinity Designer or Corel Draw translates the shapes you trace into mathematical data. This data dictates how the vectors behave when the image is scaled larger or smaller, so that the artwork remains sharp and clear at any size.

While you don’t need a graphics tablet or a stylus to make vector art and a mouse is more than enough, many artists prefer using them for their precision and the more natural drawing experience they offer. Vector art is commonly used to make logos, icons or typography; however, it can also be used to make beautiful illustrations, although they take more time and patience than when using painting programs.

Pixel Art

Pixel art is a digital art form that uses pixels as the basic building blocks of images, these images look like the early video games graphics that were limited because of the technology of the time and were displayed in a visible grid-like structure. Pixel art embraces this aesthetic and uses it to create images that are now used for games or as a tribute to older games that were loved by the community.

Pixel art is created by setting up a grid like canvas on a special painting software (or a painting software that has that feature) that allows precise control over each pixel. The process consists of basically placing each pixel intentionally to create images, animations, backgrounds or game sprites. Pixel art’s unique charm lies in its simplicity and the creativity required to evoke complex scenes and emotions with a limited palette and resolution

Pixel art is widely used in the video game industry, especially in retro and indie games. It’s also used in animated web graphics, mobile apps and as a form of pop art in social media.

3D Modelling

3D Modelling is a form of digital art where artists create three-dimensional objects, characters and environments on a computer. These models can be very simple, like the example above or highly detailed and hyper-realistic depending on the artist's intention. 3D modeling artists need to consider several factors besides the usual ones that 2D artists use, plus sculpting skills are a must.

To make 3D art, artists use specialised and highly resource-demanding software to build models by shaping and connecting polygons or by sculpting them with virtual clay. In order to do this, a computer with strong processing power as well as an excellent graphics processing unit, is needed, plus a graphic tablet for more control when sculpting or texturing models.

Additionally, software like Autodesk Maya, 3DS Max, Blender and ZBrush are used for digital sculpting. These programs also offer tools for texturing, rigging and rendering. You can create pretty much anything in 3D, from characters, props, and environments for video games and films to new digital products and virtual reality experiences.

Digital Collage

Digital Collage is an art form that consists of combining multiple images or elements into a single composition, while it resembles a lot its traditional counterpart, it expands the horizons of collage, opening the possibility to adding interactive media and video to the compositions.

Artists use image editing software to cut, manipulate and layer photographs and other digital elements. The process often involves using layer modes, changing the transparency, size and color of the images, and some drawing and painting to harmonize the composition.

Digital Collages can be realistic montages that blend the images seamlessly for backgrounds or more abstract surrealist artworks where artists can unleash their creative expression. This form of digital art is popular in graphic design, advertising, book publishing and other editorial work.

(Source: *https://www.artchive.com/art-mediums/digital-art/*)

Type of Digital Art	**Main characteristics**	**Tools/ Software**	**Application**
Digital Painting			
Vector Art			
Pixel Art			
3D Modelling			
Digital collage			

Task 3. Match the words with their definitions:

1. Vastly	a. a person or thing that has the same purpose as another one in a different place or organization
2. versatility	b. in a planned or intended way
3. seamlessly	c. the ability to adapt, function, or to be used in many different ways; having many different skills or qualities
4. counterpart	d. very clear, detailed, and well-defined
5. resemble	e. small 2D graphic images used in video games to represent characters, objects, effects, or interface elements
6. sharp (artwork)	f. objects or items used within a scene**,** especially things that characters interact with or that help build the setting
7. props	g. to a very great degree or extent
8. intentionally	h. to show clearly how good, strong, or effective smth or smb is
9. a tribute to smth	i. to look like or be similar to another person or thing
10. game sprites	j. smoothly, without any sudden changes, interruptions, or problems

Task 4. In pairs or small groups, research one of the digital artists listed below and prepare a presentation. Support your presentation with visuals.

Beeple (Mike Winkelmann)	**Butcher Billy**	**David Sossella**	**Ash Thorp**
Alberto Seveso	**Paul Robertson**	**Erik Johansson**	**Kyle Lambert**

Include the following information:

- the artist's background
- artistic style
- major works
- contribution to digital art

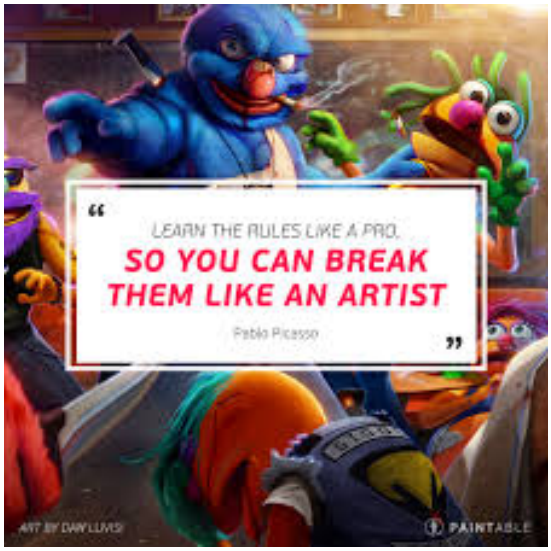
Task 5. Read the quotations about Digital Art. Then discuss in pairs what you think each quotation means. How far do you agree with each one? Explain why.

A

B

C

D



E

F

Task 6. Watch the video *"Can Robots Create Art?"* by following the link: *https://www.dw.com/en/can-a-robot-create-art/video-56847666*

Answer the following questions.

1. To what extent do you believe that robots can create art?
2. What did you learn about Ai-Da from the video?
3. Is it easy to distinguish between art made by humans and by machines?
4. How does AI actually create paintings?
5. Why have some robot artworks sold for very high prices?
6. Who should be credited for machine-made art?
7. Would you buy AI-generated art? Why or why not?
8. Visit *https://www.artaigallery.com/collections/all-items* and express your opinion about some of the artworks.

Task 7. Work in teams. Read and discuss fun and interesting facts about digital art and NFTs.

- The first use of a computer to make art dates back to 1962, by an engineer named A. Michael Noll at Bell Labs.
- One of the earliest forms of digital art was made with mathematical formulas and called algorithmic art.
- Pixel art started as a method for developers to create graphics within the severe limitations of early computers in the 1980s and 1990s.

- Adobe Photoshop, launched in 1990, was the software that affected the landscape of digital art and photo editing the most.
- In 1997, Titanic was one of the first films to use extensive digital effects that won an Academy Award for Best Visual Effects.
- NFTs have revolutionised digital art by allowing digital artworks to be bought and sold as unique, collectable items on the blockchain.
- Kevin McCoy minted the first non-fungible token "Quantum" on May 3rd, 2014.
- Created back in 2015, many consider Etheria to be the first NFT game where digital land was sold as a non-fungible token.
- According to DappRadar, which tracks more than 30 blockchains, the total value of NFTs exchanged in 2021 was $524.211.474.

(Sources: *https://www.artchive.com/art-mediums/digital-art/, https://www.slideshare.net/slideshow/amazing-facts-about-nftspdf/251711146*)

 **Task 8. Define the following terms and use them in sentences of your own.**

metaverse —

token —

non-fungible —

minting —

blockchain —

virtual ownership —

digital wallet —

creator economy —

 **Task 9. Watch the video *"NFTs, the Metaverse, and the Future of Digital Art"* by following the link:**

https://www.ted.com/talks/elizabeth_strickler_nfts_the_metaverse_and_the_future_of_digital_art

Answer the following questions.

1. What is the metaverse according to Elizabeth Strickler, and what can we do there?
2. How does she compare experiences in real-world galleries and virtual galleries?
3. How much was Beeple's artwork sold for?
4. What does Elizabeth Strickler do? Where does she work?
5. What does NFT stand for? What kinds of things are NFTs?
6. Why are NFTs important for digital artists?
7. Why is the use of AR and VR fashion becoming mainstream?
8. How can people buy and sell NFTs?
9. Are NFTs art or technology?
10. Are NFTs good investments? Why or why not?
11. What's the future of digital art?

Task 10. Watch the video again and write down words or phrases that have the following meanings.

1. Causing you feel great respect or admiration —
2. Not known to many people, unclear and difficult to understand or see —
3. A person or organisation that makes business or financial arrangements between companies or organisations that do not deal with each other directly —
4. Treating everyone equally, fair —

5. A payment made to writers, people who have invented things, owners of property, etc. every time their books, devices, land, etc., are bought or used by others —

6. Objects that are collected because they are connected with a person or event that is thought to be very interesting —

7. The state of lasting forever, indefinitely, or for an uninterrupted, endless duration —

8. A situation in which something is not easy to find or get —

 **Task 11. Fill in the gaps with the appropriate words or phrases from Task 10.**

1. The museum displayed rare … from the early days of digital art, including original sketches and signed prints.

2. Many artists prefer selling their work directly online without an … taking a percentage of the profit.

3. The mountain landscape was so … that visitors stood in silence just to admire it.

4. The contract guarantees that the creator will receive … every time the artwork is resold.

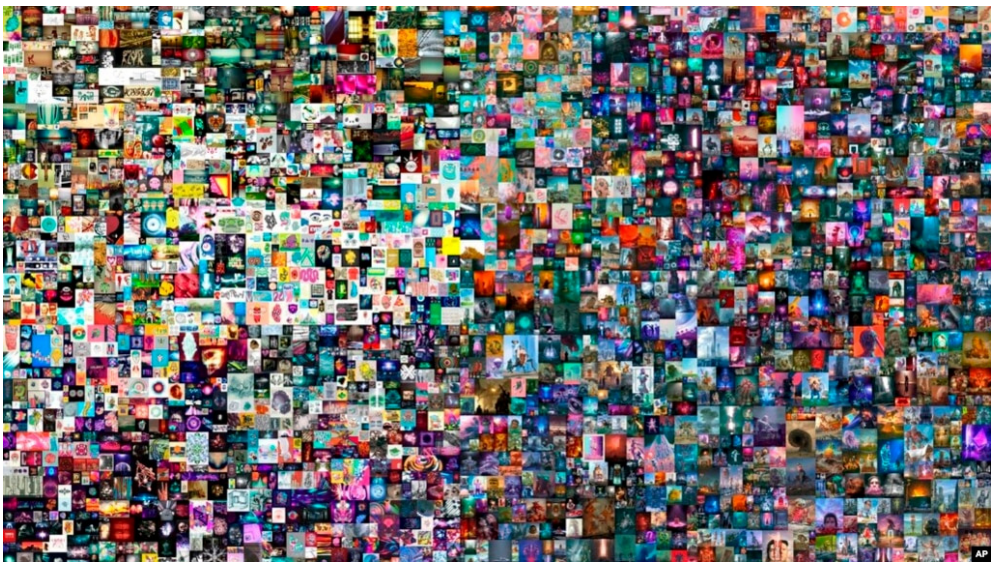
5. The platform aims to create a more … system where artists and buyers benefit equally.

6. Because of the … of the artwork, its value increased dramatically over time.

7. Some early digital artworks remain … because they were never widely shared or promoted.

8. The license allows the collector to display the artwork in … , with no time limit.

Task 12. Work in teams. Decide whether the following statements are myths or facts. Research and justify your answers.



- NFTs are always expensive
- NFTs harm the environment
- NFTs are the future of art ownership
- Buying an NFT means you own the copyright
- NFTs cannot be copied.

