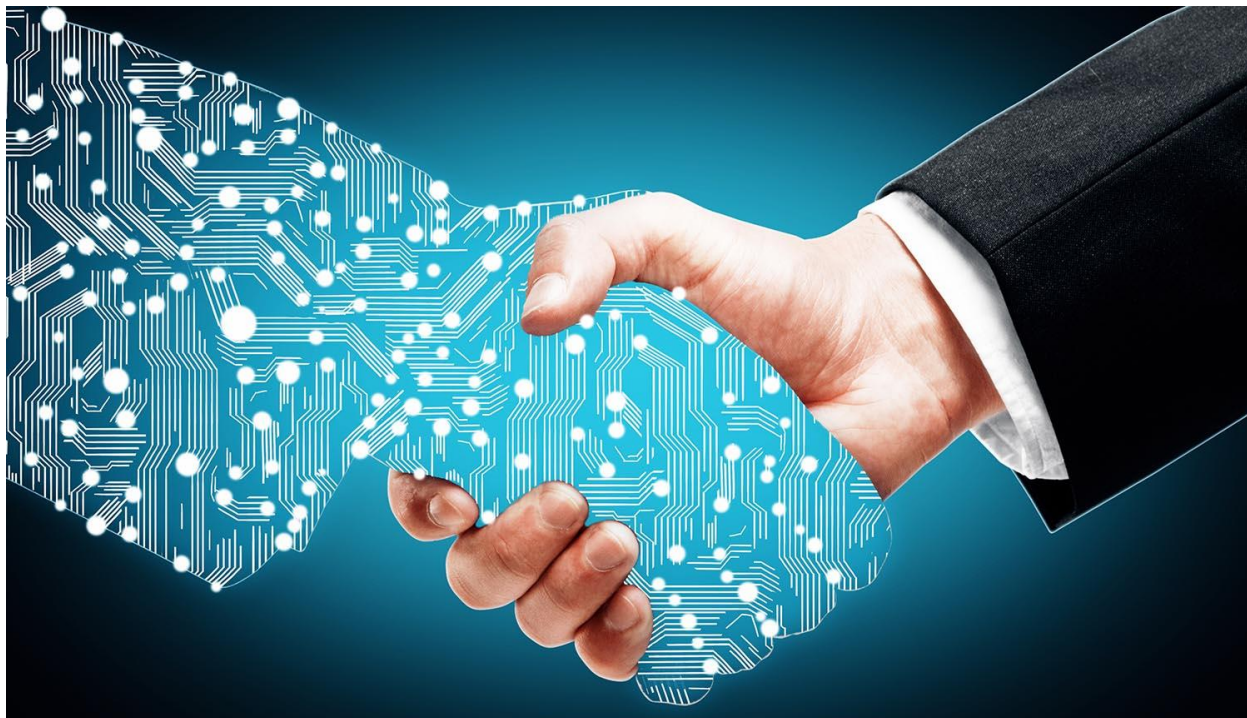


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Пособие предназначено для углубленного изучения английского языка в сфере информационных технологий.

Пособие состоит из 7 уроков, тематически охватывающих различные сферы использования современных информационных технологий. Каждый урок включает аутентичный профессионально-ориентированный текст, словарь с транскрипцией, упражнения для проверки понимания прочитанного, задания, способствующие усвоению специальных терминов, речевые упражнения, предполагающие ведение диалога, аргументированное высказывание своей точки зрения в ходе дискуссии, подготовку презентации по выбранной теме, различные виды ролевых игр.

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ВВЕДЕНИЕ

Изучение английского языка занимает одно из важных мест в подготовке будущих IT-специалистов. Учебное пособие 'Professional IT English' предназначено для работы со студентами, уже завершившими базовый курс английского языка, овладевшими основами нормативной грамматики и освоившими некоторый запас общеупотребительной лексики. Целью учебного пособия является развитие навыков устной и письменной коммуникации на английском языке в сфере межличностного, межкультурного, делового и профессионального общения. Кроме того, освоение тем, представленных в пособии, способствует развитию навыков профессионально-ориентированного чтения и перевода, решения задач в деловой сфере, развитию памяти, внимания, анализа, логического мышления.

Пособие состоит из основной части в виде 7 уроков и 3 приложений, содержащих лексические тесты и методические рекомендации по подготовке презентаций. Каждый урок включает аутентичный текст, словарь с транскрипцией, вопросы для проверки понимания прочитанного и упражнения, способствующие развитию навыков устной и письменной коммуникации, усвоению и использованию в речи деловой лексики, задания на развитие навыков перевода и на выполнение небольших индивидуальных проектов.

Рекомендовано Алтайским государственным техническим университетом им. И.И. Ползунова в качестве учебного пособия для студентов, обучающихся в сфере информационных технологий.

UNIT

1



BIG DATA

Preview

Answer the questions:

1. How much data do you store on each of your devices?
2. How much data do you store in cloud?
3. How has the volume of this data increased in the past few months?

I. READING

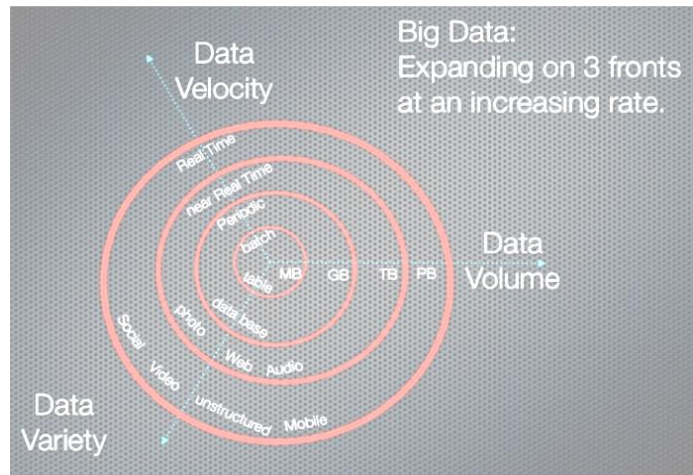


Read and translate the text

BIG DATA

The term “big data” **refers** to an **accumulation** of data that is too large and **complex** for processing by traditional database management **tools**. It is possible to **gain** a better understanding of big data if it is described according to three vectors: **volume**, **velocity**, and **variety** – the three Vs.

Volume is the V most associated with big data because the quantities of big data can reach almost **incomprehensible** proportions. Facebook, for example, has more users than China has people. Since each of those users has uploaded a lot of photographs, Facebook is storing **roughly** 250 billion images.



Velocity is the vector representing the **measure** of how fast the data is coming in. Facebook, for example, has to handle a tsunami of photographs every day: its users upload more than 900 million photos a day. It has to **ingest** it all, process it, **file** it, and somehow, later, be able to **retrieve** it.

Variety is the vector that represents the growth of different data types and categories. Big data **incorporates** all the varieties of data. From excel tables and databases, data structure has changed to add hundreds of formats: pure text, photo, audio, video, web, GPS data, sensor data, relational data bases, documents, SMS, pdf, flash, etc. Data is very different from application to application, and the **majority** of it is unstructured.

The **vast** amount of data, expanding in volume, velocity and variety at an increasing rate, was impossible to either capture or store in the past. It was simply too expensive or too **overwhelming**. Even if companies were able to capture the data, they didn’t have the tools to easily analyze it and use the results to make decisions. Very few tools could **make sense of** these **vast** amounts of data. The tools that did exist were complex to use and did not produce results in a **reasonable time frame**.

In the end, those who really wanted to go to the enormous **effort** of analyzing this data **were forced to** work with **snapshots of data**. This had the

undesirable effect of **missing** important **events** because they were not in a **particular** snapshot.

At present companies that know how to pragmatically use big data are able to **predict** the future, execute important business processes, or simply **gain** new **insights**.

[Text is adapted from URL: <http://www.dummies.com/programming/big-data/big-data-for-dummies-cheat-sheet/>]

II. NOTES

accumulation [əˌkjʊːmjəˈleɪʃn]	накопление, скопление
vector ['vektə]	вектор
complex BrE ['kɒmpleks], AmE [kəmˈpleks]	сложный
associated [əˈsəʊʃieɪtɪd] [əˈsəʊsiɪtɪd]	связанный, ассоциируемый
tsunami [tsuːˈnɑːmi]	цунами
to file smth [faɪl]	регистрировать и хранить (документы)
type [taɪp]	тип
category ['kætəgəri]	категория
excel [ɪkˈsel] table	таблица Excel
pdf [ˌpiː diː ˈef]	формат pdf (Portable Document Format)
audio [ˈɔːdiəʊ]	аудио
structure ['strʌktʃə]	структура
enormous [ɪˈnɔːməs]	огромный
pragmatically [prægˈmætɪkli]	прагматично, практично

III. VOCABULARY

1. big data [ˈdeɪtə]	большие данные, «биг дата»
2. to refer to smth [rɪˈfɜː]	относиться к чему-то, отсылать
3. tool [tuːl] database management tools	инструмент, средство средства управления базами данных
4. to gain [geɪn] to gain a better understanding of smth to gain new insights	получить лучше понять что-либо увидеть что-то по-новому, осознать на основе имеющейся информации
5. volume [ˈvɒljʊːm]	объём
6. velocity [vəˈlɪsəti]	скорость
7. variety [vəˈraɪəti]	разнообразие, многообразие
8. to incorporate [ɪnˈkɔːpəreɪt]	включать в себя, вбирать в себя

Big data incorporates all the varieties of data.	Большие массивы данных включают в себя всё многообразие данных.
9. incomprehensible [ɪnˌkɒmpriˈhensəbl] to reach incomprehensible proportions	непостижимый, недоступный пониманию достигать невероятных размеров
10. roughly [ˈrʌfli] roughly 250 billion images	приблизительно, примерно примерно 250 миллиардов изображений
11. measure [ˈmeɪʒə] to measure	мера, степень, масштаб измерять
12. to ingest [ɪnˈdʒest]	проглотить, принимать внутрь
13. to retrieve [rɪˈtriːv]	извлечь, найти, восстановить
14. pure [pjʊə] pure text	чистый, без примесей простой текст
15. majority [məˈdʒɔːrəti] The majority of data is unstructured.	большинство, большая часть Большую часть составляют неструктурированные данные.
16. vast [vɑːst] vast amount	обширный, огромный, значительный огромное количество
17. to expand in smth [ɪkˈspænd]	расширяться, увеличиваться в чем-л.
18. overwhelming [ˌəʊvəˈwelmiŋ]	слишком трудоёмкий, приводящий в замешательство
19. to make sense of smth It doesn't make sense.	осмыслить что-л., разобраться в чем-л. Это непонятно.
20. reasonable [ˈriːznəbl] to produce results in a reasonable time frame	разумный, обоснованный, приемлемый выдавать результаты в приемлемые сроки
21. to be forced to do smth	быть вынужденным делать что-то
22. snapshot [ˈsnæpʃɒt] snapshot of data	моментальный снимок снимок данных, консолидированные за заданный период времени данные
23. undesirable [ˌʌndɪˈzaɪərəbl] to have an undesirable effect [ɪˈfekt]	нежелательный иметь нежелательный эффект
24. to miss smth	пропустить, упустить
25. event [ɪˈvent]	событие
26. particular [pəˈtɪkjələ]	отдельно взятый, определенный
27. effort [ˈefət] to go to the enormous effort of...	усилие предпринять огромные усилия по...

<p>28. to predict [pri'dikt]</p> <p>Companies that know how to pragmatically use big data are able to predict the future.</p>	<p>предсказывать</p> <p>Компании, умеющие извлекать практическую пользу из больших массивов данных, способны предсказывать будущее.</p>
--	---

IV. COMPREHENSION CHECK

Answer the questions based on the text. More than one variant can be correct.

1. What was true about processing big data in the past?

- a) There were no tools to analyse big data.
- b) It was difficult to receive the results very fast.
- c) Analysing big data required little effort.
- d) Many companies didn't have enough money to analyse big data.
- e) Some important events were missing in data analysis.

2. What is NOT true about big data at present time?

- a) Big data is too large to process.
- b) Big data includes a wide range of data.
- c) Big data is used to predict the future.
- d) It's possible to work only with snapshots of data.
- e) The majority of big data is structured.
- f) Big data analysis is not helpful in making business decisions.

3. What is NOT directly stated in the text?

- a) China has fewer people than Facebook has users.
- b) Big data incorporates sensor data.
- c) It is cheap to analyse big data at present.
- d) Data structure has changed to include 900 different formats.
- e) Some companies know how to pragmatically use big data.
- f) Instagram users upload millions of photos every day.

V. GRAMMAR

ЭМФАТИЧЕСКИЕ КОНСТРУКЦИИ

В различных ситуациях общения у говорящих может возникнуть необходимость в том, чтобы выразить эмоциональное отношение к какому-либо факту. Для этого используют специальные **эмфатические конструкции**, которые служат для выделения того или иного члена предложения (от англ. **“emphatic”** – выразительный, подчеркнутый, выделенный).

