**15.04.25**

**Homework:**

p. 138 ex. 3

1. AI can analyzes millions of chemical compounds to predict effective drugs for diseases like cancer, replacing slow lab tests. For example, Atomwise uses AI to simulate molecule interactions.

2. AI processes photos from cameras or drones to identify endangered species and detect some threats like illegal hunting. Projects like Wildbook apply machine learning to recognize animals’ unique patterns, supporting conservation efforts.

3. AI designs efficient solar panels and wind turbines by simulating weather and material data. It also identifies materials for better energy storage, reducing costs and boosting clean energy reliability.

p. 140 ex. 10

|  |  |  |  |
| --- | --- | --- | --- |
| **Verb** | **Noun** | **Adjective** | **Adverb** |
| except | exception | exceptional | exceptionally |
| assist | assistance | assistive | assistively |
| predict | prediction | predictive | predictively |
| separate | separation | separate | separately |
| necessitate | necessity | necessary | necessarily |
| require | requirement | required | requiredly |
| develop | development | developmental | developmentally |
| environmentalism | environment | environmental | environmentally |

**15.04.25**

**Classwork:**

p. 141 ex. 12

1. Существует специальный комплекс оборудования и программ для распознавания номерных знаков автомобилей (license-plate numbers).
   1. There is a special complex of equipment and programs for recognizing license plate numbers.
2. Компьютерные технологии оказывают положительных эффект в развитии детей при правильном их использовании.
   1. There is a positive effect of computer technologies on children's development when used correctly.
3. На борту Международной космической станции есть доступ в Интернет.
   1. There is access to the Internet on board the International Space Station.
4. Всё ещё нет свидетельств того, что сильный искусственный интеллект когда-либо будет создан.
   1. There are no signs that strong artificial intelligence will ever be created.
5. Этому не существует прецендента, никогда в мире не было столь быстрого технологического развития.
   1. There has never been such rapid technological development in the world before.

p. 141 ex. 13

As in many areas of life recently, generative AI and large language models like ChatGPT (1) **have also changed** the astronomy world.

The team that (2) **created** the first image of a black hole in 2019 (3) **used** a generative AI to produce its new image. To do so, it first taught an AI how to recognize black holes by (4) **feeding** it simulations of many kinds of black holes. Then, the team used the AI model it (5) **had built** to fill in gaps in the massive amount of data collected by the radio telescopes on the black hole M87.

Using this simulated data, the team (6) **was able to** create a new image that is two times sharper than the original and is fully consistent with the predictions of general relativity.

Astronomers (7) **have also turned** to AI to help tame the complexity of modern research. A team from the Harvard-Smithsonian Center for Astrophysics created a language model (8) **called** astroBERT to read and organize 15 million scientific papers on astronomy. Another team, based at NASA, (9) **has even proposed** using AI to prioritize astronomy projects, a process that astronomers (10) **engage** in every 10 years.

p. 142 ex. 17

Минприроды России (Ministry of Natural Resources and Environment) уже сегодня успешно применяет искусственный интеллект. Вести учет животных или обеспечивать поимку браконьеров помогают фотоловушки (trail cameras). Однако для наибольшей точности информации фотоловушки ведут съемку любого движения - от падения ветки до перемещения животных или человека. Просмотр тысяч фотографий потребует от человека очень большого количества времени, но это легко можно решить с помощью нейронных сетей. «ИИ смогли научить различать кошачьих: у каждой особи свой неповторимый рисунок, который нейросеть "запоминает". В итоге мы фотофиксируем жизнедеятельность каждой особи, не нарушая ее жизненный ареал. Для обучения ИИ необходима большая база данных, и такую базу для кошачьих мы уже получили от заповедника "Земля леопарда". Скоро мы определим каждого тигра и леопарда на данной территории», - рассказал А.В. Леус, доцент кафедры радиоэлектроники и прикладной информатики Московского физико-технического института.