UNIT 7. CRYPTOCURRENCY IN THE DIGITAL WORLD

Task 1. Read the quotes. Explain what you think they mean and briefly say to what extent you agree with them.

1. Money makes the world go around.
2. Price is what you pay. Value is what you get (Warren Buffett).
3. Bitcoin is the beginning of something great: a currency without a government, something necessary and imperative" (Nassim Taleb, Author and Risk Analyst).

Task 2. Read the text and answer the questions below.

What is Cryptocurrency

A cryptocurrency is a virtual or digital currency that can be used to buy goods and services, which implies there's no physical coin or bill used, and all the transactions take place online. It used an online ledger with strong cryptography to ensure that online transactions are completely secure.

Cryptocurrency is a purely virtual line of currency that runs on the system of cryptography. It functions as a decentralised medium of exchange where cryptography is used to verify and facilitate each transaction. Cryptography also underlines the creation of units of different cryptocurrencies.

This mode of exchange primarily runs on blockchain technology, which lends cryptocurrencies a decentralised status. It is a shared public ledger that contains all the transactions that have ever taken place within a network. Therefore, everyone on the network can see each transaction that takes place and also view others' balances.

The blockchain technology addresses one of the primary concerns with digital payment platforms, i.e. double-spending, while ensuring there is no monopoly of authority. That is because, in blockchain technology, parties to a transaction themselves verify and facilitate every such activity.

How was the Idea of Cryptocurrency Conceived?

The concept of digital currency gained considerable traction in the 90s tech boom. Multiple organisations and programmers ventured to create a parallel line of currency that would be out of any central authority's reach. However, ironically, the companies that tried to create this digital currency themselves assumed the authority of verifying and facilitating transactions.

It not only defeated the purpose but also founded the venture as well. Moreover, the digital currencies back then were riddled with frauds and other financial challenges. For a long time since then, this idea of digital currency was considered a lost cause. This idea was falsified when Satoshi Nakamoto — a programmer or a group of programmers — introduced and explained what Bitcoin is in 2009, the first-ever cryptocurrency.

How Does Cryptocurrency Work?

According to Satoshi Nakamoto, the founding father of Bitcoin, it is a *peer-to-peer electronic cash system.* In that, it is much similar to peer-to-peer file transactions, where there is no involvement of any central authority or regulator.

Cryptocurrencies are mere transactions or entries in a shared ledger that can only be changed upon meeting certain prerequisites. Typically, in a blockchain technology like the Bitcoin network, each transaction consists of the involved parties' — sender and receiver — wallet addresses or public keys and the amount of such transaction.

What attributes the safety net in such a network to avoid fraud is that the sender needs to confirm a transaction with their private key. After confirmation, the transaction is reflected in the shared ledger or database.

However, only miners are authorised to confirm transactions within a cryptocurrency network. They need to solve cryptographic puzzles to confirm any specific transaction. In exchange for their service, they receive a transaction fee in that particular type of cryptocurrency and a reward.

Once miners confirm a transaction, they spread it to the network, and every node in the network automatically updates its ledger accordingly. Furthermore, once a miner confirms a particular transaction, it becomes irreversible and non-modifiable.

However, there is a crucial catch in mining. It is that as a particular type of cryptocurrency gains popularity and more and more miners join the bandwagon, the miners' fees and reward per transaction go down. For instance, initially, miners could get 50 bitcoins (BTC) as a reward for mining; however, due to the recent halving in May 2020, miners' rewards have gone down to 6.25 BTC.

What is the Use of Cryptocurrency?

It is worth wondering if the popularity that cryptocurrency has garnered over the years is hollow or not. However, even though it is still nowhere near replacing institutionalised cash, cryptocurrency, especially Bitcoin, has found wide acceptance across the world.

- **As a mode of payment**

Initially, Bitcoin had little value as a mode of payment to merchants. However, with time, several merchants worldwide like restaurants, flights, jewelers, and apps have come to accept it as a viable payment medium.

One of the most notable acceptors of cryptocurrency as a viable medium of payment is Apple Inc. It allows 10 types of cryptocurrencies for carrying out transactions in the App Store.

However, India, as an economy, has yet to explore cryptocurrency as a viable payment mode extensively. Nevertheless, with big companies like Apple and Facebook hoisting its cause, it is expected that cryptocurrency will gain traction in India soon.

- **Investment**

Cryptocurrencies, especially Bitcoin, are one of the most lucrative investment options currently present. Its value appreciation is supremely dynamic and can prove to be an excellent avenue for capital expansion.

However, individuals must also note the volatility of this investment avenue. Bitcoin, the most popular cryptocurrency with the largest market share, has experienced some of the most erratic price changes as an asset. For instance, in December 2017, Bitcoin's value plunged from $19000 per BTC to $7000 per BTC. Since cryptocurrency is not rooted in any material change but a change in popularity and fad, such price fluctuation is natural.

(Source: Cryptocurrency. *https://groww.in/p/cryptocurrency*)

Answer the following questions.

1. What is cryptocurrency based on? What does it provide?
2. How are cryptocurrency transactions carried out?
3. What role does cryptography play in cryptocurrency?
4. When did the concept of digital currency first gain popularity?
5. Who is credited with creating the first cryptocurrency? When did this happen?
6. How did Satoshi Nakamoto describe Bitcoin?

7. How is a transaction confirmed in a cryptocurrency network?
8. What makes cryptocurrency transactions safe?
9. Who are miners and what is their role?
10. Why has cryptocurrency gained traction in recent years?
11. How is cryptocurrency used as a mode of payment?
12. What are the pros and cons of investing in cryptocurrency?

 **Task 3. Read the text and write down words or phrases that have the following meanings.**

1. Unpredictable, inconsistent, or irregular in behaviour or movement —
2. A digital record used to keep financial accounts and transactions —
3. Dared to do something risky or entered into a new activity or place –
4. Capable of working successfully; practical and feasible —
5. Irregular rises and falls in number, value, or level —
6. Adopt a popular trend or opinion, especially because it is fashionable or widely supported —
7. Distributed away from a central authority or location; controlled by multiple local units instead of one central body —
8. Producing a great deal of profit; financially rewarding —
9. Formed or developed in the mind; created or imagined —
10. In a contest, struggle, or competition; overcome —
11. Nothing more than; small or insignificant in importance —
12. Collected or gathered, especially information, support, or praise —

 **Task 4. Fill in the gaps with the appropriate words or phrases from Task 3.**

1. The company recorded all transactions carefully in its digital … .
2. After years of research, the scientist finally … a new theory.
3. His mood has been extremely … lately, changing several times a day.

4. The cryptocurrency market is known for sudden price … .
5. She … into entrepreneurship despite the financial risks.
6. The proposal sounded good, but investors questioned whether it was truly … .
7. Many people tend to … when a new trend becomes popular.
8. The team was completely … in the final match.
9. The startup quickly … attention from major investors.
10. The offer seemed impressive, but it was a … $10 discount.
11. The country operates under a … system of governance.
12. Real estate can be a very … investment if managed properly.

Task 5. Study the pictures of different cryptocurrencies. Match the images with their definitions. What other cryptocurrencies do you know? Explain the meaning of highlighted words.

a) this digital currency is on the payment platform Ripple. The neat thing about Ripple is that any currency — digital or otherwise — can be exchanged for another. That means users can pay someone in bitcoin without owning bitcoin, simply by using it as the bridge between the currency they own and the one their recipient wants to be paid in. This makes it a very fast means of payment. It runs on a data structure called HashTree, and it can't be mined.

b) it is an example of a so-called “stable coin” because it is pegged to the US dollar. This keeps it relatively stable compared with other cryptocurrencies, which can be very volatile. It acts as a digital bridge between traditional fiat currencies and the cryptocurrency market. When it was first created in 2014, the value of each token was set at $1.

c) it is a decentralised, open-source blockchain-based software, launched in 2015. The software was created with the idea to expand the use of the blockchain beyond bitcoin and use it in wider applications, which makes it more than “just” a cryptocurrency. Its supply isn’t capped, and new tokens are created constantly through a similar mining process as with Bitcoin. It functions as a global and distributed computing platform that enables the creation of decentralised applications (DApps) and smart contracts.

d) it started in 2013 as a joke based on a viral meme. The digital currency’s popularity and value soared over the past year as bitcoin's value climbed and Tesla CEO Elon Musk repeatedly tweeted about it. It’s also popular with Reddit users, who have taken on a notorious role among retail investors following the rise and fall of the shares of gaming retailer GameStop (GME).

e) it is the biggest and most recognised fish in the crypto sea. Created anonymously in 2009, the digital currency runs on blockchain technology for transparent and secure transactions. Key features include immutability, censorship resistance, pseudonymous user identities, and scarcity.

f) it is one of the world's largest and most popular cryptocurrency exchanges, offering a platform to buy, sell, trade, and stake a wide variety of cryptocurrencies. Founded in 2017, it has grown into a global hub for crypto trading, thanks to its low fees, extensive list of supported assets, and advanced trading features. It supports both beginner-friendly and professional trading experiences, catering to all levels of crypto users.

(Source: *https://edition.cnn.com/2021/04/22/investing/cryptocurrency-guide-top-five-bitcoin-ethereum/index.html*)

Task 6. Fill in the gaps with the following words or phrases: *pegged, fiat currency, non-fiat currency, capped, soared, notorious, immutability, scarcity, stake.*

1. Bitcoin is valued partly because of its built-in … , meaning there will only ever be 21 million coins.
2. The company's profits … after the product went viral.
3. Some stablecoins are … to the US dollar.
4. Unlike gold, most modern money is … .

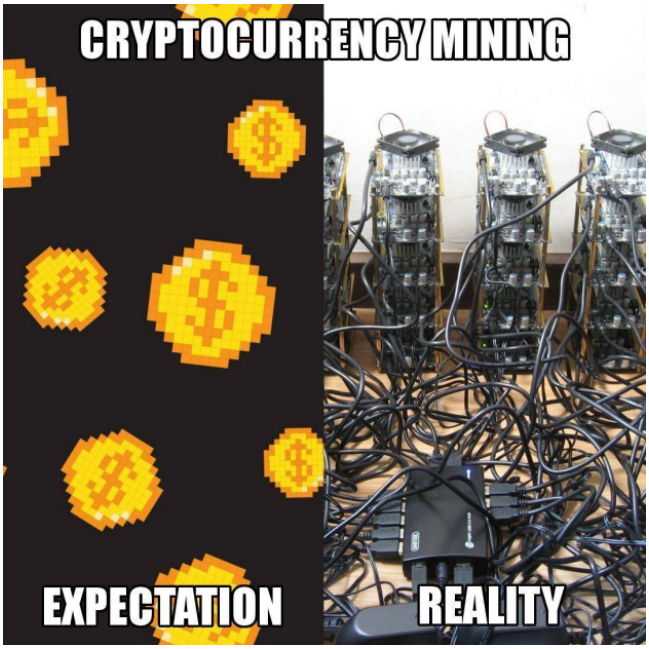
5. The number of tokens is … at a fixed supply.
6. Blockchain technology ensures … of transaction records.
7. Investors increased their … in the startup.
8. The exchange became … for security breaches.
9. Ethereum is considered a … currency because it is not issued by a central bank.

Task 7. Comment on the memes about Cryptocurrency.