Одним из способов привлечь внимание к действию, описываемому в предложении, служит эмфатическая конструкция **DO/DOES/DID + VERB**. Обратите внимание на то, что вспомогательный глагол используется в соответствующем времени, лице и числе. Смысловой глагол при этом используется в форме инфинитива без частицы *to*:

a) *I **do** want to come to the party.*

Я действительно хочу прийти на вечеринку.

b) *Susan **does** like to talk a lot!*

Сьюзан в самом деле любит поговорить!

c) *He **did** come yesterday.*

Он всё же пришел вчера.

Как правило, такая структура применяется, когда нужно подчеркнуть противоречие, возразить:

*Many companies nowadays **do** capture the data, **but** they don't have the tools to easily analyze it.*

В настоящее время многие компании фиксируют данные, но не обладают необходимыми инструментами для их эффективного анализа.

*Facebook **does** make it easy for users to upload their photographs. **However**, the users should be able to retrieve the images easily as well.*

Безусловно, Фейсбук позволяет пользователям без труда загружать свои фото на сайт. Однако необходимо, чтобы пользователи настолько же легко могли находить и извлекать нужные им фотографии.

При переводе таких предложений для усиления значения перед сказуемым добавляются слова **действительно, несомненно, безусловно, на самом деле, всё же**:

*The tools that **did** exist were complex to use and did not produce results in a reasonable time frame.*

*Средства, которые **всё же** существовали, были сложны в использовании и не позволяли получить результат в приемлемые сроки.*

VI. EXERCISES

Exercise 1. Change the sentences by adding emphasis to the verb. Then translate the sentences with emphatic construction into Russian.

1. This had the undesirable effect of missing important events.
2. At present companies know how to pragmatically use big data.
3. Knowing how to pragmatically use big data helps to gain new insights.
4. Facebook handles a tsunami of photographs every day.
5. Facebook users upload more than 900 million photos a day.

6. Facebook stored roughly 250 billion images last year.
7. Some companies went to the enormous effort of analyzing data using the traditional tools.
8. Companies analyzed data in the past, but they were forced to work with snapshots of data.
9. The modern tools for data analysis produce results in a reasonable time frame.

Exercise 2. Use emphatic constructions in answers to the following questions about smartphones.

Example A: – Do you use headphones to listen to music? – I do use headphones to listen to music, but when I'm at home alone I prefer to use speakers.

Example B: – Do you use headphones to listen to music? – I do not use headphones to listen to music now, because they are broken, but I do want to buy new ones because I do need them!

1. Do you have a lot of applications on your phone? – I **do have** a lot of applications, **but** ...
2. Did you make sense of all the functions/features that your phone has?
3. Does your friend sometimes take snapshots of you?
4. Does your phone measure your internet traffic automatically?
5. Do most of your friends have an Android operational system on their phones?
6. Did you think of buying a new phone for yourself?
7. Do you think your phone is a useful tool for your studies?
8. Does it require a lot of efforts to find and retrieve necessary information on your phone?
9. Do you know roughly the volume of free memory space on your phone?

Exercise 3. Match each vocabulary word or phrase with its definition. Notice that there are more definitions than words.

_____ pure	1: logical
_____ tool	2: grow, become bigger
_____ insights	3: speed
_____ roughly	4: means of doing something
_____ expand	5: something happening
_____ predict	6: very difficult to fully understand
_____ reasonable	7: variety
_____ vast	8: small amount of
_____ ingest	9: not exactly
_____ incomprehensible	10: totally with nothing else mixed in
_____ the majority of	11: understanding of deep things

_____event
_____velocity
_____miss

- 12:** huge
13: most
14: describe a possible future event
15: not notice
16. eat
17. explain

Exercise 4. For each vocabulary word or phrase, circle TWO correct definitions

1. incomprehensible:

- a) self-destructive
- b) very confusing
- c) understandable
- d) clear
- e) difficult to mentally process

2. gain new insights:

- a) get understanding of deep things
- b) think carefully about
- c) obtain ideas
- d) travel abroad
- e) meet new people

3. incorporate:

- a) improve
- b) break apart into tiny pieces
- c) include
- d) exclude
- e) integrate

4. predict:

- a) try new things
- b) describe a possible future event
- c) to tell something to an enemy
- d) forecast
- e) test ideas scientifically

5. measure

- a) fail to notice
- b) degree of something
- c) free time
- d) amount of something
- e) record by a camera

6. roughly:

- a) very little
- b) logically
- c) approximately
- d) small amount of
- e) not exactly

7. velocity:

- a) probability
- b) a little bit of
- c) speed
- d) rare situation
- e) rate

8. retrieve

- a) reject
- b) get back
- c) eat
- d) spend
- e) recover

9. ingest:

- a) loud and terrible
- b) spoil
- c) eat
- d) consume
- e) incorrect statement

10. vast:

- a) men's clothing
- b) huge
- c) to spread
- d) computer virus
- e) enormous

11. pure:

- a) fresh
- b) not polluted
- c) food for babies
- d) clean
- e) tough

12. majority:

- a) most
- b) smaller part of
- c) argument
- d) military officer
- e) mainstream

Exercise 5. Put the given fragments in the right order to form questions.

1. is / many / images / Facebook / how / storing / ?
2. velocity / represent / what / vector / does / ?
3. have / does / what / handle / Facebook / every / day / to / ?
.....
4. data formats / does / what / incorporate / big data / ?
5. impossible / why / it / to capture / in the past / data / was / a vast / of / amount / ?
.....
6. are / of / used / what / the results / data analysis / for / ?
.....
7. what / with / was / the tools / existed / that / the problem / for analysing data / in
the past / ?
8. be able / if / know / you / you / how to / data / what / pragmatically use / to do /
will / ?

Exercise 6. Work in pairs. Ask each other questions found in Exercise 5.

Exercise 7. Fill in the blanks with appropriate words as you watch the video “What is Big Data and how does it work” (<https://www.youtube.com/watch?v=TzxmjbL-i4Y>). Note the meaning of the following words:

to go way beyond [bi'jʌnd] – выходить далеко за рамки чего-л.

ridiculous [ri'dɪkjʊləs] – нелепый

treatment ['tri:tmənt] – лечение

genetic disease [dʒi'netɪk dɪ'zi:z] – генетическое заболевание

to cure [kjʊə] – вылечить, избавить от чего-л.

cancer ['kænsə] – рак

So, we constantly produce a lot of _____. For example, via social media, public transport and _____. But it goes way beyond that: daily we upload _____ pictures, _____ tweets, and _____ documents. In total, we produce 2.5 quintillion _____ a day – that’s a lot of zeros, it’s ridiculous! We call this “big data”. But

what's actually more important is what you can _____ it. To process big data, you don't need _____ computers. People work with the _____ and endless _____ of normal servers and powerful algorithms. This way, they can analyse over a _____ pieces of data in minutes. And the result? Well, for example, video streaming website Netflix analysed the big data of their viewers, like _____ and watching patterns. This way, they produced a _____ series with the perfect combination of actors, directors, and story line. Right now the big data of _____ is being analysed to develop a car that can drive completely _____ all by itself! And in the future we can even use the big data of DNA to determine the _____ treatment. This way, curing genetic diseases like cancer would become _____. And that's just the _____.

According to the video, what spheres of life can be improved by using big data analysis? How?

What specific examples of big data application are given?

What other new facts about big data have you learned from the video?

VII. SPEAKING

Exercise 1. Speak about velocity, variety and volume of data in your life.

1. Do you upload photographs or documents to social networks or cloud storage?
2. How many files are you storing online?
3. Can you easily find the image or document you need? How much time does it usually take you to find it? What are some tools which help to retrieve a particular image or document from a file storage?
4. Do you think all your text messages are stored somewhere other than on your phone? Can anyone access them?
5. Is it possible to store everyone's text messages?
6. In what spheres are sensors used? What are the functions of some of the sensors that you've seen? Where is the information from such sensors stored?

UNIT

2



DATA MINING

Preview

Answer the questions:

1. How can big data be a problem?
2. How can it be an opportunity?
3. What is needed to make the maximum use of big data?

I. READING



Read and translate the text

DATA MINING: WHAT IT IS AND WHY IT MATTERS

Data mining is the process of finding anomalies, **patterns** and **correlations** within large data sets to predict **outcomes**. Data mining is a **cornerstone** of analytics, helping you develop the models that can uncover connections within millions or billions of records. With a **broad range of techniques**, you can use this information to **increase revenues**, **cut costs**, improve customer relationships, **reduce risks** and more.



The process of digging through data to discover hidden connections and predict future trends has a long history. However, the term "data mining" wasn't **coined** until the 1990s. Its foundation comprises three **intertwined** scientific disciplines: statistics (the numeric study of data relationships), **artificial intelligence** (human-like intelligence displayed by software and/or machines) and machine learning (algorithms that can learn from data to make predictions).

Over the last **decade**, **advances** in processing power and speed have enabled us to move **beyond manual, tedious** and time-consuming practices to quick, easy and automated data analysis. The more complex the data sets collected, the more potential there is to uncover relevant insights. Retailers, banks, manufacturers, telecommunications providers and insurers, among others, are using data mining to discover relationships among everything from pricing, **promotions** and demographics to how the economy, risk, competition and social media are **affecting** their business models, revenues, operations and customer relationships.

Why is data mining important? While the volume of data produced is **doubling** every two years, more information does not necessarily mean more knowledge. Data mining allows you to:

- **sift through** all the chaotic and **repetitive** noise in your data;
- understand what is relevant and then make good use of that information to **assess** likely **outcomes**;
- **accelerate** the **pace** of making informed decisions.

Data mining, as a composite discipline, uses a variety of methods to address different types of needs.

Descriptive modeling uncovers similarities in historical data to **determine** reasons behind success or failure, such as categorizing customers by product preferences or sentiment.

Predictive modeling goes deeper to classify events in the future or **estimate** unknown outcomes – for example, using **credit scoring** to determine an individual's **likelihood** of **repaying a loan**.

Prescriptive modeling looks at internal and external variables and **constraints** to recommend one or more **courses of action** – for example, determining the best marketing offer to send to each customer.

[Text is adapted from: https://www.sas.com/en_us/insights/analytics/data-mining.html]

II. NOTES

data mining ['deɪtə'maɪnɪŋ]	дата майнинг, интеллектуальный анализ данных
anomaly [ə'nɒməli]	аномалия
analytics [ˌænə'lɪtɪks]	аналитика
automated ['ɒtə'meɪtɪd]	автоматизированный
chaotic [keɪ'ɒtɪk]	хаотичный
correlation [ˌkɒrə'leɪʃn]	соотношение, взаимоотношение
cornerstone ['kɔ:nəstəʊn]	основа, краеугольный камень
trend [trend]	тенденция
manual ['mænjuəl]	ручной
decade ['dekeɪd]	десятилетие
retailer ['ri:teɪlə]	ритейлер, предприятие розничной торговли
manufacturer [ˌmænju'fæktʃərə]	производитель
insurer [ɪn'ʃʊərə]	страховая компания, страховщик
descriptive modeling	дискриптивное моделирование
predictive modeling	предиктивное моделирование
prescriptive modeling	прескриптивное моделирование
similarity [ˌsɪmə'lærəti]	сходство
preferences ['prefərənsəz]	предпочтения
sentiment ['sentɪmənt]	отношение
variable ['veriəbəl]	переменная

III. VOCABULARY

1. patterns ['pætnz]	шаблоны, модели, принципы
2. outcome ['aʊtkʌm]	вероятное событие
3. range [reɪndʒ] broad range of techniques [tek'ni:ks]	диапазон, спектр широкий спектр приемов
4. to increase revenues [ɪn'kri:s 'revənju:z]	увеличить доходы
5. to cut costs [kɒsts]	снизить затраты
6. to reduce [rɪ'dju:s] risks You can use this information to increase revenues, cut costs, reduce risks and more.	снизить риски Можно использовать эту информацию, для увеличения доходов, снижения затрат, уменьшения рисков и многого другого.
7. to coin [kɔɪn] The term "data mining" wasn't coined until the 1990s.	вводить в обращение, в употребление Термин «data mining», обозначающий интеллектуальный анализ данных, был введен в обращение только в 90-е гг.
8. to intertwine [ɪntə'twain] intertwined disciplines	переплетаться связанные отрасли знания
9. artificial intelligence [ˌɑ:ti'fiʃl ɪn'telɪdʒəns], AI [eɪ'aɪ]	искусственный разум
10. advances [əd'vɑ:nsɪz] in smth Advances in processing power and speed have enabled us to move to automated data analysis.	прогресс в чем-л, достижения Прогресс в увеличении мощностей и скорости позволил перейти к автоматизированному анализу данных.
11. beyond [brɪ'jɒnd] to move beyond smth to smth	вне, за рамками перейти от чего-л. к чему-л.
12. tedious ['ti:diəs]	утомительный, трудоемкий
13. promotion [prə'məʊʃn]	рекламная кампания, продвижение
14. to affect smth [ə'fekt]	влиять на что-л.
15. to double ['dʌbl] The volume of data produced is doubling every two years.	удваиваться Объем производимых данных удваивается каждые два года.
16. to sift through smth [sɪft θru:]	отфильтровать что-л.
17. repetitive [rɪ'petətɪv]	повторяющийся
18. likely ['laɪkli] to assess [ə'ses] likely outcomes likelihood ['laɪklihʊd]	вероятный оценивать вероятные результаты вероятность

19. pace [peɪs] to accelerate [æk'seləreɪt] the pace of smth	темп ускорить темп чего-л.
20. to determine [dɪ'tɜːmɪn]	определять
21. score [skɔːr] credit scoring	сумма баллов рейтинг кредитоспособности
22. to estimate ['estɪmeɪt] to estimate unknown outcomes	оценивать оценивать возможный результат
23. loan [ləʊn] to repay a loan Predictive modeling uses credit scoring to determine an individual's likelihood of repaying a loan.	кредит выплатить кредит Предиктивное моделирование ис- пользует рейтинг кредитоспособности при определении вероятности выплаты кредита заемщиком.
24. constraint [kən'streɪnt]	ограничение
25. course of action [ˌkɔːs əv 'ækʃn] to recommend [ˌrekə'mend] a course of action Prescriptive Modeling looks at internal and external variables and constraints to recommend one or more courses of action.	план действий рекомендовать план действий Прескриптивное моделирование рассматривает внутренние и внешние переменные и ограничения, чтобы рекомендовать один или несколько планов действий.