The Ministry of Natural Resources and Environment of Russia is already successfully utilizing artificial intelligence today. Trail cameras are helping to track animals or catch poachers. However, for maximum accuracy, these trail cameras capture any movement — from falling branches to the movements of animals or humans. Reviewing thousands of photographs would require a significant amount of time from a person, but this can easily be resolved using neural networks. "We have trained AI to distinguish between felines: each individual has a unique pattern that the neural network 'remembers.' As a result, we photographically document the activity of each individual without disrupting its habitat. To train the AI, a large dataset is required, and we have already obtained such a dataset from the 'Land of the Leopard' reserve. Soon, we will identify every tiger and leopard in this area," said A.V. Leus, associate professor at the Department of Radio Electronics and Applied Informatics at the Moscow Institute of Physics and Technology.

p. 142-143 ex. 18

1. The role of computers in science
2. The evolution of computing technology
3. The main ways of using computers in science
4. Automation in science and industry
5. The impact of the Internet on scientific progress
6. Simplification of data processing

p. 143-144 ex. 19

1. One of the first computers was used for military purposes. - **True**

2. The computation of the digits of Pi appears in the text to illustrate how computers collect and process data. **– False**

The computation of Pi is given as an example of *complex mathematical calculations*, not data collection

3. Computers can detect very fast events. **- True**

4. The Large Hadron Collider couldn’t have happened without help of computers. **- True**

5. Computers can’t substitute humans in working with hazardous materials. – **False**

Robotic arms (controlled by computers) *can* handle hazardous materials like radioactive samples, substituting humans.

6. The Internet has slowed down the scientific research. - **False**

The Internet enabled "instantaneous sharing of data" and easier collaboration, *accelerating* research.

7. Word processing programs are important part of data processing. - **True**

p. 144 ex. 120

1. Computers revolutionized data handling in science.
   1. **Key words:** computers, science, data collection, recording, store information, review data
2. From wartime codebreaking to ultra-fast analysis, computers transformed research.
   1. **Key words:** Colossus, World War II, crack codes, high-speed recording, data analysis
3. They excel in data processing, math, and detecting microscopic events.
   1. **Key words:** collect/process data, mathematics, calculations, detect data, high-speed photography, Large Hadron Collider
4. Automation (e.g., robotic arms) replaces humans in dangerous tasks.
   1. **Key words:** automated machines, factories, robotic arm, radioactive samples, dangerous materials
5. The Internet accelerated global scientific collaboration.
   1. **Key words:** Internet, scientists, government, data sharing, collaboration
6. Word processors exemplify how computers streamline data work.
   1. **Key words:** manipulate data, word processing, typewriters

p. 144 ex. 1

1. **Artificial** intelligence
2. Neural **network**
3. To **forecast** the weather
4. DNA **sequencing**
5. A behavior **patterns**
6. Statistical **data**
7. Humanitarian **aid**

p. 144 ex. 2

1. **Artificial intelligence** in medicine serves to **predict** and prevent diseases.
2. I hadn’t seen her for ten years, but I **recognized** her immediately.
3. We get gigabytes of **data** from trail cameras every day.
4. Elon Musk is a kind of person who **highlights** how dangerous AI is and then creates it.
5. The dance is basically a **pattern** of steps that you repeat over and over again.
6. A **neuron** is the most fundamental unit of processing.

**22.04.25**

**Homework:**

p. 150 ex. 5.4

1. The nanometer is

b) a billionth of a meter

2. The size of a human hair is

a) one hundred thousand nanometers

3. The phrase “There's plenty of room at the bottom” ( Richard Feynman ) is about

a) transistor shrinking

4. The difference between one thing and another is

b) the order in which the atoms are put together

5. The end of laundry will be due to

b) to making textiles, where dirt literally fluffs

6. We need a robot building another robot because the robots that the robots are building are

b) down to the molecular level

7. In eye surgery the traditional methodology is being replaced by

a) nanoparticles, that float in eyedrops

8. Graphene is

b) the thinnest material ever built

9. Graphene has

a) width and length

10. You can make grapheme if you take a lead pencil

b) draw it across the page and keep healing off layers of the graphite until there's only one layer left, a single atom tall

11. Graphene can be used for

a) computing, 4D printing, military, healthcare, fun, and environment among them

12. Nanotech products

b) are going to be free in future

**29.04.25 Homework:**

**p. 157 ex. VIII - answer any 2 issues in writing (3-4 sentences for each).**

1) “Data is the new oil”

Data has become extremely sensitive and valuable, just like oil was in the past. Companies use data to understand customers and create promising products, but it’s important to encrypt and protect it from theft or espionage . If data falls into the wrong hands, it can cause serious damage, much like an oil spill harms the environment. That’s why we must handle data carefully and follow practical rules to keep it secure .

2) “We don’t have to be scared about evolution of technology”

Technology is constantly improving, and it brings many legitimate benefits to our lives. With proper security provisions , we can safeguard info and reduce risks like white-collar crime or unauthorized access . While some people worry about complicated systems, they can actually make life more convenient if used correctly. In fact, technology helps us solve problems faster and makes the world a better place.