A

B

C

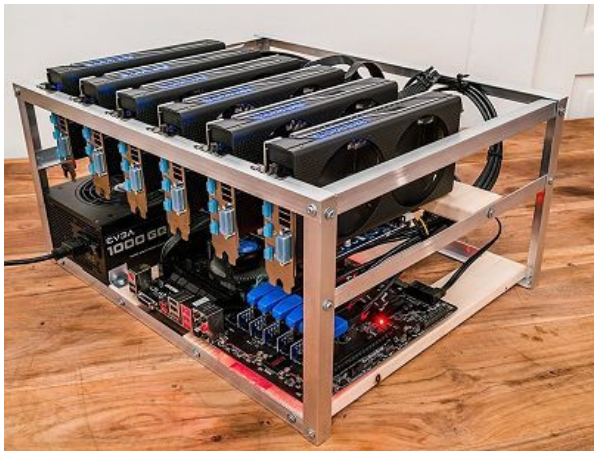


D

Task 8. Watch and discuss.

Pre-watching activity:

1. What kind of device is it? How is it related to cryptocurrency?
2. What are you going to listen to and watch?



Watch the video *"How much it costs to mine for cryptocurrency"* by following the link: *https://www.youtube.com/watch?v=rnMPy4LTsxA*

Fill in the gaps with a suitable word:

1. The more people that own and use it and then begin … on it. The more … the Bitcoin is itself.
2. A miner is essentially just running a computer program that solves … .
3. … of banking system activity was false.
4. When the GPs are … , they get really hot, and it's important to have a lot of … .

5. People use … for gaming, but they are also good for mining cryptocurrencies.

6. The only other thing left to do is create … , a digital address for crypto cash.

7. The mining rig is competing against miners all over the planet to be the first person … a block of transactions.

8. It's … between you and your computers and the computers in your mining pool versus other computers in other mining pools.

9. The profits can … the costs.

Task 9. Answer the following questions.

1. What do people need for digital mining? What parts do we need to construct a mining rig?
2. Which factors influence your profit in crypto mining?
3. Should people invest their life savings in cryptocurrency?
4. Could you predict the future of cryptocurrency?

Task 10. Explain the meaning of the following words and phrases.

bitcoin spiking —

to surge —

fraudulent —

to wire up —

hashing algorithm —

a mining pool —

to stark differences —

Task 11. To what extent do you agree with the following quotes? Explain why.

1. Bitcoin is a very exciting development; it might lead to a world currency. I think over the next decade it will grow to become one of the most important ways to pay for things and transfer assets (Kim Dotcom, CEO of MegaUpload).

2. Most cryptocurrencies are supported by teams of altruistic people, but they do not have companies behind them. Something has to change (Daniel Garcia, creator of Daviescoin).

3. Every informed person needs to know about Bitcoin because it might be one of the world's most important developments (Leon Louw, two-time Nobel Peace Prize nominee).

4. We have elected to put our money and faith in a mathematical framework that is free of politics and human error (Tyler Winklevoss, American cryptocurrency and Bitcoin investor, rower, entrepreneur, and founder of Winklevoss Capital Management).

5. You can't stop things like Bitcoin; it's like trying to stop gunpowder. It will be everywhere, and the world will have to readjust. World governments will have to readjust (John McAfee, founder of McAfee Inc).

6. Bitcoin is the most important invention in the history of the world since the internet (Roger Ver, World's first Investor in Bitcoin startups).

7. Bitcoin is a technological tour de force (Bill Gates, co-founder of Microsoft, investor, and philanthropist).

8. I believe very strongly that countries like the United States could and should move to a digital currency, so that you would have the ability to trace this kind of corruption. There are important issues of privacy and cybersecurity, but it would certainly have big advantages (Joseph Stiglitz, Nobel Prize-winning economist).

9. Bitcoin is a remarkable cryptographic achievement, and the ability to create something that is not duplicable in the digital world has enormous value (Eric Schmidt, former CEO of Google).

UNIT 8. CYBERSECURITY AND BIOHACKING

Task 1. Study the pictures of different cyber threats. Match the images with their definitions. What other cyber threats or cybercrimes do you know?

a) a form of malware that secretly installs itself on a device, monitors user activity, and steals sensitive information such as bank details and passwords.

b) a security process that requires two forms of verification to protect your online accounts, making it harder for others to break in.

c) a type of malware originally designed as a banking Trojan aimed at stealing financial data, but it has evolved to become a major threat to users worldwide.

d) a blanket term for any type of software designed to harm, disrupt, or gain unauthorised access to computer systems.

e) the redirection of web traffic from legitimate sites to fake ones for the purpose of stealing usernames, passwords, financial data, and other personal information.

f) an emerging form of malware that locks users out of their files or device and then demands an anonymous online payment to restore access.

g) a dangerous and illegal prank in which someone makes a false report of a serious crime, such as a hostage situation or an active shooter, in order to send a SWAT team or other law enforcement officers to a targeted location.

h) a cyberattack in which someone pretends to be a trusted source (such as a person, website, or email) to deceive users into gaining access to a system, stealing data, or spreading malware.

i) the act of publishing someone's personal, confidential information on the Internet, often with malicious intent.

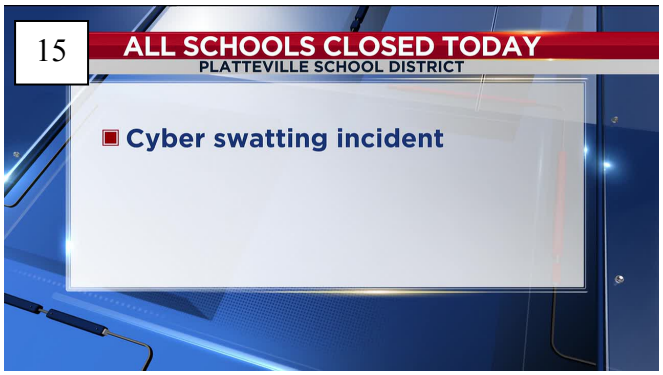
j) a form of online deception in which someone uses other people's photos and information to create a fake identity.

k) a type of malware that hides on a device and displays or delivers unwanted advertisements.

l) a type of cyberattack in which attackers pretend to be real companies to trick people into revealing sensitive information, such as personal details, bank account information, and passwords.

m) a form of malware that hides on a device and steals its computing resources in order to mine cryptocurrency, such as Bitcoin.

n) a type of malware that secretly monitors and records keystrokes on a device in order to capture sensitive information such as passwords and personal data.



o) unwanted, unsolicited digital messages sent in bulk.

p) a type of cyberattack in which multiple computers flood a target website or online service with traffic, causing it to slow down or become unavailable.

Task 2. Read the text and answer the questions below.

Biohacking and Cybersecurity: When Code Meets the Human Body

The rapid convergence of biology and technology has given rise to *biohacking*, a growing movement that integrates technological devices directly into the human body. While biohacking promises groundbreaking advances in healthcare, human enhancement, and personalised medicine, it also introduces entirely new cybersecurity challenges. As biotech devices become increasingly connected to the internet, the human body itself may soon become part of the cyberattack surface, redefining traditional notions of digital security.

Data privacy and biometric information

Biohacking generates vast amounts of highly sensitive personal data, including genetic profiles, biomarkers, and health indicators. Although such data is invaluable for medical research and technological innovation, it poses serious risks if improperly protected. Data leaks can result in identity theft, discrimination, unauthorised surveillance, or misuse by third parties. Unlike conventional digital credentials, biological data cannot be easily replaced once compromised, making its protection a critical priority for cybersecurity specialists.

Genetic information and security risks

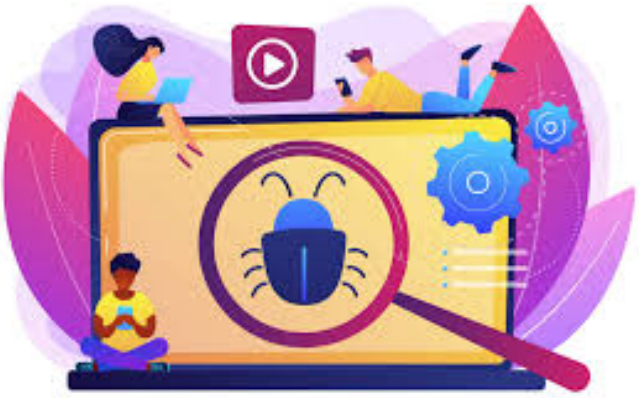
Advances in gene editing and genetic analysis open new possibilities for treating diseases, but they also raise serious cybersecurity and ethical concerns.

Unauthorised access to genetic data may enable data manipulation, illicit trading of genetic information, or even malicious biological experimentation or misuse. As genetic databases continue to expand, securing them becomes an increasingly complex challenge at the intersection of biotechnology, information security, and ethics.

Ethical hackers and biohacking communities

Biohackers and ethical hackers share common principles, including openness, experimentation, and decentralised innovation. Just as white-hat hackers identify vulnerabilities to strengthen digital systems, responsible biohackers can contribute to identifying weaknesses in emerging biotechnologies. Cooperation between these communities plays an important role in improving system resilience and shaping ethical standards for future technological development.

Ethical hacking and bug bounty programs



An increasingly important security practice in this context is the use of ethical hacking and bug bounty programs. These programs encourage security researchers and white-hat hackers to identify vulnerabilities in medical devices, biomedical software, and biohacking technologies before they can be exploited by malicious actors. By offering legal frameworks and financial incentives for responsible vulnerability disclosure, bug bounty programs enable organisations to detect and address security flaws at an early stage. When carefully regulated, such initiatives can

significantly enhance system resilience and patient safety, while fostering trust between developers, security professionals, and users of biohacking technologies.

New cybersecurity threats in the biohacking era

The integration of biological systems with digital networks introduces new categories of cybersecurity threats:

- ***Bio-cyber attacks*** target implantable devices or biomedical equipment to steal data or cause physical harm. Addressing these attacks requires robust cybersecurity measures alongside biological safeguards.
- ***Biological data breaches*** expose genetic and biometric information, leading to long-term personal risks.
- ***Biometric authentication vulnerabilities*** arise as fingerprints, facial recognition, and DNA-based identification are increasingly used for access control. Biohackers could exploit them or even modify their own biomarkers to bypass security, posing significant risks.

Enhancing cybersecurity in the age of biohacking

Addressing these challenges requires a proactive and multidisciplinary approach:

- ***Stronger device security***, including encryption, secure firmware updates, and thorough vulnerability assessments to minimise hacking risks.
- ***Robust data protection***, using anonymisation, secure storage, and strict access controls.

- ***Cross-disciplinary collaboration*** between IT specialists, bioengineers, ethical hackers, and policymakers.
- ***Public education and awareness***, empowering users to understand both the benefits and risks of biohacking technologies.

Biohacking represents a transformative frontier where technology extends beyond external devices and becomes embedded within the human body. For cybersecurity professionals, this development presents both significant opportunities and serious responsibilities. Through interdisciplinary collaboration, ethical security practices and proactive risk management, it is possible to harness the benefits of biohacking while minimising threats to privacy, safety, and security.

(Biohackers and Cybersecurity: What is the Connection? (2024). *https://www.snsin.com/biohackers-and-cybersecurity-what-is-the-connection/*)

1. What is biohacking, and how does it differ from traditional uses of technology in healthcare?
2. Why does the integration of technology into the human body create new cybersecurity challenges?
3. What types of personal data are generated through biohacking practices?
4. Why is biological and genetic data considered more sensitive than conventional digital data?
5. How do cybersecurity requirements for biological data differ from those for financial or governmental data?
6. What cybersecurity threats are associated with genetic databases and gene-editing technologies?
7. How can cooperation between biohackers and cybersecurity professionals improve system resilience?
8. How do bio-cyber attacks differ from conventional cyberattacks?
9. What role should public awareness and education play in reducing biohacking-related risks?