IV. COMPREHENSION CHECK

Exercise 1. Choose the correct answer(s) to the following questions:

- 1. According to the text, what is data mining used for?**
 - a) to predict outcomes;
 - b) to reduce revenues;
 - c) to develop customer relationships;
 - d) to increase costs.
- 2. What is true about the term “data mining”?**
 - a) It was widely used until the 1990s.
 - b) It was not used after the 1990s.
 - c) It appeared on coins in the 1990s.
 - d) It started to be used in the 1990s.

3. **What is true about descriptive modelling?**
 - a) It's one of the methods of data mining.
 - b) It is focused on the future outcomes.
 - c) It can identify groups of customers who bought the same product.
 - d) It is used to recommend one or more courses of action.
4. **Why is data mining important?**
 - a) It allows you to make uninformed decisions.
 - b) It doubles the information every two years.
 - c) It helps to understand what information is not relevant.
 - d) It helps make decisions faster.
5. **What spheres is data mining used in?**
 - a) Banking and insurance;
 - b) Retail and marketing;
 - c) Social media;
 - d) All of the above.
6. **What data mining method is used to suggest the best way to act in the future?**
 - a) Descriptive modeling;
 - b) Predictive modeling;
 - c) Provocative modelling;
 - d) Prescriptive modeling.

V. GRAMMAR

ДВОЙНОЕ ОТРИЦАНИЕ КАК ЭМФАТИЧЕСКАЯ КОНСТРУКЦИЯ

В английском языке двойное отрицание употребляется только в эмфатических целях. Два отрицания при этом нейтрализуют друг друга и создают оппозицию – утвердительное значение. Одно отрицание в таких случаях выражается грамматическим путем, а второе – при помощи приставок или слов, имеющих отрицательное значение.

*The term "data mining" **wasn't** coined **until** the 1990s.*

*Термин «data mining», обозначающий интеллектуальный анализ данных, **был введен в обращение только в 90-е гг.***

*It is **not until** the business owners see some actual data mining models for their business that they start to understand the potential outcomes of the project.*

***Только после того, как владельцы компаний увидят** реальные модели интеллектуального анализа данных для своего бизнеса, они начнут понимать возможные перспективы проекта.*

Отрицание **not**, употребляемое перед прилагательным или наречием с отрицательными приставками **un-, in- (il-, im-, ir-) dis-**, имеет усилительное значение, и все сочетание обычно соответствует русскому "вполне, весьма, довольно + прилагательное (наречие)"; например:

- not uncommon* – довольно обычный,
- not infrequently* – довольно часто,
- not impossible* – вполне возможно.

VI. EXERCISES

Exercise 1. Translate the sentences with emphatic constructions into Russian.

1. It is not impossible to sift through all the repetitive noise in your data.
2. It is not uncommon to use data mining to uncover similarities in historical data to determine reasons behind success or failure.
3. It was not until the analytics looked at internal and external variables and constraints that they could recommend two possible courses of action.
4. It is not infrequent that important hidden connections are discovered through data mining.
5. It's not unusual anymore for organizations to store multiple petabytes of data.
6. It is not unusual for organisations applying data mining techniques to see a 10-20 % revenue growth.
7. Access to real-time data is not unreasonable and must be a priority for all organisations.
8. It was not until the early 2000 that two leading companies in the technology world – Yahoo! and Google – predicted the problems of storing and managing huge data and initiated work on finding a solution.

Exercise 2. Make up questions based on the text.

1. What _____?
2. When _____?
3. Who _____?
4. Why _____?
5. Where _____?
6. How _____?
7. How long _____?
8. How many _____?
9. How important _____?

Exercise 3. Work with a partner. Ask each other the questions from exercise 2 and answer them.

Exercise 4. Insert the words from the box into the following sentences.

1. Using automated data analysis can reduce **t**_____ and complex manual calculations and improve the accuracy of the results.
2. Data mining can help produce personalized advertising and geographically targeted **p**_____s.
3. Many tools are designed to make it as easy as possible for you to **s**_____ **t**_____ the Social Data to find what is useful.
4. Data mining helps marketers **m**_____ **b**_____ general stereotypes and zoom in on the specific customer.
5. Marketing departments can use big data to help their organizations **i**_____ **r**_____.
6. With the growing use of information technology and the recent **a**_____ in web systems, the amount of data available to users has increased exponentially.
7. The application of big data analytics in healthcare has a lot of positive and also life-saving **o**_____s.
8. The vast majority of big data is typically **r**_____ data.
9. Internet of Things and big data are closely **i**_____ and although they are not the same thing, it is very hard to talk about one without the other.
10. Uninstalling an important application can **a**_____ your computer's operation.

Exercise 5. Translate the following sentences.

1. Корпорации могут иметь доступ к огромному объему своих данных и не иметь необходимых инструментов, чтобы использовать эти данные для увеличения доходов.
2. Современные технологии позволяют компаниям ускорить темп принятия решений.
3. Специальные алгоритмы позволяют обнаружить повторяющиеся шаблоны в больших массивах данных.
4. Чтобы получить наилучший результат, специалист должен знать широкий спектр приемов в области анализа больших массивов данных.
5. Достижения в современных технологиях позволили минимизировать утомительный ручной труд.
6. Вероятность положительного результата увеличилась вдвое.
7. Из-за недостатка информации было трудно определить наилучший план действий.

8. Рейтинг кредитоспособности используется банками, чтобы снизить риски невыплаты кредита.
9. Большое количество ограничений негативно повлияло на успех рекламной компании.
10. Искусственный разум позволяет выйти за рамки обычных человеческих возможностей.

VI. SUPPLEMENTARY READING

1. Answer the following pre-reading questions:

- ✓ What songs or poems do you know which were probably written by people suffering from depression? How can you tell the author was depressed based on the language of his writing? Is it always easy to see?
- ✓ How can data mining technologies be used to detect depression?

2. While reading, pay attention to the pronunciation of the following words:

suffer ['sʌfə] – страдать

suicide ['sju:saɪd] – самоубийство

singular pronoun ['sɪŋɡjʊlə'prəʊnaʊn] – местоимение единственного числа

spinal cord injury ['spaɪnəl kɔ:d 'ɪndʒəri] – травма позвоночника

recreation [,rekri'eɪʃən] – отдых, развлечение

PEOPLE WITH DEPRESSION USE LANGUAGE DIFFERENTLY – HERE'S HOW TO SPOT IT

Depression changes the way you move and sleep, and is even noticeable in the way you express yourself in writing. Sometimes this “language of depression” can have a powerful effect on others. Just consider the impact of the poetry and song lyrics of Sylvia Plath and Kurt Cobain, who both killed themselves after suffering from depression.



Scientists have long tried to pin down the exact relationship between depression and language, and technology is helping us get closer to a full picture. Traditionally, linguistic analysis have been carried out by researchers reading and taking notes. Nowadays, computerised text analysis methods allow the processing of extremely large data banks in minutes. This can help spot linguistic features which humans may miss.

A new study has now unveiled a class of words that can help accurately predict whether someone is suffering from depression. Computerized text analysis

of personal essays and diary entries by depressed people as well as the work of well-known artists such as Cobain and Plath revealed clear and consistent differences in language between those with and without symptoms of depression.

It will surprise no one to learn that those with symptoms of depression use a great amount of words conveying negative emotions, such as “lonely”, “sad” or “miserable”. More interesting is the use of pronouns. Those with symptoms of depression use significantly more first person singular pronouns – such as “me”, “myself” and “I” – and significantly fewer second and third person pronouns – such as “they”, “them” or “she”. This pattern suggests people with depression are more focused on themselves, and less connected with others.

A big data text analysis of 64 different online mental health forums, examining over 6,400 members, found that “absolutist words”, such as “always”, “nothing” or “completely” can be even better markers of depression, reflecting a more black and white view of the world people with depression have.

Researchers are combining automated text analysis with machine learning (computers that can learn from experience without being programmed) to classify a variety of mental health conditions from natural language text samples such as blog posts. Such classification is already outperforming that made by trained therapists. Importantly, machine learning classification will only improve as more data is provided and more sophisticated algorithms are developed.

As the World Health Organisation estimates that more than 300m people worldwide are now living with depression, an increase of more than 18% since 2005, having more tools available to spot the condition is certainly important to improve health and prevent tragic suicides such as those of Plath and Cobain.

[The text is adopted from URL: theconversation.com/people-with-depression-use-language-differently-heres-how-to-spot-it-90877]

3. After reading the text, choose synonyms to the words in italics:

1. People with depression use language differently – here’s how to *spot* it.

- a) to notice
- b) to buy
- c) to hide
- d) to speak

2. Scientists have long tried to *pin down* the exact relationship between depression and language.

- a) to advertise
- b) to discuss
- c) to forget
- d) to understand

3. A new study has now *unveiled* a class of words that can help accurately predict whether someone is suffering from depression.
 - a) improved
 - b) guessed
 - c) discovered
 - d) disagreed with
 4. Those with symptoms of depression use a great amount of words *conveying* negative emotions, such as “lonely”, “sad” or “miserable”.
 - a) communicating
 - b) hiding
 - c) preventing
 - d) improving
 5. Such classification is already *outperforming* that made by trained therapists.
 - a) shown to the public
 - b) changing
 - c) better than
 - d) improving
4. What other text analysis applications can you think of?

II. SPEAKING

Exercise 1. Prepare a report (presentation) on one of the following topics:

- | | |
|----------------------------------|--|
| 1) Data Mining in Sports | 7) Data Mining in Retail |
| 2) Data Mining in Medicine | 8) Data Mining in Food Industry |
| 3) Data Mining in Social Media | 9) Data Mining in Traffic Control |
| 4) Data Mining in Agriculture | 10) Data Mining in Weather Forecasting |
| 5) Data Mining in Fighting Crime | 11) Data Mining in Space Exploration |
| 6) Data Mining in Banking | |

Exercise 2. Discuss ethical issues of data mining. Is it possible to misuse big data? Speak of beneficial and harmful ways to use the following types of data:

- ✓ Current location data;
- ✓ History of previously visited locations;
- ✓ Facial recognition;
- ✓ Online consumer data;
- ✓ Friends lists on social media;
- ✓ E-mail address database;
- ✓ Medical records.

UNIT

3



DATA SECURITY

Preview

Answer the questions:

1. Do you buy anything online? Do you feel safe making online payments?
2. Have you or anyone you know ever been a victim of a cybercrime or a hacker's attack?
3. What rules does one have to follow to prevent losing data or money online?

I. READING

Read and translate the text

DATA SECURITY

Data security refers to the process of protecting data from **unauthorized access** and data **corruption throughout** its lifecycle. Data security is also known as information security or computer security. It is an essential aspect of IT for organizations of every size and type. Security **measures** include data **encryption**, tokenization and key management practices.

Encryption is the process of using an algorithm to transform **plain** text information into a non-readable form called **ciphertext**. An algorithm and an encryption key are required to decrypt the information and return it to its original plain text format.