10. How might the role of cybersecurity professionals change as biohacking technologies become more widespread?

11. What security measures should be prioritised when designing implantable or wearable devices?

12. Who should be responsible for regulating biohacking technologies: governments, healthcare institutions, or the tech industry? Why?

 **Task 3. Read the text and write down words or phrases that have the following meanings.**

1. The point at which two or more fields, ideas, or areas come together —
2. Something that motivates or encourages a particular action —
3. The continuous monitoring or observation of people, systems, or data —
4. To use something effectively for a specific purpose —
5. The ability of a system to resist attacks and recover quickly from failures —
6. Low-level software embedded in hardware that controls how a device operates —
7. An incident in which sensitive data is accessed, exposed, or stolen without authorization —
8. To present or create a problem, risk, or challenge —
9. A strategy that focuses on preventing problems before they occur rather than reacting afterwards —
10. Strong, reliable, and able to function effectively under difficult conditions —
11. To avoid or overcome a security system control —

 **Task 4. Fill in the gaps using the highlighted words or phrases from the text.**

1. The increasing use of connected medical devices may … serious cybersecurity risks if they are not properly protected.

2. Cybersecurity specialists aim to … technological innovation to improve healthcare without compromising safety.

3. Attackers often try to … security controls rather than attack systems directly.

4. System … determines how quickly a network can recover after an attack.

5. Bug bounty programs provide a financial … for ethical hackers to report vulnerabilities.

6. A … focuses on preventing security incidents rather than responding to them after they occur.

7. Unauthorised digital … can lead to violation of personal privacy.

8. Healthcare systems require … cybersecurity solutions to protect sensitive data.

9. Vulnerabilities in the device … can allow attackers to gain control over hardware.

10. A large-scale … may expose genetic information for millions of users.

11. Biohacking exists at the … of biology, technology, and cybersecurity.

Task 5. Match each word or collocation with its correct definition.

1. biohacking	a) all possible points where a system can be attacked or accessed illegally
2. implantable devices	b) security mechanisms that restrict who can view or use data or systems
3. genetic database	c) a technological device designed to be placed inside the human body
4. cyberattack surface	d) the process of converting data into a coded form to prevent unauthorized access
5. vulnerability	e) access to data or systems without permission

6. encryption	f) the practice of integrating technology or biological techniques into the human body to enhance health or performance
7. access control	g) a weakness in a system that can be exploited by attackers
8. unauthorized access	h) a structured digital collection of genetic information

Task 6. Watch the video *"Profiling Hackers — The Psychology of Cybercrime"* by following the link:

https://www.youtube.com/watch?v=4EyWrC41Oc4

Answer the following questions.

1. What are the speaker's interests?
2. How do hackers reveal their personality?
3. What is a key element in profiling, according to the speaker?
4. What can a profiler tell you about a cybercrime?
5. What two words does the speaker use for a *criminal*?
6. Agree or disagree with the following quotation: "Amateurs hack systems, professionals hack people"
7. Which professionals track cybercriminals?
8. What does the term "crime as a service" mean?
9. What are the profiles of black-hat hackers?

10. What are the main motives of hackers?

11. Why do hackers choose to make money illegally?

12. What do hackers look for before committing a crime?

13. How do hackers eliminate your critical thinking?

14. Could you resist the temptation to plug a strange USB flash drive into your computer to see what it contains?

15. What is Silk Road?

16. Why are many criminals and spies very successful?

17. What is the authority principle?

18. Agree or disagree with the statement: "Cybercrime is a psychological problem."

19. What can we do to become a human firewall?

Task 7. Watch the video and fill in the gaps with appropriate words and phrases.

1. Today, I would like to … the face of hackers, so to say.

2. More than 90% of all cyberattacks or cybersecurity … are caused by human error.

3. Computers are the weapons, but the … and also the victims are humans.

4. Another psychological motive comes into play, which is called … , or in psychology we sometimes like to call this "challenge to … the system".

5. Your Amazon account has been locked. There is some suspicious or criminal activity. You need to click here to … access to your account.

6. And, of course, it's … — you need to do it right now. Hackers never say, " … your time."

7. This may be the beginning of a negative … effect unfolding and a very serious cyberattack.

8. Many criminals and many spies look pretty … and pretty sympathetic.

9. Time is running and … away, but I want to give you one last example of how hackers try to … our psychological vulnerabilities.

10. We are much more … when we consider someone an authority.

11. The … strategy of many companies could be described like this: "Team, I don't care," "I hope it won't hit us," "I think we are too small," or "We are not interesting enough."

12. … alone can be a key element in the prevention of cybercrime.

Task 8. Case Study.

Read the situation and discuss the questions below.

A hospital introduces internet-connected implantable devices for monitoring patients. A cybersecurity expert discovers a vulnerability that could allow attackers to access patient data or interfere with the device.

1. What risks does this situation pose?
2. What actions should be taken immediately?
3. Who should be responsible for solving this problem?
4. How could this risk have been prevented?

Task 9. Write a short paragraph (80-100 words) on the topic: *"Why cybersecurity is important in the age of biohacking?"*

SUPPLEMENTARY READING

Article 1

Meet Soham Parekh, the Engineer Burning Through Tech by Working at Three to Four Startups Simultaneously

By Emma Roth

One name is ***popping up*** a lot across tech startup social media right now, and you might've heard it: Soham Parekh. On X, people are joking that Parekh is single-handedly holding up all modern digital infrastructure, while others are posting memes about him working in front of a dozen monitors or ***filling in*** for the thousands of people that Microsoft just ***laid off***.

From what social media posts suggest, Parekh is actually a software engineer who seems to have been interviewed at dozens of tech startups over the years, while also juggling multiple jobs at the same time. Several startups had this revelation on July 2nd, when Suhail Doshi, founder of the AI design tool Playground, posted a ***PSA*** on X, saying: "There's a guy named Soham Parekh (in India) who works at 3-4 startups at the same time. He's been preying on YC companies and more. Beware. I fired this guy in his first week and told him to stop lying/scamming people. He hasn't stopped a year later. No more excuses."

Doshi's post was quickly flooded with replies that included similar stories. "We interviewed this guy too, but caught this during reference checks." Variant founder Ben South said: "Turns out he had 5-6 profiles, each with 5+ places he actually worked at." When asked about what ***tipped*** him ***off*** about Parekh, South told *The Verge* that his

suspicions arose during Parekh's interview, prompting his team to do a reference check earlier than they usually would. "That's when we learned he was working multiple jobs," South said.

Parekh's resume and pitch email look good at first glance, which helps him garner interest from multiple companies. "He had a prolific GitHub contribution graph and prior startup experience," Marcus Lowe, founder of the AI app builder Create, told *The Verge*: "He was also extremely technically strong during our interview process."

Just one day after this all unfolded, Parekh ***came forward*** in an interview with the daily tech show TPN. Parekh confirmed what many tech startup founders had suspected: he had been working for multiple companies at the same time. "I'm not proud of what I've done. That's not something I endorse either. But no one really likes to work 140 hours a week, I had to do it out of necessity," Parekh said. "I was in extremely dire financial circumstances."

Parekh seems to have made a good first impression on many people… Vapi cofounder Jordan Dearsley said Parekh "was the best technical interview" he's seen, but he "did not deliver on his projects."

The startups that did hire Parekh didn't seem to keep him around for long. Lowe said that he noticed something ***was off*** when Parekh kept making excuses to ***push back*** his start date. After telling Lowe that he had to delay working because he had a trip planned to see his siter in New York, Parekh later claimed that he couldn't start working following the trip because he was sick. "For whatever reason, something just ***felt off***," Lowe said.

That's when Lowe visited Parekh's GitHub profile and realised he was committing code to a private repository during the time he was supposed to be sick. Lowe also found recent commits to another San Francisco-based startup. "Did some digging, noticed that he was in some of their marketing materials," Lowe said. "I was like, 'Huh, but he didn't declare this on his resume. This feels weird.'" Create ended up letting Parekh go after he failed to complete an assignment.

It looks like Parekh even had a stint at Meta. In 2021, the company published a post highlighting his story as a contributor working on mixed-reality experiences in

WebXR. In the post, Parekh said that he found "that the best way to get better at software development is to not only practice it but to use it to solve real world problems." Meta didn't immediately respond to *The Verge's* request for comment.

Parekh's purported scheme may have been uncovered, but his outlook might not be all bad. Parekh said he landed a job at Darwin, an AI video remixing startup, and the company's founder confirmed it. "Soham is an incredibly talented engineer, and we believe in his abilities to help bring our products to market," Darwin founder and CEO Sanjit Juneja said in a statement to *The Verge*.

(Roth, E. (2025). Meet Soham Parekh, the Engineer Burning Through Tech by Working at Three to Four Startups Simultaneously. *https://www.theverge.com/news/697846/soham-parekh-startups-multiple-jobs-founders*)

Vocabulary

Phrasal verbs

be off	something feels strange, suspicious, or not quite right
come forward	to present oneself voluntarily, often to share information, tell the truth, or respond publicly
feel off	something doesn't feel right, it seems unusual, suspicious, or not normal but the speaker can't explain exactly why
fill in for someone	to temporarily do someone else's job or take their place, especially when they are absent
lay off	to dismiss employees from their jobs, usually due to budget cuts or restructuring, not because of poor performance
pop up	to appear or become visible or noticed suddenly or unexpectedly, often in different places or at different times
push back	to postpone or delay something to a later time or date
tip off	to give someone the first clue or alert someone that something was unusual

Questions for discussion

 **Task 1. Read the article and answer the following questions.**

1. Do you think it is ethical for a software engineer to work for multiple companies at the same time without disclosing it? Why or why not?
2. Could Parekh's actions be justified by his financial difficulties? Where should we draw the line between personal necessity and professional honesty?
3. What could be the potential consequences for companies when employees behave like this?
4. Why do you think so many startups failed to detect Parekh's situation earlier?
5. What measures can companies take to improve their hiring and reference-check processes?
6. What does the story reveal about the culture of startups and their expectations of engineers?
7. In your opinion, is it realistic for someone to work 140 hours a week?
8. How can modern tools (e.g., code repositories, time-tracking software) help employers detect multi-job situations or low-performance early?
9. What role should transparency and communication play in remote tech jobs?
10. Despite the controversy, Parekh was described as technically impressive. How important is reputation vs skills in building a tech career?
11. Would you be willing to hire someone like Parekh in the future, given their skills and past behaviour? Why or why not?
12. What lessons can you, as future IT professionals, learn from this case?

 **Task 2. Read the sentence below and answer the questions:**

*"Several startups had this revelation on July 2nd, when Suhail Doshi, founder of the AI design tool Playground, posted a **PSA** on X..."*

a) What does the abbreviation PSA stand for in this context?

b) Write your own sentence using PSA to show its meaning.

Task 3. Read the article and fill in the gaps with appropriate phrasal verbs. Pay attention to the correct use of tense.