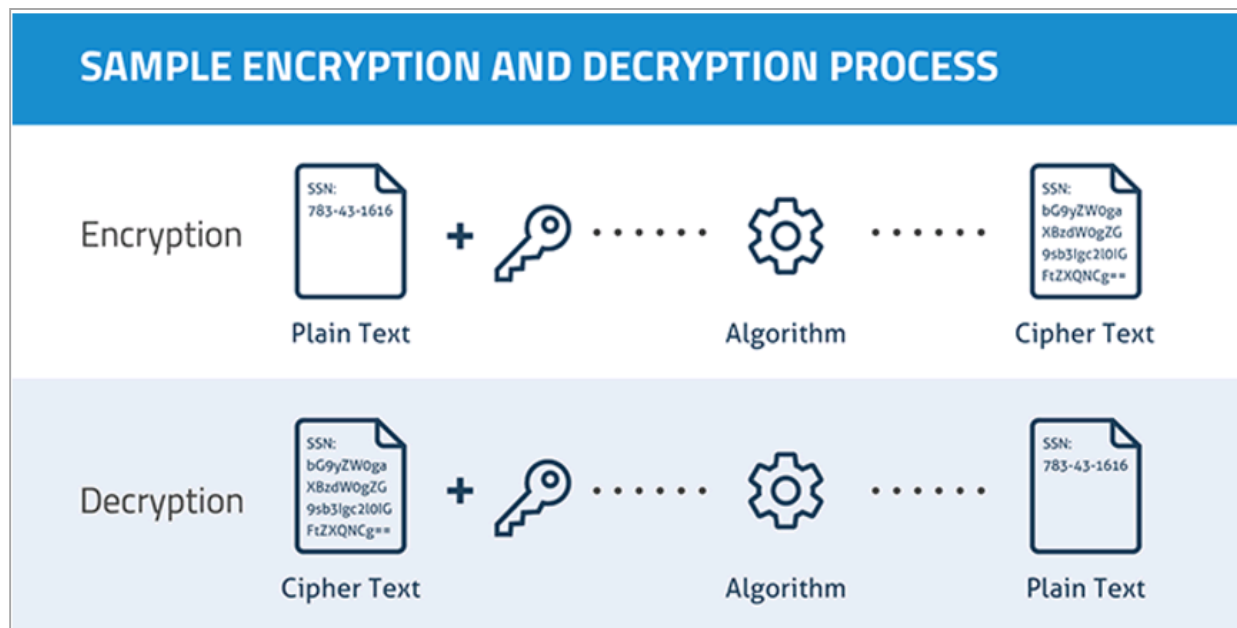


Figure 1. – Sample Encryption and Decryption Process

(Источник: <https://www.skyhighnetworks.com/cloud-security-university/tokenization-vs-encryption/>)

Tokenization is the process of turning a meaningful piece of data, such as an account number, into a random **string** of characters called a **token**. The **advantage** of tokens is that there is no mathematical relationship to the real data they represent. If they are **breached**, they have no meaning. There is no key, or algorithm, that can reverse them back to the real data **values**. Tokenization uses a database, called a token **vault**, which stores the relationship between the sensitive value and the token.

The token value can be used in various applications as a substitute for the real data. For example, in the case of processing a credit card payment, the token is **submitted** to the vault to **retrieve** the real value – the **account** number – for use in the authorization process. Very often the end user is not even **aware** that the data is stored in the cloud in a different format.



Figure 2. – Sample Tokenization Process

(Источник: <https://www.skyhighnetworks.com/cloud-security-university/tokenization-vs-encryption/>)

Besides encryption and tokenization, good key management practices are essential for protecting sensitive data, as its security crucially depends on the security of the cryptographic key that allows the data to be decrypted. As a result, the problem of protecting personal data **is reduced to** the problem of protecting such keys from unauthorized access and use. For example, keys must never be stored in the same place as encrypted data and only **authenticated** users should get access to encrypted resources.

Another important component of key management is **keeping track** of the events which have happened in the application. Each and every access to the set of data which is encrypted because of its high **degree** of sensitivity should be **logged** in detail, identifying the user who has accessed the sensitive data, the data which is being accessed, and the time when the data is accessed.

II. NOTES

lifecycle ['laɪf saɪkl]	жизненный цикл
original [ə'ɹɪdʒənəl]	первоначальный
original format ['fɔːmæt]	первоначальный формат
random ['rændəm]	случайный, произвольно выбранный

character ['kærəktə]	цифра, буква, знак, символ
to represent [,reprɪ'zent]	представлять
to reverse [rɪ'vɜ:s]	возвращать, обращать
SSN – Social Security Number	номер свидетельства соц. страхования
sensitive ['sensətɪv]	засекреченный, секретный, уязвимый
sensitive value ['vælju:]	засекреченное цифровое значение
sensitive data	секретные данные, конфиденциальная информация
sensitivity	конфиденциальность
substitute ['sʌbstɪtju:t]	заменитель, замена
various ['veəriəs]	различный
component [kəm'pəʊnənt]	часть, деталь, компонент
to identify[aɪ'dentɪfaɪ]	определить, установить личность

III. VOCABULARY

1. throughout [θru:'aʊt]	на всём протяжении
2. to authorize ['ɔ:θəraɪz] unauthorized access ['æksəs] authorization [ˌɔ:θəraɪ'zeɪʃn]	давать разрешение несанкционированный доступ проверка регистрационной информации о пользователе
3. corruption [kə'rʌpʃn] data corruption Data security refers to the process of protecting data from unauthorized access and data corruption throughout its lifecycle.	повреждение, разрушение нарушение целостности данных Под обеспечением сохранности данных понимается процесс защиты данных от несанкционированного доступа и от нарушения целостности на протяжении всего жизненного цикла.
4. measure ['meʒə] security measures	мера меры безопасности
5. encryption [ɪn'krɪpʃn] data encryption to encrypt / to decrypt	шифрование шифрование данных зашифровать / расшифровать
6. plain [pleɪn] plain text	простой, понятный обычный, незашифрованный текст
7. ciphertext ['saɪfətɛkst] Encryption is the process of transforming plain text information into a ciphertext.	зашифрованный текст Шифрование – это процесс преобразования информации в форме простого текста в зашифрованный текст.

<p>8. token ['təʊkən] tokenization ['təʊkənəɪ'zeɪʃn]</p>	<p>токен, жетон, ярлык, символ токенизация</p>
<p>9. string [strɪŋ] random string of characters</p>	<p>строка случайная последовательность символов</p>
<p>10. vault [vɔ:lt] A token vault stores the relationship between the sensitive value and the token.</p>	<p>хранилище Хранилище токенов содержит соотношения засекреченных значений и их «ярлыков» – токенов.</p>
<p>11. advantage [əd'vɑ:ntɪdʒ] disadvantage [ˌdɪsəd'vɑ:ntɪdʒ]</p>	<p>преимущество недостаток</p>
<p>12. to breach [bri:tʃ] security breach The advantage of tokens is that if they are breached, they have no meaning.</p>	<p>нарушить целостность, создать брешь нарушение защиты Преимущество токенов в том, что в случае утечки сами по себе они лишены смысла.</p>
<p>13. value ['vælju:] data values</p>	<p>значение значения данных</p>
<p>14. account [ə'kaʊnt] account number</p>	<p>счет номер счета</p>
<p>15. to submit [səb'mɪt]</p>	<p>представлять на рассмотрение, предъявлять</p>
<p>16. to retrieve [rɪ'tri:v] The token is submitted to the vault to retrieve the real value for use in the authorization process.</p>	<p>извлекать Токен предъявляется в хранилище, чтобы извлечь реальное значение для использования в процессе авторизации.</p>
<p>17. to be aware [ə'weə] of smth The end user is not even aware that the data is stored in the cloud in a different format.</p>	<p>быть в курсе чего-л., отдавать себе отчет в чем-л. Конечный пользователь даже не отдает себе отчет в том, что данные хранятся в облаке в другом формате.</p>
<p>18. to reduce [rɪ'dju:s] smth to smth The problem of protecting personal data is reduced to the problem of protecting cryptographic keys from unauthorized access and use.</p>	<p>сводить что-л. к чему-л. Проблема защиты персональных данных сводится к проблеме защиты криптографических ключей от несанкционированного доступа и использования.</p>
<p>19. authenticated [ɔ:'θentɪkeɪtɪd] user Only authenticated users should get</p>	<p>аутентифицированный пользователь Только аутентифицированные</p>

access to encrypted resources.	пользователи должны получать доступ к зашифрованным ресурсам.
20. to keep track [træk] of smth Another important component of key management is keeping track of the events which have happened in the application.	отслеживать, фиксировать Еще одной важной задачей при управлении ключами является отслеживание событий, произошедших в приложении.
21. degree [di'gri:] high degree of sensitivity	степень высокая степень конфиденциальности
22. to log smb's access ['æksəs] to data in detail Every access to the set of data which is encrypted because of its high degree of sensitivity should be logged in detail.	подробно залогировать ч-л доступ к данным Любой доступ к данным, зашифрованным по причине высокой степени их конфиденциальности, должен быть подробно залогирован.

IV. COMPREHENSION CHECK

Exercise 1. Compare the encryption and tokenization processes by filling in the table:

	Encryption	Tokenization
What does this process transform the given data into?		
What is required to return the information to its original form?		
Where can this security measure be used?		
What is the advantage of this method?		

Exercise 2. Think of a title for each paragraph of the text and write down your ideas below:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

V. EXERCISES

Exercise 1. Make up questions based on the text.

1. What _____?
2. When _____?
3. Who _____?
4. Why _____?
5. Where _____?
6. How _____?
7. What is _____?
8. How many _____?
9. How important _____?

Exercise 2. Work with a partner. Ask each other questions from exercise 2 and answer them.

Exercise 3. Complete the definitions of the terms from the text by filling in the blanks. Note *the verbs* which are usually used to define something.

1. _____ is the process of using an algorithm to transform ciphertext back to its original plain text format.
2. A database which stores the relationship between the sensitive value and the token **is known as** a _____.
3. A value that is applied using an algorithm to a plain text to produce encrypted text **is known as** _____.
4. The practices of protecting cryptographic keys from unauthorized access and use **are called** _____.
5. The process of turning a meaningful piece of data into a random string of characters **is called** _____.
6. A substitute for the real data which has no meaning is called a _____.
7. _____ **refers to** the process of using an algorithm to transform plain text information into a non-readable form.
8. _____ **refers to** the process of protecting data from unauthorized access and data corruption throughout its lifecycle.

Exercise 4. Learn to give the definitions from exercise 3 *quickly* without looking at the text.

Exercise 5. Fill in the blanks with the vocabulary words in an appropriate form.

1. Real-time access to log data will allow you to filter and locate that one event that could be the cause of a **s**_____ **b**_____.
2. Company management s often not **a**_____ of some security **m**_____.

3. On your website you can define the rule to allow only **a**_____ **u**_____ to access specific services.
4. In this company all data security measures are **r**_____ to changing passwords once a week.
5. Special software allows you to **l**_____ **a**_____ to sensitive data.
6. Is there a log file I can set up to **k**_____ **t**_____ of who accessed what files and what they did with them – i.e. deleted, changed and so on?
7. Financial-related personal data has higher **d**_____ of **s**_____.
8. Improper shutdowns of a computer may cause **d**_____ **c**_____.

Exercise 6. Fill in the empty cells with the appropriate word from the box.

ciphertext	unauthorized	advantage	reduce
non-readable	decrypt	sensitive data	

Synonym	Synonym	Antonym
allowed	authorized	
encode	encrypt	
original text	plain text	
benefit		disadvantage
personal data		data open to public
	decrease	increase
clear	readable	

Exercise 7. Translate the sentences into English.

1. Для защиты конфиденциальных данных обычно используется шифрование, но в последние несколько лет стала популярна другая технология – токенизация.
2. Шифрование имеет много преимуществ и является одним из наиболее эффективных средств обеспечения безопасности конфиденциальных данных.
3. Шифрование позволяет обеспечить доступ к данным только авторизованным пользователям.
4. Но шифрование – не единственная мера безопасности, есть и альтернативные методы.
5. Иногда самым правильным решением будет не защищать конфиденциальные данные шифрованием, а вообще не передавать их.
6. Токенизация заключается в подмене реальных значений данных строкой случайных символов – токеном.
7. Любой человек, имеющий ключ шифрования, может преобразовать

зашифрованный текст в первоначальный формат.

8. В случае с токенизацией процесс не является обратимым. Токен, предъявляемый вместо данных, не несет в себе никакой конфиденциальной информации. Токен не имеет алгоритма, который может восстановить реальные значения данных.
9. Соотношение «ярлыка» с реальными данными хранится в хорошо защищенной базе данных, называемой «хранилище токенов».
10. В случае утечки токен не поможет извлечь никакие реальные конфиденциальные данные.
11. Токенизация идеально подходит для защиты конфиденциальных данных, таких как номера счетов и номера социального страхования.