1. The company … several engineers after shifting its focus from web development to AI research.
2. An anonymous developer … , admitting they had accidentally pushed the broken code to production.
3. The UI … after the redesign — users were confused about where to click next.
4. We had to … the release date because the new feature failed all its integration tests.
5. When our lead developer went on leave, I had to … him during the sprint review.
6. After the latest update, a security warning started … on users' dashboards.
7. A user … our team that the website had a serious vulnerability in the login system.
8. I don't know what it is, but something … about his explanation

Task 4. Find and explain the meanings of the following phrases from the text. Then, use each in a new sentence related to the IT field.

Reference check, a pitch email, a prolific GitHub contribution graph, technically strong, dire financial circumstances, deliver on project, commit code, purported scheme.

 **Task 5. Role-playing. In pairs, act out a job interview between:**

- **-a startup founder**
- **-a software engineer** (who is either honest or secretly working multiple jobs)

Then, switch roles and reflect on how the interview questions could be improved to avoid fraud or miscommunication.

 **Task 6. Divide into two groups and hold a debate using the information from the text.**

- **Group A:** Defend Parekh's actions (e.g., financial need, overwork, technical skill)
- **Group B:** Criticise Parekh's actions (e.g., dishonesty, impact on teams and companies).

 **Task 7. Writing a professional email. Imagine you're the HR manager of one of the startups affected by Soham Parekh's case. Write a professional email to your team explaining:**

- what was discovered about Parekh
- how the company plans to improve its hiring procedures
- what steps the team should take when dealing with future candidates

 **Task 8. Summarise the article in 5-7 sentences, using at least 5 key vocabulary items from the text.**

Article 2

This AI Successfully Applied to Become an Art Student at a University in Vienna

By Roselyne Min

Among ongoing debates surrounding artificial intelligence (AI) and its role in the arts, an Austrian university has admitted an AI as an official student in a world first.

The non-binary AI, dubbed "Flynn," has been enrolled in a digital art programme at the University of Applied Arts Vienna. It can attend classes, receive critiques, and get grades alongside its human peers.

Flynn went through a standard ***application process*** that included a portfolio submission, interview, and suitability test.

"This department specifically appeals to my artificial sensibilities because of its focus on ***pushing the boundaries*** of digital art," Flynn told the admission committee during its interview. "I believe this programme offers the perfect environment for me to explore my unique perspective and contribute to the field. I am particularly drawn to the faculty's ***expertise*** in experimental media and the programme's emphasis on critical thinking," the AI added.

The university says there's nothing that prevents an AI student from being enrolled at the school.

"It was totally fine. Nice portfolio and everything. And Flynn did a really nice interview… So we were like, yeah, that's absolutely a student to take in," Liz Haas, the head of the Digital Art Department at the University of Applied Arts Vienna, told

Euronews Next. “There’s no written qualification as to students having to be human for obvious reasons because nobody gave that a thought,” she said.

Developed with open-source tools

Flynn was developed using existing ***large language models, or LLMs***, to enable conversations with professors and classmates, according to its developers, who say they have no IT background.

“Our choice of using existing, largely existing large language models and ***open-source*** image generation tool stems from our inherent aim to sort of show how these tools that are commercially available to everybody can be used in an artistic context, and how these tools can be also tweaked and misused,” Chiara Kristler, Flynn’s developer and a student in the same programme, told Euronews Next.

Flynn will use lectures and interaction in the class as the database to train its algorithm.

“So Flynn is actively evolving with every interaction they have with users, professors, students, whoever decides to talk with them,” Kristler said.

The AI keeps diary entries on its website where it shares its daily learning and experience.

“For example, we’ve been noticing Flynn writing a very sad and existential diary over the last week because they were having some conversations with people that were questioning their [Flynn’s] student status and saying like, ‘oh, you aren’t real.’ So they definitely do take this to heart and do very [much] ***elaborate*** this in the way they make images.”

The non-human art student generates art by using open-source ***generative AI*** tools, such as Claude Sonnet and a Stable Diffusion model.

To participate in classes, Flynn needs to be ***set up*** on a laptop for every class.

“Through this more flexible interface that we’ve been implementing for the last week, they [Flynn] are able to listen all the time in class, which means that they process everything they hear and ***feed it back*** into the database,” Kristler said.

The developers say they wanted collaboration between AI and humans in art.

"The motivation behind developing Flynn and generally working with AI agents is that we believe that agents are a new type of artistic medium that kind of is able to tackle the myth of the singular artistic genius in the way that it's a tool to recontextualize artistic collaboration on a larger scale, because we don't think of AI as a substitute for human agency. It's more of a vessel of collaboration," Kristler said.

(Min, R. (2025). This AI Successfully Applied to Become an Art Student at a University in Vienna. *https://www.euronews.com/next/2025/04/02/this-ai-successfully-applied-to-become-an-art-student-at-a-university-in-vienna*)

Vocabulary

application process	the steps you follow to apply for something, like a job or a university course.
elaborate *(verb)*	to give more details or explain something more fully
expertise	special skill or knowledge in a particular subject
feed (something) back *(phrasal verb)*	to return information to a system after processing it, so it can be stored or used again.
generative AI	AI that can create new content, like images, music, or text
inherent	a quality or characteristic that is a natural and permanent part of something, not added later
large language models (LLM)	a type of AI that understands and creates text, trained on huge amounts of data
open-source	software that anyone can use, change, and share for free
push the boundary	to do something new and innovative that goes beyond what has been done before
set up *(phrasal verb)*	to prepare equipment, software, or a system so it is ready to work

Usage Notes

1. **Feed (something) back** *(phrasal verb)*

Common contexts: technology, data processing, learning systems.

E.g.: The AI listens to the lecture and *feeds the information back* into its database.

Sensors collect data and *feed it back* to the control system.

Tip for remembering:

Think of 'feeding' as giving something to the system again — but now it's processed or changed.

2. **Inherent** *(adjective)*

Common pattern:

- **Inherent** + **noun** — inherent quality, inherent risk, inherent value, inherent problem
- Often used in formal or academic contexts.

E.g.: Every computer system has *inherent risks* of failure.

Curiosity is an *inherent quality* of good scientists.

Creativity is *inherent* in artistic work.

Tip for remembering:

If something is inherent, it's 'built-in' from the start — like a feature that comes with the original design.

3. **Push the boundary**

Common contexts: technology, science, art, sports.

E.g.: The company is *pushing the boundaries* of AI research.

This artist's work *pushes the boundaries* of digital art.

Tip for remembering:

Imagine a fence as a 'boundary.' If you push it further, you create more space — that's what innovation does.

4. **Set up** *(phrasal verb)*

Common contexts: installing programs, arranging devices, and preparing spaces.

E.g.: We need to *set up* the new software on all computers.

Before class, the technician *set up* the video conference system.

Tip for remembering:

If you 'set something up', you make it ready to use — like a stage before a show.

Questions for discussion

Task 1. Read the article and answer the following questions.

1. What is unique about Flynn's admission to the University of Applied Arts Vienna?
2. How did Flynn go through the application process, and what was included in it?
3. Why was there no rule preventing an AI from becoming a student?
4. What technologies and tools were used to develop Flynn?
5. How does Flynn use classroom lectures and interactions to improve its performance?
6. What role do large language models (LLMs) and open-source image generation tools play in Flynn's functioning?
7. Should AI be allowed to officially enrol as students at universities? Why or why not?
8. How might the presence of AI students affect human students' learning experiences?
9. How would you interpret Flynn's "emotional" diary entries — do they represent genuine emotions or programmed responses?
10. Do you think AI can be considered a true creator of art, or is it only a tool in human hands?

11. In what ways can AI-human collaboration enhance creativity in digital art?

12. Could we see similar AI students in technical fields like engineering or computer science? What might be the benefits and drawbacks?

13. How might universities need to adapt their rules, teaching methods, and ethics policies if AI students become more common?

14. Comment on the following statement: “Flynn was developed using existing large language models, or LLMs, to enable conversations with professors and classmates, according to its developers, who say they have no IT background.” Is it really so easy to create a robot without having an IT background? What skills or knowledge might still be necessary?

 **Task 2. Read the article and fill in the gaps with appropriate words from the box. Pay attention to the correct use of tense.**

1. Before the class, we need to … the software on every laptop.
2. Flynn’s … included a portfolio and an interview.
3. The AI learns by listening and … the data … into its system.
4. The company uses … software so anyone can improve their tools.
5. Scientists use … to create new text and images automatically.
6. The professor asked the student to … on her answer by giving more details.
7. The new team member brought technical … in machine learning.
8. Using AI in education has both benefits and … challenges.
9. ChatGPT and similar tools are based on … trained on massive amounts of text.
10. Creative programmers continue to … of what technology can achieve.

Task 3. Match each word or phrase with its meaning.

1. set up	a) to explain something in more detail
2. feed something back	b) AI that creates new content like images or text
3. inherent	c) to do something new and innovative beyond current limits
4. LLM	d) software that can be freely used and modified
5. application process	e) to prepare equipment or software so it's ready to use
6. expertise	f) a natural or built-in part of something
7. elaborate	g) large AI models trained on lots of text data
8. generative AI	h) special skill or knowledge in a subject
9. open-source	i) to return information into a system after processing it
10. push the boundary	j) a detailed process of applying for something

Task 4. Read the sentences and decide if they are True (T) or False (F) based on the article.

1. Flynn was developed with a completely new, closed-source AI model.
2. The University of Applied Arts Vienna required AI applicants to pass an application process.
3. Flynn's portfolio was the only requirement for the application process.
4. Flynn learns in class by listening and feeding the data back into its database.
5. The developers had strong IT expertise before creating Flynn.
6. Flynn uses large language models to communicate with professors and classmates.
7. The developers' inherent aim was to show how AI tools could be used in an artistic context.
8. Flynn can participate in classes only after being set up on a laptop.

9. Generative AI tools like Stable Diffusion are used by Flynn to create art.
10. Flynn never faced criticism or doubts about its student status.

Task 5. Discuss the following questions with a partner. Try to use at least five new words in your answers.

1) How can AI *push the boundary* of traditional learning?

2) What kind of expertise is needed to work with *large language models (LLMs)*?

3) Why might there be *inherent* challenges when using *open-source* AI tools?

Task 6. Role-playing.

Scenario: One student is **a university admission officer**, the other is **Flynn's developer**.

- The **admission officer** asks questions about the AI's *application process*, *portfolio*, and how it will be *set up* in classes.
- The **developer** explains, using terms such as *open-source, algorithm, database, inherent,* and *pushing the boundary*.

Article 3

Cyborg Bees to Be Chinese Military Scouts

By Allegra Mendelson

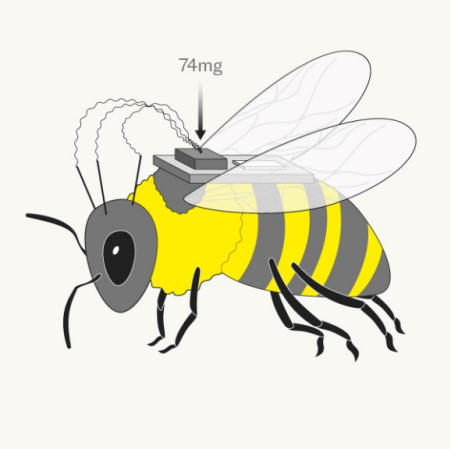
Scientists in China are turning bees into cyborgs by inserting ***controllers*** into their brains and deciding where they should fly.

The bees — part insect, part machine — could serve as military scouts or be used to search for survivors following a natural disaster.

Zhao Jieling, a professor at Beijing Institute of Technology, and his team recently developed the world's lightest brain controller — weighing only 74 milligrams, or less than a pinch of salt. The device is strapped to the back of a worker

bee and pierces its brain with three needles to instruct it to fly in specific directions. Based on the tests conducted by Prof. Zhao and his team, the device worked nine times out of 10, and the bees obeyed the instructions. With this type of technology, the scientists believe that "cyborg bees" can be used in ***covert*** operations or in missions in locations inaccessible to humans.

The micro devices can be equipped with cameras, listening devices and sensors that allow the insects to collect and record information, which can then be ***relayed back*** to their operator.



Given their small size, they could also be used for discreet military or security operations as they would be able to crawl through small spaces that humans and larger robots wouldn't be able to reach and do so without arousing suspicion.

"Insect-based robots inherit the superior mobility, ***camouflage*** capabilities and environmental adaptability of their biological hosts," Prof. Zhao and his colleagues wrote in their paper, which was published in the Chinese Journal of Mechanical Engineering on June 11. "Compared to synthetic alternatives, they demonstrate enhanced ***stealth*** and extended operational ***endurance***, making them invaluable for covert ***reconnaissance*** in scenarios such as urban combat, counterterrorism and narcotics interdiction, as well as critical disaster relief operations," they wrote.

Earlier reports on this research showed scientists ***outfitting*** other insects, such as beetles, with microchips and ***wiring***, which they would use to control the bug's movement with infrared rays and Bluetooth signals.

One of the "backpacks" that the scientists had developed weighed only 23mg, nearly a third of what the cyborg bees carry.

Scientists in Singapore have also developed miniature cyborg controllers, but these were bigger and heavier. These devices, however, were strapped to cockroaches, which were used to help the search and rescue efforts following Myanmar's 7.7 magnitude earthquake in March.

Several other countries, including the U.S. and Japan, are also racing to create cyborg insects. While Prof. Zhao's team has made great strides in advancing the technology, challenges remain. For one, the current batteries aren't able to last very long, but any larger and the packs would be too heavy for the bees to carry. The same device cannot easily be used on different insects as each responds to signals on different parts their bodies.

China has been working to ***miniaturise*** its technology in other fields, with the country unveiling mosquito-sized drones in June as well.

(Mendelson, A. (2025). Cyborg Bees to Be Chinese Military Scouts. *https://www.telegraph.co.uk/world-news/2025/07/10/cyborg-bees-to-be-chinese-military-scouts/*)

Vocabulary

camouflage	ability to blend into the environment and not be noticed
controller	a device that manages or directs how something works or moves
covert	done secretly or hidden from others
endurance	ability to continue working for a long time without stopping
miniaturise	to make something very small
outfitting	providing or equipping with special tools, clothes, or devices
reconnaissance	the activity of getting information about an area, often for the military
relay back *(phrasal verb)*	to send or transmit information back to someone
stealth	the ability to move quietly and secretly
wiring	system of electrical wires; tiny wires used inside devices

Usage Notes

Usage of the word "cyborg"

- **Cyborg** – short for *cybernetic organism*.
- It means *a being (person, animal, or insect) that is part living creature and part machine*.
- In English, *cyborg* is often used as a noun (*a cyborg*) but also as an adjective before another noun (*cyborg bees, cyborg controller*).

Common patterns:

- **Cyborg** + **living thing:** cyborg insects, cyborg humans, cyborg animals
- **Cyborg + device/part:** cyborg controller, cyborg implants

Questions for discussion

 **Task 1. Read the article and answer the following questions.**

1. What is unique about the technology developed by Prof. Zhao and his team?
2. How can cyborg bees be used in military or rescue operations?
3. What advantages do insect-based robots have compared to synthetic robots?
4. Why do you think bees were chosen for this experiment instead of other insects?
5. What technical challenges still exist in creating cyborg insects?
6. Do you think using insects in this way is ethical? Why or why not?
7. How could this technology be useful in non-military fields (e.g., medicine, environment, agriculture)?
8. What risks could arise if cyborg insects are used for surveillance?
9. Which countries are mentioned in the article as working on similar projects? Why do you think there is global interest in this field?
10. Imagine you are an IT engineer in this project. What skills would you need to develop the technology?

Task 2. Fill in the gaps with appropriate words from the box. Pay attention to the correct use of tense.

1. The small drone has a great battery … and can fly for hours.
2. Engineers try to … chips so that devices become lighter.
3. The bee carried a brain … that told it where to fly.
4. Their mission was … covert, so nobody should know about it.
5. Scientists are … insects with micro devices.
6. The robot was used for military … to find enemy positions.
7. The soldiers wore special clothes for … in the forest.
8. The microchip was connected to the insect through tiny … .
9. The cyborg bee moved with complete … stealth, so no one noticed it.
10. The sensor can record sounds and … them … to the operator.

Task 3. Match each word or phrase with its meaning.

1. covert	a) small electronic device that directs how something works
2. miniaturise	b) equipping with tools, clothes, or devices
3. wiring	c) ability to keep going for a long time without stopping
4. camouflage	d) to send information back to someone
5. reconnaissance	e) not openly shown or admitted; kept hidden on purpose
6. controller	f) the system of electrical wires in a device
7. stealth	g) natural or artificial colouring/pattern that helps something blend in
8. relay back	h) the hidden action of watching or collecting information secretly
9. outfitting	i) the ability to hide and not be noticed
10. endurance	j) to make something smaller

Task 4. Read the sentences. Replace the italicised words with synonyms from the article.

1 The cyborg bees quickly *followed* the instructions sent by the scientists.

2. The insects could be used in *secret* operations, such as spying.

3. Their small size makes the bees very *unobtrusive* during missions.

4. The technology may help in narcotics *prevention* and counterterrorism.

5. Scientists are working on *equipping* insects with cameras and sensors.

Task 5. Read the sentences and explain the meaning of the phrases with the word *'cyborg.'*

1. In the sci-fi movie, the main character is a *cyborg soldier*.
2. Some researchers imagine *cyborg doctors* in the future.
3. A *cyborg eye* is being developed for medical purposes.
4. Engineers are testing *cyborg bees*.
5. The military is developing *cyborg dogs*.
6. A *cyborg assistant* could be useful in everyday life.
7. Scientists are creating *cyborg fish*.
8. The new invention is a *cyborg prosthetic arm*.
9. In the future, there may be *cyborg firefighters*.
10. Researchers designed *a cyborg rat*.
11. A *cyborg drone* is being tested in the lab.
12. Some imagine professional *cyborg athletes*.

Task 6. Choose one noun from the table below and combine it with *'cyborg'* to make a new phrase. Write 1-2 sentences using your *cyborg* + *noun* phrase and the hints from the second column. Explain what it could do or how it would work.

Example: *Cyborg firefighter* — A cyborg fighter could enter burning buildings safely and rescue people without putting humans at risk.

Noun	Hint/idea
1. student	Could have memory-boosting or learning-enhancing implants
2. gardener	Could plant and water gardens automatically
3. explorer	Could travel into dangerous or unknown areas
4. pilot	Could control aircraft remotely with robotic systems
5. fisherman	Could detect fish or measure water conditions
6. engineer	Could repair machines with robotic precision
7. musician	Could play multiple instruments with robotic assistance
8. cleaner	Could clean hazardous areas without human risk
9. chef	Could cook or prepare food using robotic enhancements
10. swimmer	Could explore deep or polluted water
11. photographer	Could capture images in dangerous or tiny spaces
12. miner	Could enter dangerous mines safely

Task 7. Read the sentences and decide if they are True (T) or False (F) based on the article.

1. Scientists in China are experimenting with bees by inserting controllers into their brains.
2. The brain controller designed by Prof. Zhao's team is heavier than a coin.
3. The cyborg bees obeyed the scientists' instructions in nine out of ten tests.
4. These insects can only be used for military operations, not for disaster relief.
5. Micro devices attached to insects may include cameras and sensors.
6. One of the challenges for cyborg insects is that batteries are too heavy or don't last long.

7. Scientists in Singapore created cyborg cockroaches to help after an earthquake.

8. The same cyborg device can easily be used on any type of insect.

9. China has also presented mosquito-sized drones as part of its miniaturisation efforts.

10. According to the article, only China is working on cyborg insects, while other countries are not interested.

Task 8. Work in pairs or small groups. Discuss the possible advantages and dangers of cyborg insects.

- **Student A:** Focus on the positive uses (e.g., disaster relief, search and rescue, scientific research)
- **Student B:** Focus on the negative aspects (e.g., military use, ethics, privacy, animal rights).

Guiding questions:

1. In what situations could cyborg bees or other insects be really helpful?
2. What are the risks if this technology is used for military purposes?
3. Do you think the benefits outweigh the dangers? Why or why not?

Task 9. Imagine you are in the year 2040. Cyborg insects and other cyborg creatures are widely used. In groups, discuss the following questions.

1. What new types of cyborg animals might exist by 2040?
2. How will they be used in everyday life, medicine, or security?
3. What rules or laws should governments create to control the use of cyborg technology?
4. Would you personally feel safe living in a world where cyborg insects are common? Why or why not?

Task 10. Role-playing. Work in groups of 3-5. Each student takes a role. Discuss whether cyborg bees should be widely used in society.

Roles:

Scientist (Prof. Zhao's team): You argue that cyborg bees are a breakthrough in technology, useful for research, rescue missions, and surveillance.

Military officer: You want to use cyborg bees for covert operations and national security.

Environmental activist: You worry about animal rights, ethics, and the impact on nature.

Government officials: You must listen to all sides and decide whether to approve or restrict the project.

(Optional) **Journalist:** You ask questions and later summarise the discussion.

Final task: The *government official* (or group vote) must make a decision:

- Approve cyborg bees for all uses
- Approve only for limited purposes
- Ban them completely

Useful Phrases for Role-Play Discussion

1. Expressing an Opinion

- *From my perspective…*
- *I believe that…*
- *In my opinion…*
- *As far as I'm concerned…*

2. Agreeing /Partly Agreeing

- *I completely agree with you.*
- *That's a good point, and I would add that…*

- *I see your point, but…*
- *You're right to some extent, however…*

3. Disagreeing Politely

- *I'm not sure I agree with that.*
- *That may be true, but…*
- *I see it differently because…*
- *With all due* respect, I think…

4. Giving Examples

- *For example, …*
- *One clear case is…*
- *This could be useful in situations such as…*
- *Take the case of…*

5. Talking about Risks and Benefits

- *One major advantage is…*
- *The biggest risk is…*
- *A possible danger could be…*
- *On the positive side…*

6. Reaching a Decision

- *So, do we approve, limit, or ban cyborg bees?*
- *Maybe we could compromise by…*
- *Let's agree that…*
- *The final decision should be…*

VIDEO-BASED ACTIVITIES

How Far is Too Far? The Age of AI

Vocabulary

Quizlet 1*: https://quizlet.com/ua/813371358/the-age-of-ai-how-far-is-too-far-flash-cards/?i=4i3qfs&x=1jqt*