VII. SPEAKING

Exercise 1. Prepare a report (a presentation) on one of the following topics:

1. Keeping your cryptographic keys safe and secure (suggested resource: <https://www.cryptomathic.com/news-events/blog/cryptographic-key-management-the-risks-and-mitigations>)
2. Classification of cryptographic keys (suggested resource: <https://www.cryptomathic.com/news-events/blog/classification-of-cryptographic-keys-functions-and-properties>)
3. The full life-cycle of cryptographic keys (suggested resource: <https://info.townsendsecurity.com/definitive-guide-to-encryption-key-management-fundamentals#The-Full-Life-Cycle-of-Keys>)
4. Famous cases of data security breaches (suggested resource: <https://gizmodo.com/target-confirms-that-encrypted-pins-were-swiped-in-blac-1490418755>;
<https://www.computerweekly.com/news/2240237912/Sony-Pictures-admits-it-was-unprepared-for-Novembers-cyber-attack>)
5. Tokenization of personal credit card payments (suggested resource: <https://jointoken.com/#/>)
6. Tokenization of mobile payments (suggested resource: <https://www.retaildive.com/ex/mobilecommercedaily/biometrics-tokenization-gain-steam-with-mastercard-visa-commitments>)
7. Unbreakable encryption (suggested resource: <http://fortune.com/2013/10/14/unbreakable-encryption-comes-to-the-u-s/>)

Exercise 2. Prepare a list of questions to ask a data security specialist about different methods of data protection and problems of data security management. Act out an interview with one of your classmates playing the role of a data security expert.



CLOUD TECHNOLOGY

Preview

Answer the questions:

1. How have cloud technologies changed the IT sphere?
2. What are the advantages and disadvantages of cloud computing?
3. What cloud providers are popular?

I. READING

Read and translate the text

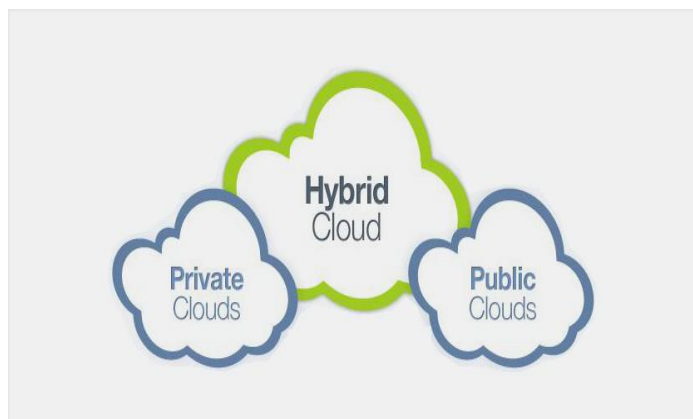
CLOUD TECHNOLOGY

Cloud technology services cover a vast range of options, from the basics of storage, networking, and processing power through to natural language processing and artificial intelligence as well as standard office applications. Companies offering these computing services are called cloud providers. They typically **charge for** cloud computing services based on usage, similar to how you are **billed for** water or electricity at home.



Cloud computing services can be private, public and hybrid. **Private cloud services** are **delivered** from a business's data center to **internal users**. Internal users may or may not be billed for services through IT chargeback. In the **public cloud model**, a **third-party cloud service provider** delivers the cloud service over the Internet. Customers only pay for the CPU cycles, storage or bandwidth they consume.

A **hybrid cloud** is a combination of public cloud services and an on-premises private cloud, with orchestration and automation between the two. The goal of a hybrid cloud is to create a unified, automated, scalable **environment** that **takes advantage of** all that a public cloud infrastructure can provide, while still **maintaining control** over mission-critical data.



Cloud technologies architecture refers to the various components and sub-components of cloud that constitute the structure of the system. This architecture can be classified into two sections: **front-end** and **back-end**. Front End is the visible interface that computer users or clients **encounter** through their **web-enabled client devices**. But it should be clear here that not all cloud technologies systems will use the same user interface. Back End is the “cloud” part of a cloud technologies architecture, **comprising** all the resources required to deliver cloud-

technologies services. A system's back end can be made up of a number of metal servers, data storage facilities, virtual machines, a security mechanism, and services, all built in **conformance** with a deployment model, and all together responsible for providing a service.

Security remains a **primary concern** for businesses thinking about cloud adoption – especially public cloud adoption. Public cloud service providers share their underlying hardware infrastructure between numerous customers, as public cloud is a multi-tenant environment. This environment demands isolation between logical compute resources. At the same time, access to public cloud storage and compute resources is guarded by account **login credentials**.

II. NOTES

to constitute ['kɒnstɪ,tʃu:t]	составлять
orchestration ['ɔ:kɪ,streɪʃn]	взаимодействие, механизм управления
automation [,ɔ:tə'meɪʃn]	автоматизация
infrastructure ['ɪnfɹə,strʌktʃə]	инфраструктура
unique [ju:'ni:k]	уникальный
architecture ['ɑ:kɪ,tektʃə]	архитектура
structure ['strʌktʃə]	структура
to classify ['klæsɪfaɪ]	классифицировать
section ['sekʃn]	секция, часть
hybrid ['haɪbrɪd]	гибридный
public ['pʌblɪk]	общедоступный
unified ['ju:nɪfaɪd]	унифицированный
mechanism ['mekə,nɪzəm]	механизм
numerous ['nju:mərəs]	многочисленный
various ['veəriəs]	различный
mission ['mɪʃn]	миссия
isolation [,aɪsə'leɪʃn]	разделение
to guard [gɑ:d]	защищать

III. VOCABULARY

1. cloud [klaʊd] cloud technology cloud adoption cloud providers public cloud	облако облачные технологии переход на облачные технологии поставщики облачных услуг общедоступное облако
--	--

hybrid cloud private cloud service on-premises [ən 'premɪsɪz] private cloud	гибридное облако услуга по предоставлению частного облака локальное частное облако (установленное на площадке заказчика)
2. to charge [tʃɑ:dʒ] for smth to charge for cloud computing services	брать плату за ч.-л. брать плату за услуги облачных вычислений
3. to bill [bɪl] to be billed for smth to be billed for water or electricity to be billed for services through IT chargeback	выставлять счёт получать счет за что-л. получать счет за воду или электричество получать счет за услуги посредством электронных возвратных платежей
4. environment [ɪn'vaɪrənmənt] scalable environment multi-tenant environment	среда масштабируемая среда мультиарендная среда
5. to deliver [dɪ'lɪvə] to deliver services over the Internet	поставлять предоставлять услуги через Интернет
6. a third-party service provider [ə θɜ:d 'pɑ:ti sɜ:vɪs prə'vaɪdə]	предоставляющая услуги третья сторона; сторонний поставщик
7. to take advantage of smth to take advantage of all that a public cloud infrastructure can provide	воспользоваться ч.-л. воспользоваться всем тем, что может предоставить инфраструктура общедоступного облака
8. to maintain control over smth [meɪn'teɪn] to maintain control over mission-critical data	поддерживать контроль над ч.-л. поддерживать контроль над особо важными данными
9. front-end ['frʌnt end]	фронтэнд; внешний, клиентский
10. back-end ['bæk end]	бэкенд; внутренний, серверная часть
11. to encounter [ɪn'kaʊntə] smb/smth to encounter through web-enabled client devices	иметь дело с к.-л., ч.-л. иметь дело с доступом к сети посредством устройств

<p>12. to comprise [kəm'praɪz] to comprise all the resources required to deliver cloud-technologies services</p>	<p>включать, охватывать включать все ресурсы, необходимые для предоставления услуг облачных технологий</p>
<p>13. in conformance [kən'fɔ:məns] with to be built in conformance with a deployment model</p>	<p>в соответствии с быть построенным в соответствии с моделью развертывания</p>
<p>14. to remain a primary concern for smb ['praɪməri kən'sɜ:n] Security remains a primary concern for businesses.</p>	<p>оставаться основным приоритетом Безопасность остается основным приоритетом для предприятий.</p>
<p>15. login credentials [kri'denʃəlz] Access to public cloud storage and compute resources is guarded by account login credentials.</p>	<p>учётные данные Доступ к общедоступным облачным хранилищам и вычислительным ресурсам охраняется учетными данными входа в учетную запись.</p>

IV. READING COMPREHENSION

Exercise 1. Answer the questions.

1. What is NOT true about cloud technology services?

- a) Cloud computing services can be private, public and hybrid.
- b) Cloud technology services cover only standard office applications.
- c) Cloud providers normally charge for cloud computing services based on usage.

2. What is NOT true about the types of cloud services?

- a) The customers of public cloud services pay for the CPU cycles through IT chargeback.
- b) Private cloud services are delivered from a company's data center to both internal and external users.
- c) A hybrid cloud service is a combination of public cloud services and an on-premises private cloud.

3. What is NOT true about cloud technologies architecture?

- a) Back end is the “visual” part of a cloud technologies architecture.
- b) Cloud technologies architecture includes various components and sub-components of the cloud.
- c) Cloud technologies architecture can be classified into two sections: front-end and back-end.

4. What is NOT true about public cloud security?

- a) Public cloud is a multi-tenant environment, so the underlying hardware infrastructure is shared between numerous customers.
- b) Unfortunately, access to public cloud storage and computer resources cannot be guarded by account login credentials.
- c) Security still remains a primary concern for businesses thinking about public cloud adoption.

Exercise 2. Make your own questions based on the content of the text and ask your group mates to answer them.

Exercise 3. Complete the definitions of the terms from the text by filling in the blanks.

- 1. _____ is the “cloud” part of a cloud technologies architecture, comprising all the resources required to deliver cloud-technologies services.
- 2. A combination of public cloud services and an on-premises private cloud, with orchestration and automation between them is known as _____.
- 3. _____ are delivered from a business's data center to internal users.
- 4. The visible interface that computer users or clients encounter through their web-enabled client devices is called _____.
- 5. _____ are used to guard access to public cloud storage and compute resources.
- 6. _____ refers to the delivery of the cloud service over the Internet by a third-party cloud service provider.
- 7. Companies that offer and charge for cloud computing services based on usage are called _____.
- 8. _____ means that public cloud service providers can share their underlying hardware infrastructure between numerous customers.

Exercise 4. Give the English equivalents

- 1. мультиарендная среда.....
- 2. локальное облако, установленное на площадке заказчика.....
- 3. услуга по предоставлению частного облака
- 4. поддерживать контроль над особо важными данными.....
- 5. брать плату за услуги облачных вычислений.....
- 6. сторонний поставщик
- 7. доступ к общедоступным облачным хранилищам
- 8. поставщики облачных услуг

9. включать все ресурсы, необходимые для предоставления услуг облачных технологий
10. масштабируемая среда.....
11. унифицированный механизм
12. получать счет за услуги посредством электронных возвратных платежей
13. иметь дело посредством доступа к сети

Exercise 5. Compare the types of cloud computing services by filling in the table:

	private	public	hybrid
Who is this service provided by?			
What do its customers pay for?			
Is it secure to store data here?			

Exercise 6. Put the given fragments in the right order to form questions.

1. cloud / for / do / providers / charge / what /?
2. are / companies / what / cloud / called / providers /?
3. is / “cloud” / technologies / how / the / part / a / architecture / of / cloud / called / ?.....
4. public / possible/ is / within / improve / cloud / it / security / to /?
5. organizations / the / public / placing / why / about / still / do / data / the / cloud / many / in / doubt /?
6. cloud / the / of / goal / hybrid / a / what /is/?.....
7. cloud / in / what / the / is / shared/ public /?.....

Exercise 7. Translate the sentences into English.

1. Все жильцы получают счета за воду и электричество.
2. При выборе поставщика облачных услуг вам следует обращать внимание не только на стоимость, но и на качество пакета предлагаемых услуг.
3. Интернет-банкинг – это предоставление банковских услуг через Интернет.

4. По мнению международных экспертов в области информационной безопасности, пользователи давно потеряли контроль над своими данными.
5. Возможно ли обеспечить безопасность доступа к общедоступным облачным хранилищам и вычислительным ресурсам?
6. Учетные данные – это имя пользователя и пароль.
7. В соответствии с требованиями клиентов проект переделывали трижды.
8. Пользователи общедоступного облака не могут управлять и обслуживать это "облако".
9. В мультиарендной среде изменения в базе данных могут вносить несколько пользователей.

VI.SUPPLEMENTARY READING

Answer the pre-reading questions.

1. Why are many companies afraid to place their apps and platforms on the cloud?
2. Is there a technology that can help ensure secure access remotely?

Note the meaning of the following words used in the text:

high profile – широкая огласка, большой резонанс
 automobile licenses – автомобильные номера
 SaaS – Software as a service
 ransom – выкуп
 crook – мошенник



Read the text and express your opinion about cloud security. What possible ways to prevent hacking attacks are mentioned in the text?

PREVENTING THE SECURITY GAP IN THE CLOUD

It's no secret that people and businesses are moving to the cloud at a rapid rate. The latest figures show that in 2018 most organizations will have around 40 per cent of their apps and platforms on the cloud. That number is expected to grow. But it will hardly grow up to 100 per cent.

One of the main reasons for this is that companies are frightened to have a high profile cloud-related cyber-attack.



It wasn't that long ago that UBER got hacked and the crooks walked away with personal data from 57 million users that included 600,000 U.S. automobile licenses. What made this attack worse is the fact that UBER kept it silent for more than a year and decided to pay the ransom. The cyber crooks were able to grab log-in credentials from a GitHub repository used by UBER's development team that was left unprotected.

Not just businesses, but individuals are equally at risk. Last summer personal information from 198 million American voter records was left exposed. What makes this situation scary is it wasn't a hack at all. The database was publicly accessible on an Amazon S3 server. The database had been misconfigured allowing it to be available to anyone searching online. This brings to light the need for a simple, cloud-friendly solution that can protect data and people.

According to Amit Bareket, the co-founder and CEO of Perimeter 81 (an Israel-based developer of cloud-enabled VPNs with 24/7 protection that provides automatic WIFI security on the go) it could have been prevented with a software-defined perimeter technology that would close cloud environments and SaaS services to everyone except authorized devices, users and locations.

At Perimeter 81, Bareket has implemented a zero-trust security model that enables users to have direct access to cloud resources and apps. This technology evaluates the user permissions and related metadata to ensure secure access remotely.

“Utilizing it, organizations can ensure that only authorized connections are being established, while keeping the cloud completely hidden from all others including the black cloud.”

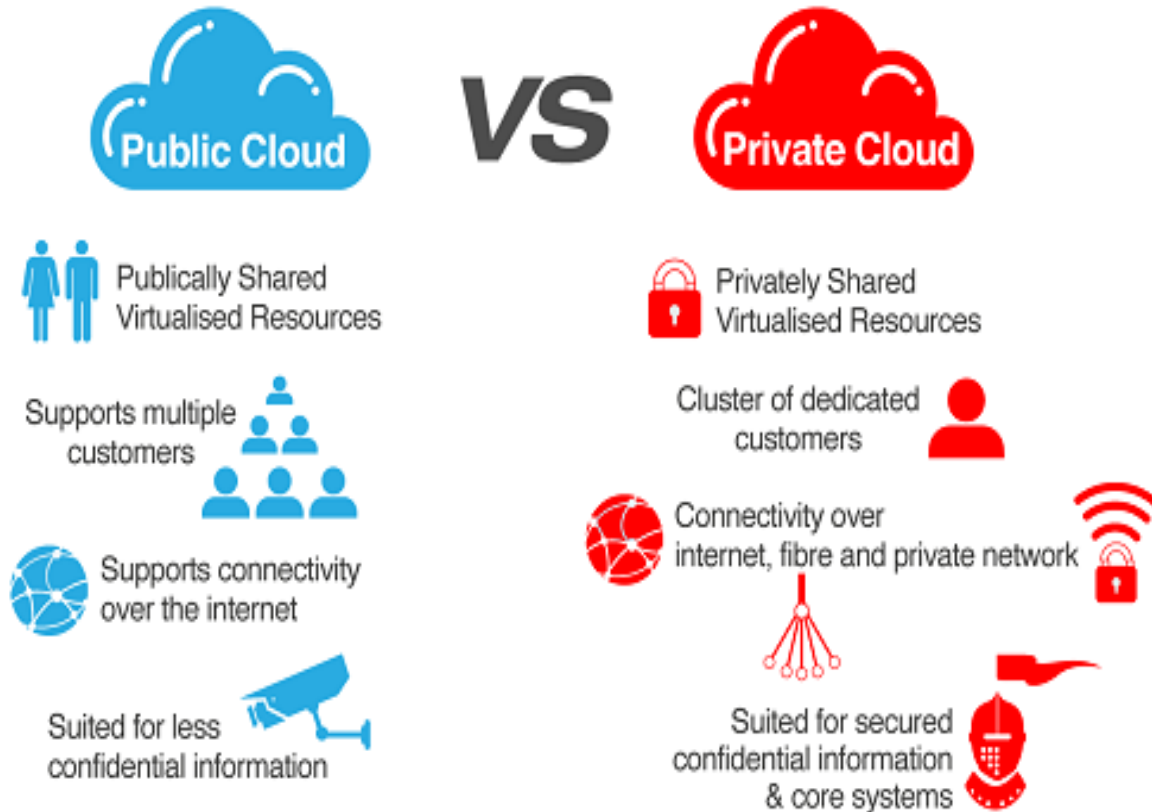
[Text is adapted from: <https://www.e-channelnews.com/preventing-the-security-gap-in-the-cloud/>]

Now answer the questions based on the text. Have your answers to questions 1 and 4 changed?

1. Why are many companies afraid to place their apps and platforms on the cloud?
2. What were the cyber crooks able to steal from a GitHub repository?
3. What happened to personal information from American voter records?
4. Is there a technology that can help ensure secure access remotely?

VII. SPEAKING

Exercise 1. This is a comparison between two types of cloud computing services. Speak about their potential customers (e.g. small business, civil service, teenagers, etc.).















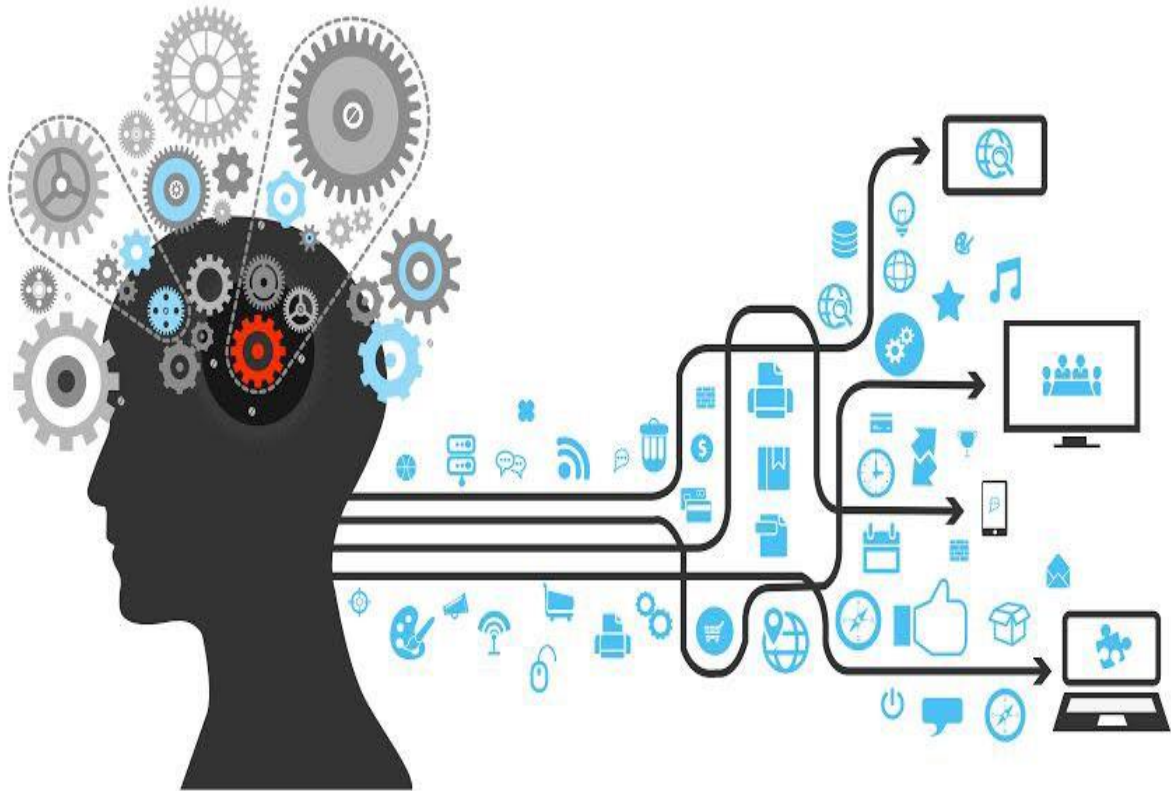
Exercise 2. Speak about the advantages and disadvantages of these types of clouds.

Exercise 3. Prepare a report (a presentation) about a popular cloud service provider of your choice.

Exercise 4. Look at the pictures and match them with the words in the box. Prepare a short monologue trying to use as many words and phrases from the box as possible.

Cloud computing	Cloud Search	Data Processing	Data Filter
Data Backup	Data Exchange	Cloud system	Process Automation
Cloud Technology	Cloud Hosting	Data Synchronization	Data Security



ARTIFICIAL INTELLIGENCE

Preview

Answer the questions:

1. How has artificial intelligence transformed the modern world?
2. What AI gadgets are the most popular ones nowadays?
3. What are the benefits and risks of artificial intelligence?

I. READING

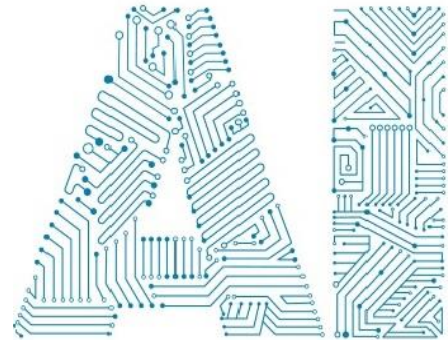


Read and translate the text

ARTIFICIAL INTELLIGENCE

Artificial intelligence or AI is the simulation of **human intelligence** processes by computer systems. These processes include **learning** (**retrieving information** and rules for using it), **reasoning** (using the rules to reach **approximate** or **definite conclusions**), and self-correction. **Particular** applications of AI include expert systems, speech recognition and machine vision.

AI has **gained** prominence recently due, in part, to big data, or the increase in speed, size and variety of data businesses are now collecting. AI can perform tasks such as identifying patterns in the data more efficiently than humans, enabling businesses to gain more insight out of their data. Today, this term includes everything from robotic process automation to actual robotics.



Examples of AI technology are automation, machine learning, machine vision, natural language processing, robotics.

Automation is the process of making a system or process function automatically. **Robotic process automation** (RPA), for example, can be programmed to perform high-volume, repeatable tasks normally performed by humans. RPA is different from IT automation in that it can adapt to changing **circumstances**.

There are three types of **machine learning** algorithms:

- **supervised learning**, in which data sets are **labeled** so that patterns can be detected and used to label new data sets;
- **unsupervised learning**, in which data sets aren't labeled and are sorted according to **similarities** or differences;
- **reinforcement learning**, in which data sets aren't labeled but, after performing an action or several actions, the AI system is given feedback.

Machine vision makes computers see. Machine vision captures and analyzes visual information using a camera, analog-to-digital conversion and digital signal processing. It is often **compared to** human eyesight, but machine vision isn't **bound by** biology and can be programmed to see through walls, for example. It is used in a range of applications from **signature** identification to medical image analysis.

Natural language processing (NLP) is the processing of human – and not computer – language by a computer program. One of the older and best known examples of NLP is **spam detection**, which looks at the subject line and the text of an email and decides if it's **junk**. Current **approaches** to NLP are based on machine learning. NLP tasks include text translation, sentiment analysis and **speech recognition**.

Robotics is a field of engineering focused on the design and manufacturing of robots. Robots are often used to **perform** tasks that are difficult for humans to perform. They are used in **assembly lines** for car production or by NASA to move large objects in space. More recently, researchers are using machine learning to build robots that can interact in **social settings**.