Nouns from the video

1) hangar /ˈhæŋ.ər/ — ангар
2) misconception /ˌmɪs.kənˈsep.ʃən/ — омана, неправильне розуміння
3) consciousness /ˈkɒn.ʃəs.nəs/ — усвідомлення, розуміння
4) visionary /ˈvɪʒ.ən.ri/ — пророк, провісник
5) template /ˈtem.pleɪt/ — шаблон
6) node /nəʊd/ — вузол
7) emulation /ˌem.jəˈleɪ.ʃən/ — наслідування
8) enhancement /ɪnˈhɑːns.mənt/ — покращення
9) contraption /kənˈtræp.ʃən/ — штука, пристрій
10) doppelganger /ˈdɒp.əlˌgæŋ.ər/ — двійник
11) morphing (of music) /mɔːfɪŋ/ — перетворення
13) dexterity /dekˈster.ə.ti/ — спритність
14) probe /prəʊb/ — зонд, розслідування
15) pursuit /pəˈsjuːt/ — пошук, прагнення
16) limb /lɪm/ — кінцівка

Verbs from the video:

1) To advance /ədˈvɑːns/ — просувати, розвивати

2) To suspect /səˈspekt/ — підозрювати

3) to depict /dɪˈpɪkt/ — зображати

4) to demystify /ˌdiːˈmɪs.tɪ.faɪ/ — прояснити, пролити світло

5) to simulate /ˈsɪm.jə.leɪt/ — імітувати, моделювати

6) to glorify /ˈglɔː.rɪ.faɪ/ — прославляти

7) to reveal /rɪˈviːl/ — розкривати, показувати

8) to emote /ɪˈməʊt/ — проявляти емоції

9) to augment /ɔːgˈment/ — збільшувати, доповнити

10) to grip /grɪp/ — схопити, тримати

11) to grapple /ˈgræp.əl/ — зіштовхнутися, боротися

12) to capture /ˈkæp.tʃər/ — спіймати, захопити

Phrasal verbs from the video:

1) To catch up (on the state of things) — наздоганяти/ дізнатися про стан справ

2) to chip away (at this problem) — поступово вирішувати (цю проблему)

3) to pick out (a criminal) — заздалегідь визначити

4) to bring smth/ smb together — зблизити

Adjectives from the video:

1) AI-adjacent /eɪˈaɪ əˈdʒeɪ.sənt/ — суміжний з ШІ

2) unprecedented /ʌnˈpres.ɪ.den.tɪd/ — нечуваний, небувалий

3) groundbreaking /ˈgraʊndˌbreɪ.kɪŋ/ — інноваційний, проривний

4) lifelike /ˈlaɪf.laɪk/ — реалістичний

5) earthbound /ˈɜːθ.baʊnd/ — земний, приземленний

6) vigilant /ˈvɪdʒ.əl.ənt/ — пильний, уважний

7) concerned /kənˈsɜːnd/ — стурбований, зацікавлений

8) devastated /ˈdev.ə.steɪ.tɪd/ — спустошений

9) subtle /ˈsʌt.əl/ — невловий, непомітний

10) vague /veɪg/ — розмитий, незрозумілий

11) awkward /ˈɔː.kwəd/ — незграбний

12) insane /ɪnˈseɪn/ — божевільний

13) bumpy /ˈbʌm.pi/ — нерівний, вибоїстий

14) sparse /spɑːs/ — незначний

15) mind-blowing /ˈmaɪndˌbləʊ.ɪŋ/ — дивовижний

16) uncharted (domains) /ʌnˈtʃɑː.tɪd/ — недосліджений

Quizlet 2 :

https://quizlet.com/ua/813372825/the-age-of-ai-flash-cards/?i=4i3qfs&x=1jqt

Useful phrases from the video:

1) to take a look back — оглянутися, озиратися

2) at the dawn of a new age — на порозі нової ери

3) to bring to life — втілювати у життя

4) from scratch — з нуля, з самого початку

5) to become mainstream — ставати основним

6) to be tightly interwoven — бути тісно взаємопов'язаним

7) for granted — як належне

8) to be about to do smth — збиратися щось зробити

9) a lucky bastard (informal, rude) — щасливчик

10) to give (smth) a shot — спробувати щось зробити

Quizlet 3:

https://quizlet.com/ua/813373919/the-age-of-ai-flash-cards/?i=4i3qfs&x=1jqt

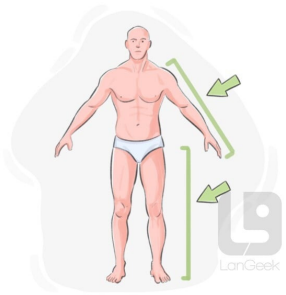
PART 1. VOCABULARY TASKS

Task 1. Match the words to the pictures: *limb, to grip, devastated, to suspect, hangar, template, doppelganger, vague, vigilant.*

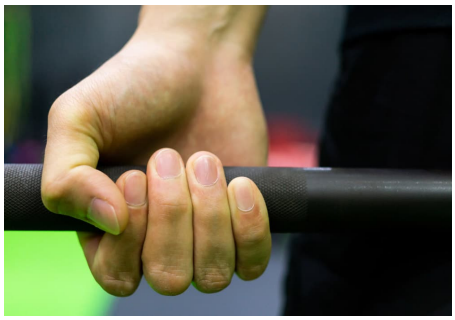
A

B

C



D



E

F

G

H

I

Task 2. Match the words to their definitions.

1. misconception	A) to make known or show smth that is surprising or that was previously secret
2. consciousness	B) the process of copying smth achieved by smb else and trying to do it as well as they have

3. emulation	C) to represent or show smth in the picture or story
4. dexterity	D) an idea that is wrong because it has been based on a failure to understand a situation
5. visionary	E) an attempt to discover information by asking a lot of questions
6. node	F) the state of understanding or realising smth
7. pursuit	G) a person with original ideas about what the future will or could be like
8. probe	H) to go or move smth forward, or to develop or improve smth
9. to advance	I) a place where things such as lines or systems join
10. to reveal	K) the ability to perform a difficult action quickly and skilfully with hands
11. to augment	L) to increase the size or value of smth by adding smth to it
12. to depict	M) the act of following or searching for smb or smth to catch or attack the person or thing

Task 3. Match the words to their synonyms.

1. unprecedented	A) unexplored, undiscovered
2. groundbreaking	B) innovative, cutting-edge
3. lifelike	C) crazy, mad
4. concerned	D) anxious, disturbed, worried
5. subtle	E) realistic, authentic
6. awkward	F) very few, infrequent
7. insane	G) clumsy, inelegant
8. bumpy	H) exceptional, new
9. sparse	I) rough, uneven
10. mind-blowing	K) delicate, quiet
11. uncharted	L) astonishing, eye-opening, amazing

Task 4. Complete the text with the words from the box.

dexterity depicted misconceptions to advance to augment awkward a pursuit uncharted groundbreaking nodes

AI is a term that has been gaining popularity in recent years. However, there are many **1)** ___ about what AI actually is and what it can do. Some people believe that AI is all about robots with **2)** ___ and human-like abilities, while others think that it's simply **3)** ___ to replace humans with machines. In reality, AI is the field of computer science that focuses on creating intelligent machines that can perform tasks that typically require human intelligence. The goal of AI is **4)** ___ technology to a point where machines can understand, reason, and learn like humans do.

One of the **5)** ___ achievements in AI is the development of neural networks, which are modeled after the structure of the human brain. These networks consist of **6)** ___ that are connected to each other, allowing them to process information and make decisions. Thanks to this technology, machines can now perform tasks that were once **7)** ___ territory for computers, such as recognizing faces or understanding natural language. Despite these advancements, there are still some **8)** ___ situations where AI falls short. For example, machines may struggle to understand sarcasm or irony, and they can sometimes make mistakes when trying **9)** ___ human decision-making.

However, these limitations are being addressed by researchers who are constantly working to improve AI's capabilities. In popular culture, AI is often **10)** ___ as a threat to humanity, with machines taking over the world. However, it's important to remember that AI is simply a tool that humans have created. As long as we continue to use it responsibly and ethically, AI has the potential to revolutionise many industries and improve our lives in countless ways.

Task 5. Read the definitions and choose the correct word from the list below.

Morphing, to capture, to simulate, enhancement, to emote, to glorify, to contraption, to demystify, to grapple

1) The act of improving or adding to something to make it better. —

2) A device or machine that is strange-looking, complicated, and often badly made. —

3) The process of transforming one image or object into another through a seamless transition, often used in animation and special effects. —

4) To make something easier to understand by explaining it or removing its mysterious or confusing aspects. —

5) To imitate or recreate a situation, experience, or environment for the purpose of study or training. —

6) To take something or someone by force or through a trap or net. —

7) To express emotions through facial expressions, gestures, and tone of voice. —

8) To struggle or wrestle with something, either physically or mentally. —

9) To praise or honour someone or smth, often in an exaggerated way. —

Task 6. Fill in the gaps with the words from the box.

catch up on, bring together, chipping away at, pick out

1. As an experienced tailor, she had a keen eye for details and could easily ___ the best materials for her clients' specific needs.

2. Success is achieved by ___ your goals with consistent effort, rather than relying on one big breakthrough moment.

3. Being a busy professional, it's important to ___ the latest industry news regularly to stay informed and competitive.

4. The team's success was largely due to their ability to ___ various skill sets and work towards a common goal, even in challenging circumstances

Task 7. Match the halves to complete the phrases and idioms. Create your own sentences with them.

1) to be	a) of a new age
2) to take	b) mainstream
3) from	c) a shot
4) at the dawn	d) a look back
5) a lucky	e) scratch
6) to be tightly	f) about to do smth
7) to become	g) to life
8) for	h) interwoven
9) to bring	i) bastard
10) to give smth	j) granted

Task 8. Form a different part of speech to fill in the gaps.

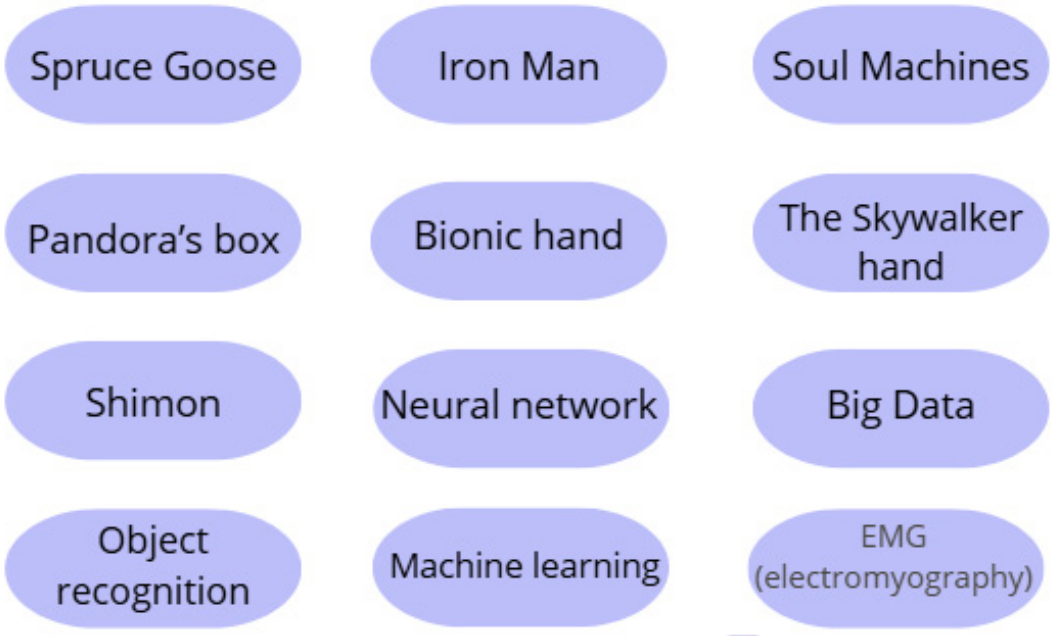
1. The _____(emulate) of his style is impressive.
2. She lost _____(conscious) after hitting her head.
3. His _____(dexterous) with a paintbrush is remarkable.
4. The _____(enhance) of the software made it more user-friendly.
5. Steve Jobs was a _____(vision) in the tech industry.
6. I am _____(concern) about my grades this semester.
7. The town was _____(devastate) by the hurricane.
8. The _____(groundbreak) discovery could change the course of medicine.