[The text is adapted from URL: [https://searchenterpriseai.techtarget.com/ definition/AI-Artificial-Intelligence](https://searchenterpriseai.techtarget.com/definition/AI-Artificial-Intelligence)]

II. NOTES

simulation [ˌsɪmjʊˈleɪʃn]	симуляция, моделирование
process [ˈprəʊses]	процесс
efficiently [ɪˈfɪʃəntli]	эффективно
self-correction [ˌself kəˈrekʃn]	самокоррекция
to collect [kəˈlekt]	собирать
to identify [aɪˈdentɪfaɪ]	идентифицировать
robotic process automation [rəʊˈbɒtɪk ˈprəʊses ˌɔ:təˈmeɪʃn]	роботизированная автоматизация процессов
natural language processing [ˈnætʃərəl ˈlæŋɡwɪdʒ ˈprəʊsəsɪŋ]	обработка текстов на естественном языке
robotics [rəʊˈbɒtɪks]	робототехника
to adapt [əˈdæpt]	адаптировать
machine vision [məˈʃiːn ˈvɪʒn]	машинное зрение, автоматический анализ видеoinформации
to analyze [tə ˈænləɪz]	анализировать
visual [ˈvɪʒʊəl]	визуальный
analog-to-digital conversion [kənˈvɜːʃn]	преобразование из аналоговой формы в цифровую
eyesight [ˈaɪˌsaɪt]	зрение

biology [baɪ'ɒlədʒi]	биология
identification [aɪ,dentɪfɪ'keɪʃn]	идентификация
medical image analysis ['medɪkəl 'ɪmɪdʒ ə'næləsis]	анализ медицинских снимков
spam [spæm]	спам
subject ['sʌbdʒɪkt]	субъект
current ['kʌrənt]	современный
sentiment analysis ['sentɪmənt ə'næləsis]	анализ тональности, эмоциональной окраски высказываний
focus ['fəʊkəs]	фокус
object ['ɒbdʒekt]	объект

III. VOCABULARY

<p>1. intelligence [ɪn'telɪdʒəns] artificial [ɑ:tɪ'fɪʃəl] intelligence human ['hju:mən] intelligence</p>	<p>интеллект искусственный интеллект (ИИ) человеческий интеллект</p>
<p>2. to retrieve [rɪ'tri:v] to retrieve information</p>	<p>извлекать извлекать информацию</p>
<p>3. to reason ['ri:zn] reasoning</p>	<p>рассуждать, делать выводы рассуждение</p>
<p>4. conclusion [kən'klu:ʒn] to reach a conclusion approximate [ə'prɒksɪmət] conclusions definite conclusions</p>	<p>вывод приходить к выводу промежуточные выводы окончательные выводы</p>
<p>5. particular [pə'tɪkjʊlə] Particular applications of AI include expert systems, speech recognition and machine vision.</p>	<p>отдельный Отдельные ИИ приложения включают экспертные системы, распознавание речи и машинное зрение.</p>
<p>6. recognition [ˌrekəg'nɪʃn] speech recognition</p>	<p>распознавание распознавание речи</p>
<p>7. to gain [geɪn] to gain prominence ['prɒmɪnəns] to gain insight ['ɪnsaɪt] AI enables businesses to gain more insight out of their data.</p>	<p>получать завоевать известность вникать, получать чёткую картину происходящего ИИ позволяет компаниям получать более чёткую картину происходящего на основе их данных.</p>

<p>8. circumstance ['sɜ:kəmstəns] Robotic process automation is different from IT automation in that it can adapt to changing circumstances.</p>	<p>обстоятельство Роботизированная автоматизация процессов отличается от автоматизации в информационных технологиях тем, что она может адаптироваться к изменяющимся обстоятельствам.</p>
<p>9. learning ['lɜ:nɪŋ] machine learning deep learning supervised ['su:pəvaɪzd] learning unsupervised learning reinforcement [,ri:ɪn'fɔ:smənt] learning</p>	<p>обучение машинное обучение глубокое обучение обучение с учителем обучение без учителя обучение с подкреплением</p>
<p>10. to label ['leɪbl] to be labeled</p>	<p>маркировать, размечать быть промаркированным, размеченным по принадлежности к к.-л. классу</p>
<p>11. similarity [ˌsɪmə'lærəti] similarities and differences In unsupervised learning data sets are not labeled and are sorted according to similarities or differences.</p>	<p>совпадение, сходство сходства и различия При обучении без учителя наборы данных не размечаются и сортируются в соответствии со сходствами или различиями.</p>
<p>12. to be compared [kəm'peəd] to smth Machine vision is often compared to human eyesight</p>	<p>быть сравниваемым с ч.-л. Машинное зрение часто сравнивается со зрением человека.</p>
<p>13. to be bound [baʊnd] by smth Machine vision isn't bound by biology and can be programmed to see through walls.</p>	<p>быть связанным (ограниченным) ч.-л. Машинное зрение не ограничено биологическими возможностями и может быть запрограммировано, чтобы видеть сквозь стены.</p>
<p>14. signature ['sɪgnətʃə] signature identification</p>	<p>подпись идентификация по подписи</p>
<p>15. junk [dʒʌŋk] Spam detection looks at the subject line and the text of an email and decides if it's junk.</p>	<p>ненужный хлам Обнаружение спама рассматривает тему и текст сообщения электронной почты и решает, является ли это нежелательным.</p>
<p>16. approach [ə'prəʊtʃ] current approaches</p>	<p>подход современные подходы</p>

<p>17. to perform [pə'fɔ:m] to perform high-volume, repeatable [rɪ'pi:təbl] tasks</p>	<p>выполнять выполнять крупномасштабные повторяющиеся задачи</p>
<p>18. to capture ['kæptʃə] Machine vision captures and analyzes visual information using a camera.</p>	<p>захватывать Машинное зрение захватывает и анализирует визуальную информацию с помощью камеры.</p>
<p>19. assembly line [ə'sembli laɪn] Robots are used in assembly lines for car production.</p>	<p>конвейер Роботы используются на конвейерах для производства автомобилей.</p>
<p>20. social setting [,səʊʃəl 'setɪŋ] Researchers use machine learning to build robots that can interact in social settings.</p>	<p>ситуации социального общения Исследователи используют машинное обучение для создания роботов, которые могут взаимодействовать в условиях социального общения.</p>

IV. READING COMPREHENSION

Exercise 1. Answer the questions based on the text. More than one variant can be incorrect.

1. What is NOT true about natural language processing (NLP)?

- a) Spam detection makes a thorough analysis of the message and then decides if it's junk or not.
- b) Current approaches to NLP are based on machine learning.
- c) NLP tasks include IT automation.

2. What is NOT true about machine learning?

- a) In unsupervised learning data sets are sorted according to their similarities not differences.
- b) Machine learning teaches computers to perform like humans.
- c) The AI system is given feedback after performing an action in reinforcement learning.

3. What is NOT true about robotics?

- a) Robotics is a field of engineering focused on the design and manufacturing of big and small robots.
- b) Robots help humans to perform tasks that are difficult for them.
- c) It's impossible to build robots that can interact in social settings.

4. What is NOT true about machine vision?

- a) Machine vision captures and analyzes visual information.
- b) Machine vision is used only in security applications.

c) Machine vision can hardly be compared to human eyesight.

5. What is NOT directly stated in the text?

- a) Robotic process automation is different from the automation supervised by humans in that it can adapt to changing circumstances.
- b) Not bound by biology, machine vision can be programmed to see through walls.
- c) Artificial intelligence as the simulation of human intelligence is able to perform all tasks and operations that human intelligence can do.
- d) Data sets are labeled in supervised learning so that patterns can be detected and used to label new data sets.
- e) Robots are able to move large objects in space.

V. EXERCISES

Exercise 1. Make your own questions based on the content of the text and ask your group mates to answer them.

Exercise 2. Complete the definitions of the terms from the text by filling in the blanks.

1. _____ is the process of making a system or process function automatically.
2. A field of engineering focused on the design and manufacturing of robots is known as _____.
3. An ability to look at the subject line and the text of an email and decide if it's junk is known as _____.
4. The simulation of human intelligence processes by computer systems is called _____.
5. A machine learning algorithm in which data sets are labeled so that patterns can be detected and used to label new data sets is called _____.
6. The process of retrieving information and rules for using it is called _____.
7. _____ refers to the ability to adapt to changing circumstances while performing high-volume, repeatable tasks normally performed by humans.
8. _____ refers to the process of capturing and analyzing visual information using a camera, analog-to-digital conversion and digital signal processing.

Exercise 3. Give English equivalents to the following words and expressions:

1. роботизированная автоматизация процессов
2. извлекать информацию
3. контролируемое обучение
4. выполнять крупномасштабные повторяющиеся задачи
5. машинное зрение
6. использовать современные подходы.....
7. преобразование из аналоговой формы в цифровую.....
8. обработка текстов на естественном языке
9. завоевать известность
10. идентификация по подписи
11. обнаружение спама
12. адаптироваться к изменяющимся обстоятельствам.....
13. человеческий интеллект
14. анализ эмоциональной окраски высказываний
15. распознавание речи
16. сходства и различия
17. стимулированное обучение

Exercise 4. Compare the most popular types of artificial intelligence by filling in the table:

	automation	machine learning	machine vision	natural language processing	robotics
What tasks does this type of AI perform?					
What are its peculiar features?					
Where can this type of AI be used?					

Exercise 5. Put the given fragments in the right order to form questions.

1. tasks / artificial / kind / perform / what / can / intelligence / of / ?
.....

2. prominence / recently / why / gained / AI / has / ?.....

 3. approaches / on / what / language / based / current / natural /are /processing /?.....

 4. detection / does / spam / how / work / ?

 5. data / why / learning / are / supervised / labeled / sets / in / ?

 6. automation / can / used / where / robotic / be / process / ?.....

 7. to interact / will / social / in / be able / robots / settings / in /future / ?

 8. be compared / vision / can / human / to / machine / eyesight / ?

Exercise 6. Translate the sentences into English.

1. Искусственный интеллект – это способ сделать компьютер, робота или программу, способную мыслить как человек.
2. Хотя первая версия системы Windows появилась в 1986, популярность у пользователей смогла завоевать только система Windows 3.0.
3. Современные программы для распознавания речи способны заменить клавиатуру.
4. Идентификацию по подписи возможно использовать повсюду.
5. Роботизированная автоматизация процессов применяется на тех предприятиях, где необходимо выполнять крупномасштабные повторяющиеся задачи.
6. В каком из видов машинного обучения наборы данных отмечаются и сортируются в соответствии со сходствами или различиями?
7. К сожалению, приблизительные выводы не всегда оказываются верными.
8. Вы хотите узнать, где и для чего используется глубинное обучение в реальной жизни?
9. ИИ приложения используются для фильтрации спама и контента низкого качества.
10. Компания разрабатывает алгоритмы машинного зрения, которые позволяют компьютерам “читать” изображения.
11. На современном производстве широкое применение получили роботизированные системы, оснащенные "машинным зрением" и различными средствами контроля движений.

VI. SUPPLEMENTARY READING

1. Answer the pre-reading questions.

1. What is a smart home?
2. Is smart home automation system secure?
3. What methods and tricks did the researchers use to hack the smart home automation system?
4. What is a common security flaw in the tested platform?

2. Read the text and note the pronunciation of the following words:

lock-pick malware app ['mælweə] – вредоносное приложение "отмычка"
proof-of-concept attacks ['kɒnsept] – экспериментальные, проверочные атаки
to eavesdrop [i:ˈvz, drɒp] – подслушивать (с помощью микрофонов)
to disguise [disˈgaɪz] – маскировать, переодевать



HACKING INTO HOMES: 'SMART HOME' SECURITY FLAWS FOUND IN POPULAR SYSTEM

University of Michigan researchers have developed a way to hack into the leading "smart home" automation system and get the PIN code to a home's front door.

The method, a "lock-pick malware app," was one of four attacks the researchers used on an experimental set-up of Samsung's SmartThings.

The researchers performed a security analysis of the SmartThings' programming framework and conducted successful proof-of-concept attacks to show the impact of the flaws they found. For example, they demonstrated a SmartApp that eavesdropped on someone setting a new PIN code for the door lock, and then sent the PIN in a text message to a potential hacker. The app was disguised as a battery-level monitor and only expressed the need for that capability in its code.

The researchers also showed that an existing, highly rated SmartApp could be remotely exploited to virtually make a spare door key by programming an additional PIN into the electronic lock. A different SmartApp was shown to be able

to turn off "vacation mode," which enables the user to program the timing of lights, blinds, and other household features to help secure the home while the owner is away.









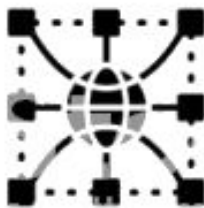



The researchers note one common security flaw. The platform grants its SmartApps too much access to devices and to the messages those devices generate.

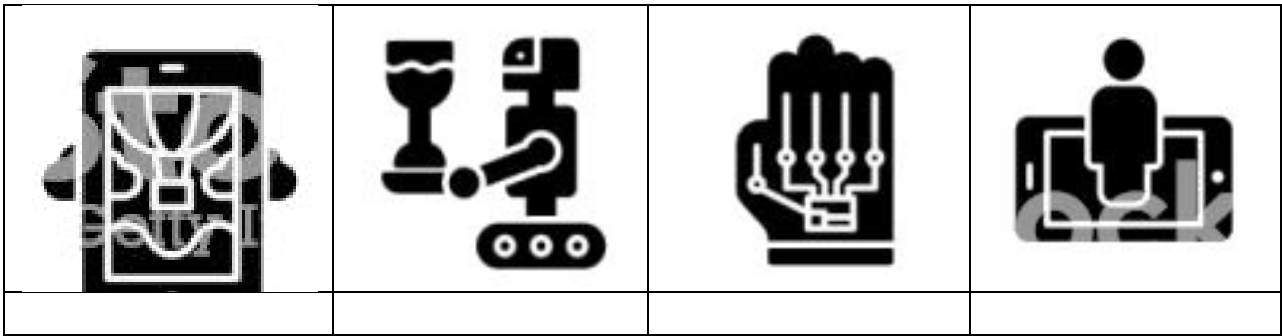
[Text is adapted from: URL: <https://cacm.acm.org/news/201938-hacking-into-homes-smart-home-security-flaws-found-in-popular-system/fulltext>]

VII. SPEAKING

1. Look at the pictures and match the gadgets and technologies with the words from the table.

Automatic robotic arm	Exoskeleton	Virtual reality head set	Artificial intelligence
Personal hover car	Tracking glove	Hologram	Personal robot
Cybernetic limb	Augmented reality	Wearable tracker	Internet of Things
Intelligent personal assistant	Drone technology	Ambient user experience	Autonomous car



1. Prepare a short talk on one of the gadgets or technologies in the picture.
2. Tell your group mates why you want or don't want to have a smart home automation system in your home.
3. Share your impressions with your group mates about books or movies about AI.
4. Speak about one of the current or possible future applications of AI.
5. Imagine that you have invented a time travelling machine and found yourself in the nearest future. How has the world changed? Choose one sphere of human life and tell your group mates about it.