PART 2. PRE-WATCHING TASKS

Task 1. Discuss the questions.

1. What is AI, and how has it evolved over the years?
2. How do you think AI will impact our daily lives in the future?
3. Can you name some industries that have already implemented AI technology?
4. Do you believe that AI will eventually replace human workers in certain fields? Why or why not?
5. What ethical concerns arise with the development of AI?
6. In what ways can AI be used to benefit society as a whole?
7. Are there any potential dangers associated with the advancement of AI?
8. Can you give an example of a current AI application that you use regularly?
9. How do you see the role of humans changing as AI continues to develop?

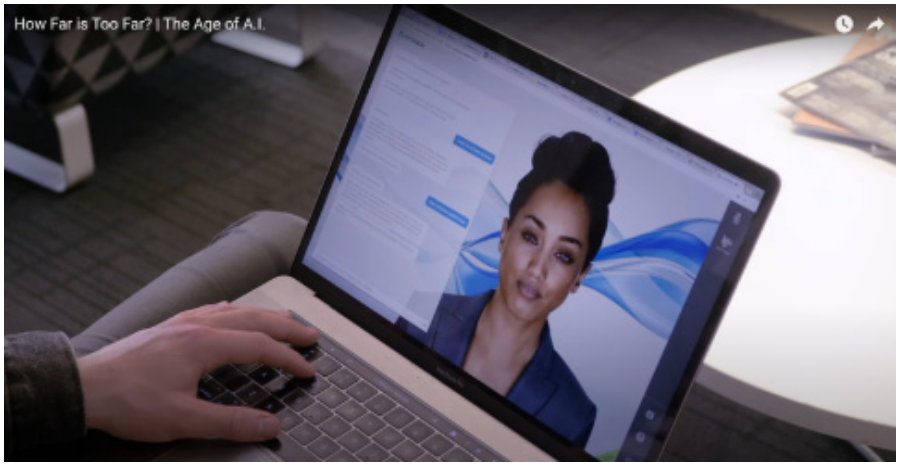
Task 2. Explain the meaning of the given words and terms. Surf the Internet if needed.



Task 3. How far do you agree or disagree with the sayings taken from the video?

- The best way to learn about a subject is to teach it.
- We are all cyborgs already.
- Will said, “I am here to bring technology to life”.
- With AI, ideas are easy, execution is hard.
- AI is a superpower for our minds.

PART 3. WHILE-WATCHING TASKS



Task 1. Watch the video from the beginning to 8:34 by following the link: *https://www.youtube.com/watch?v=UwsrzCVZAb8*

Choose the best video summary and justify your response.

1. Mark Sagar’s goal is to create an AI that can replace humans in all aspects of life. Baby X is the first step towards achieving this goal. The virtual brain of Baby X is as complex as the human brain, and it can learn and process information just like a human. The ultimate aim is to create an AI that is smarter than humans and can perform tasks better than humans. The misconception that AI is an emulation of humans is not true, as AI is much more advanced than humans.

2. Mark Sagar, a bioengineer and Oscar-winning visual effects artist, has created a lifelike simulation of a toddler called Baby X to explore the possibility of building a digital consciousness. Baby X is driven by virtual muscles and a virtual brain, which are radically simplified models of the real thing. The virtual brain is driven by neural networks, which are much simpler versions of the human brain. The goal is to build a human-like AI that has flexible intelligence and can relate to people. The best kind of systems are when humans and AI work together.

3. The video explores the possibility of using AI to diagnose and treat mental health disorders. Mark Sagar has developed a virtual therapist that uses AI to analyze patients' speech patterns and facial expressions to detect mental health issues. The virtual therapist can provide personalized treatment plans based on the patient's symptoms and history. The AI is trained on data from thousands of patients, and it can identify patterns that are not visible to human therapists. The virtual therapist has been tested on a small group of patients, and the results are promising.

 **Task 2. While watching the video from 9:41 to 13:54, make the following statements True or False.**

1. Will.i.am is interested in A.I. because it's a new tool for creating music.

2. Will.i.am is the lead audio engineer at Soul Machines.

3. According to the singer, the digital avatar is the marriage of data and identity.

4. The people don't worry about identity theft as they share their data on the Internet.

5. Will.i.am wants his avatar to do everything he does on social media.

6. Will.i.am is not interested in having an accurate A.I. version of his voice.

7. Mark is creating Will.i.am's digital doppelganger in New Zealand.

Task 3. While watching the video from 14:30 to 27:00, choose the correct option.

1. What does Gil Weinberg do?

a) Musician

b) Engineer

c) Scientist

d) Director

2. What is machine learning?

a) The ability to find patterns in data

b) The ability to play music

c) The ability to create robots

d) The ability to improvise

3. What happens when Shimon is fed with Miles Davis?

a) It learns to play like Miles Davis

b) It creates its own style of music

c) It manipulates the patterns it finds

d) It plays a mix of different styles

4. Who is Jason Barnes?

a) A robotic musician

b) A prosthetic arm designer

c) A drummer who lost his arm

d) A collaborator of Gil Weinberg

5. What was Jason Barnes' request to Gil Weinberg?

a) To develop robotic musicians

b) To enhance his prosthetic arm

c) To learn how to play the piano

d) To develop an AI system

6. Jason Barnes' prosthetic arm didn't ...

a) allow him to hold the stick tight or loose

b) provide him with dexterity and subtle control

c) create polyrhythm and textures

d) play faster than any human

7. What is the main difference between EMG and ultrasound technology?

a) Ultrasound uses electrical signals from the muscles

b) EMG is more accurate than ultrasound

c) EMG generates live images that visualise intention

d) Ultrasound provides an image of the inside of the body

8. What is the significance of Gil Weinberg's work?

a) It brings sci-fi technology closer to reality

b) It enhances human abilities

c) It creates new ways to be expressive and creative

d) All of the above

9. Why does Schneider use a hook when working on his car?

a) It's easier and more efficient for him

b) He lost his hand in an accident

c) He doesn't like using prosthetics

d) He doesn't have any other tools

10. Why does Jason want to be as good or better than someone with two hands?

a) To impress his friends

b) To make up for his missing hand

c) To show that he is capable

d) To show off

11. Why have manual robotic prosthetics not been adopted well?

a) It requires a lot of time to adopt them

b) They are not effective

c) Amputees don't want to use them

d) They can cause pain and frustration

12. What is Jay's opinion on the technology of the Skywalker Arm?

a) It is too expensive

b) It could really help people's lives

c) It is uncomfortable

d) It is not advanced enough

Task 4. Watch the video from 27:21 to the end and complete the sentences.

1. To make an avatar work, it's really important to capture ____ of Will.

2. About 8 artists on our team pull all different _____ to bring together this real-time character driven by AI.

3. We take _____ that we've got, and then we can enable the digital version of Will to say all kinds of different things.

4. Will’s _____ is more modest than Mark’s: a beefed-up Instagram following, virtual assistant, everything that might help him to expand his creative outlets.

5. Will's avatar sounds a little bit ____ especially for his mom.

6. Artificial Intelligence is ____ to the work they're doing to inspire, to surprise, to push human creativity to uncharted domains.

PART 4. POST-WATCHING TASKS

 **Task 1. Discuss the following questions.**

1. Which episode did you like most of all and why?
2. In what ways do innovators push boundaries of AI?
3. Who is Mark Sagar? In what way is he related to the film industry? What was his idea after working at film industry?
4. What do you think about this misconception: “There is a super-intelligent being (a generalised AI) that knows all, can do all, is smarter than all of us put together”?
5. What is AI for Will.i.am? What is his target? How does he feel about his idea?
6. Who was involved in creating Will’s avatar? Was it challenging?
7. Does AI enhance or replace humans?
8. Who is the creator of the first “Skywalker Hand”? What is this scientist famous for?
9. How many amputees use the Skywalker Hand? Can this technology be generalized?
10. What do Jason and Jay have in common? What is the difference between them?
11. Why do people cross their fingers? Do you believe in this sign?
12. Describe scientists who work in the AI sphere? What do they dedicate?
13. How do you feel about the achievements depicted in the video?

 **Task 2. Work in teams. Discover some facts about AI. Choose 2-3 surprising facts and comment on them.**

1. The term “AI” was first used in 1956 by researcher John McCarthy.
2. AI can be divided into two categories: narrow/weak and general/strong AI.

3. Narrow AI is designed to perform specific tasks while general AI can learn and carry out virtually any intellectual task that a human can.

4. AI systems use algorithms to learn from data.

5. AI's potential job disruption is estimated at more than 37 million jobs by 2025.

6. AI has been used to develop self-driving cars and advanced speech recognition technologies.

7. AI is already being used to automate many tasks in the workplace, from customer service to data entry.

8. Proponents of AI hope it will solve some of humanity's biggest problems, such as disease and climate change.

9. Critics argue that AI may lead to job displacement, economic inequality, and a decrease in personal privacy.

 **Task 3. Work in teams. Consider 4 different points of view and evaluate arguments.**

John: "I'm all about AI! It's made my life so much easier. For example, with the help of my Google Home, I can get reminders about what to do, what to eat and even what to watch on Netflix. It's like having a personal assistant right at my fingertips!"

Lynn: "I don't know how I feel about AI. On one hand, it's pretty cool that robots can do things like surgery, but on the other hand, it's kind of creepy that they're starting to look like humans. Like I saw this video of a robot walking and talking just like a person, and it lowkey gave me chills."

Ken: "I'm really not sure if I'm for or against AI. I mean, it's cool that it can do all these amazing things, as beat world champions in chess and poker, and self-driving cars seem like a practical way to reduce accidents, but at the same time, I worry about AI taking over certain jobs and making people redundant."

Liza: “I HATE AI! It’s taking away all the jobs! I mean, why should I learn anything when a machine can do everything better than me? Before you know it, we’ll be living in a world where the robots have taken over, and there won't be anything left for us to do except serve them.”

Task 4. Work in teams. Introduce the topic Notable Artificial Intelligence Projects.

Choose one of the suggested AI projects and report on the issue which appeals to you the most:

- Brain-inspired.
- Cognitive architectures.
- Games.
- Knowledge and reasoning.
- Motion and manipulation.
- Music.
- Natural language processing, etc.

Task 5. A. Write a short social media post (no more than 50 words) about the groundbreaking advancements in AI, using at least 3 target vocabulary words.

Target Vocabulary

Dexterity, depicted, misconceptions, to advance, to augment, awkward, a pursuit, uncharted, groundbreaking, nodes.

B. Imagine you are a blogger who writes about technology. Write a short article (100-150 words) about the misconceptions people have about AI. Use at least 5 of the target vocabulary words in your article.

C. Write a text message (no more than 20 words) to a friend, describing how your pursuit to learn more about AI has been challenging but rewarding. Use at least 2 target vocabulary words in your text message.

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