BIOMETRIC AUTHENTICATION

Preview

Answer the questions:

1. What do you know biometric authentication?
2. Where is it mostly used?
3. How has biometrics changed the issue of security in the modern world?

I. READING

Read and translate the text

BIOMETRIC AUTHENTICATION

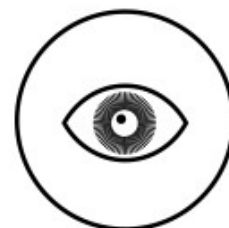
Biometric **authentication** has strongly expanded in the last few years, with more and more people relying on it and even demanding for it. Biometric authentication is the process of **verifying** your identity using your **measurements** or other unique characteristics of your body, then logging you in a service, an app, a device and so on. The most popular methods of biometric authentication are: fingerprint scanning, eye scanning (**retinal** scan, **iris** scan) and a facial **recognition** system.

A fingerprint scanner is used to **grant** user access to information or to **approve** transactions. During verification, each print is analyzed for its specific features. Then an algorithm (mathematical process) is used to turn this information into a unique numeric code. Comparing fingerprints is then simply a matter of comparing their unique codes.

There are three types of fingerprint scanners: optical, capacitive and ultrasonic. An optical scanner takes a photo of the finger, identifies the print **pattern**, and then **compiles** it into an identification code. A capacitive scanner measures electrical signals sent from the finger to the scanner, maps out the contact points and air **gaps**, resulting in an absolutely unique pattern. An ultrasonic scanner scans the surface of the finger with ultrasonic waves. Similar to a capacitive one, it forms a map of the finger unique to the individual. Fingerprint scanners are widely used in smartphones, biometric door locks, biometric car starter **kits**, fingerprint-scanning **padlocks** and safes.



Eye scanning includes retinal and iris scanning. A retinal scan illuminates the complex blood **vessels** in a person's eye using infrared light, making them more visible than the surrounding **tissue**. Iris scanners rely on high-quality photos or videos of one or both irises of a person. Some **current** and future applications of eye recognition are national **border** controls, cell phone and other wireless-device-based authentication, credit card authentication, automobile **ignition** and unlocking; **anti-theft** devices, secure financial transactions, control of access to privileged information.



Modern face recognition systems are three-dimensional techniques which use 3D sensors to capture and identify **distinctive** features on the surface of a face, such as the contour of the eye **sockets**, nose and **chin**. Today facial recognition

allows to identify students at **assured** online exams (and personalized E-learning), to upscale hotel guests upon arrival, to verify one`s identity in a payment method called Selfie Pay. It can also be used to unlock phones.

Each and every biometric system is useful and the selection of a particular biometric device depends upon the application area.

[Text is adopted from URL: heimdalsecurity.com/blog/biometric-authentication/]

II. NOTES

biometric [ˌbaɪəʊ'metrɪk]	биометрический
expand [ɪk'spænd]	расширять(ся)
unique [ju:'ni:k]	уникальный
characteristic [ˌkærɪktə'rɪstɪk]	характерный
capacitive [kə'pæsətɪv]	ёмкостный
method ['meθəd]	метод
algorithm ['ælgə,rɪðm]	алгоритм
numeric [nju:'merɪk]	цифровой
identification [aɪ,dentɪfɪ'keɪʃn]	идентификация
ultrasound ['ʌltrə'saʊnd]	ультразвуковой
absolutely ['æbsəlu:tli]	абсолютно
surface ['sɜ:fɪs]	поверхность
safe [seɪf]	сейф
to illuminate [ɪ'lu:mɪneɪt]	освещать
automobile ['ɔ:təmə'bi:l]	автомобиль
secure [sɪ'kjʊə]	безопасный
privileged ['prɪvələdʒd]	привилегированный
infrared [ˌɪnfrə'red]	инфракрасный
technique [tek'ni:k]	технический приём
contour ['kɒntʊə]	контур
personalized ['pɜ:sənəlaɪzd]	персонализированный
selection [sɪ'lekʃn]	набор

III. VOCABULARY

<p>1. authentication [ɔ:θentɪ'keɪʃn]</p> <p>biometric authentication</p> <p>wireless-device-based authentication</p> <p>credit card authentication</p>	<p>аутентификация</p> <p>биометрическая аутентификация</p> <p>аутентификация на основе беспроводных устройств</p> <p>аутентификация кредитной карты</p>
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<p>2. to rely [ri'laɪ] on smb/ smth more and more people rely on it</p>	<p>доверять, полагаться все больше людей полагаются на это</p>
<p>3. to verify ['verifaɪ] to verify one`s identity to verify oneself verification [,verɪfɪ'keɪʃn] It is enough to make a selfie to verify yourself when making a payment.</p>	<p>подтверждать подтверждать личность подтверждение Достаточно сделать селфи для того, чтобы подтвердить свою личность при осуществлении платежа.</p>
<p>4. to measure ['meɪʒə] measurement ['meɪʒəmənt] Biometric authentication is the process of verifying your identity using your measurements or other unique characteristics of your body.</p>	<p>измерять измерение, размер Биометрическая аутентификация - это процесс проверки вашей личности с использованием ваших параметров или других уникальных характеристик вашего тела.</p>
<p>5. retina ['retɪnə] retinal scan</p>	<p>сетчатка глаза сканирование сетчатки глаза</p>
<p>6. iris ['aɪrɪs]</p>	<p>радужная оболочка глаза</p>
<p>7. recognition [,rekəg'nɪʃn] facial ['feɪʃəl] recognition system</p>	<p>распознавание система распознавания лица</p>
<p>8. to grant [grɑ:nt] to grant user access</p>	<p>предоставить предоставить доступ пользователю</p>
<p>9. to approve [ə'pru:v] to approve transactions [træn'zækʃn] A fingerprint scanning is used to grant user access to information.</p>	<p>подтверждать подтверждать операции Дактилоскопический сканер используется при сканировании отпечатков пальцев для того, чтобы предоставить пользователю доступ к информации.</p>
<p>10. pattern ['pætən] print pattern</p>	<p>образец, рисунок печатный образец</p>
<p>11. to compile [kəm'paɪl] smth into smth An optical scanner takes a photo of the finger, identifies the print pattern, and then compiles it into an</p>	<p>компилировать ч.-л. во ч.-л. Оптический сканер делает фотографию пальца, идентифицирует печатный рисунок, а затем</p>

identification code.	компилирует его в код идентификации.
12. gap [gæp] air gap	промежуток воздушный промежуток
13. to map [mæp] smth out to map out the contact points and air gaps A capacitive scanner measures electrical signals sent from the finger to the scanner, maps out the contact points and air gaps, resulting in an absolutely unique pattern.	отображать ч.-л. отображать контактные точки и воздушные промежутки Емкостный сканер измеряет электрические сигналы, передаваемые от пальца к сканеру, отображает контактные точки и воздушные зазоры, в результате чего появляется абсолютно уникальный рисунок.
14. kit [kit] biometric car starter kit	набор биометрический стартер автомобиля
15. padlock ['pæd,lɒk] fingerprint-scanning padlocks	висячий замок навесной замок со сканером отпечатков пальцев
16. vessel ['vesl] blood [blʌd] vessels	сосуд кровеносные сосуды
17. tissue ['tɪʃuː] surrounding [sə'raʊndɪŋ] tissue A retinal scan illuminates the complex blood vessels in a person's eye using infrared light, making them more visible than the surrounding tissue.	ткань окружающая ткань Сканирование сетчатки освещает извитые кровеносные сосуды в глазу человека с помощью инфракрасного света, делая их более заметными, чем окружающие ткани.
18.current ['kʌrənt] current and future application	текущий, современный текущие и будущие применения
19.border ['bɔːdə] national border control	граница пограничный контроль, охрана государственной границы
20.ignition [ɪg'niʃn] automobile ignition and unlocking	зажигание автомобиля запуск и разблокировка дверей автомобиля

21. theft [θeft] anti-theft devices	кража противоугонные устройства
22. distinctive [dɪ'stɪŋktɪv] to capture and identify distinctive features	отличительный запечатлеть и идентифицировать отличительные черты
23. socket ['sɒkɪt] eye socket	впадина, углубление глазница
24. chin [tʃɪn]	подбородок
24. to assure [ə'ʃʊə] assured online exams Today facial recognition allows to identify students at assured online exams.	заверять, подтверждать подтвержденные онлайн-экзамены Сегодня распознавание лица позволяет идентифицировать учащихся на подтвержденных онлайн экзаменах.

IV. READING COMPREHENSION

Exercise 1. Choose one or more variant(s) to answer the questions.

1. What is NOT true about biometric authentication?

- a) Biometric authentication is about identity verification using unique characteristics of the body.
- b) Biometric authentication is based on, encoding and decoding.
- c) The most popular methods of biometric authentication are fingerprint scanning, eye scanning, and a facial recognition system.

2. What is NOT true about facial recognition?

- a) Facial recognition cannot be used to unlock phones.
- b) Facial recognition is based on three-dimensional techniques which use 3D sensors.
- c) Facial recognition identifies distinctive features on the surface of a face, such as the contour of the eye sockets, nose, lips and chin.

3. What is NOT true about fingerprint scanners?

- a) The main task of fingerprint scanners is to compare the unique codes of fingerprints.
- b) Ultrasonic scanners are used to scan the surface of the finger with ultrasonic waves.
- c) Capacitive scanners measure electrical signals sent from the finger to the scanners mapping out the contact points and air gaps.

4. What is NOT true about eye scanning?

- a) The results of eye scanning are used in national border controls, cell phone and other wireless-device-based authentication systems.
- b) Retina scanners rely on high-quality photos or videos of one or both irises of a person.
- c) Retinal scan illuminates the complex blood vessels in a person’s eye using ultraviolet light.

5. What is NOT directly stated in the text?

- a) In fingerprint scanning special algorithms are used to turn information into unique numeric codes.
- b) The facial recognition system gives a feedback about your state of health after performing the act of recognition.
- c) Some applications of eye recognition will gain secret control of access to privileged information in the nearest future.

V.EXERCISES

Exercise 1. Make up questions based on the text.

- 1. What?
- 2. What kind of.....?
- 3. Why?
- 4. Where?
- 5. How?
- 6. How many.....?

Exercise 2. Complete the definitions of the terms from the text by filling in the blanks.

- 1. _____ is the process of verifying your identity using your measurements or other unique characteristics of your body.
- 2. A scanner that takes a photo of the finger, identifies the print pattern, and then compiles it into an identification code is known as _____.
- 3. _____ relies on high-quality photos or videos of one or both irises of a person.
- 4. The three-dimensional techniques which use 3D sensors to capture and identify distinctive features on the surface of a face are called _____.
- 5. _____ scanning is an algorithm (mathematical process) which is used to turn the information about a print pattern into a unique numeric code.

6. _____ refers to the possibility to illuminate the complex blood vessels in a person's eye using infrared light to make them more visible than the surrounding tissue.
7. A device for scanning the surface of the finger with ultrasonic waves is called _____.
8. _____ refers to the process of measuring electrical signals sent from the finger to the scanner and mapping out the contact points and air gaps.

Exercise 3. Give English equivalents to the following words and expressions:

1. зажигание и разблокировка автомобиля
2. характерный
3. противоугонные устройства
4. биометрический автомобильный комплект стартера
5. оптический сканер
6. кровеносные сосуды
7. дактилоскопический сканер
8. навесные замки со сканером отпечатков пальцев
9. предоставлять доступ пользователю
10. система распознавания лица
11. подтвержденные онлайн-экзамены.....
12. глазница
13. пограничный контроль
14. воздушный промежуток
15. код идентификации
16. окружающая ткань
17. подтверждать операции

Exercise 4. Put the given fragments in the right order to form questions.

1. popular / biometric / are / methods / the / what / most / of /authentication /?
.....
2. are / scanners/ where / widely/fingerprint / used/ ?
3. is / to capture / what / a face / used / and / features / identify / of / distinctive/?.....
...
4. scan / does / retinal / how / work / ?.....
5. current/ what / applications/ are / recognition/eye/ of / future/ and/?.....

6. patterns / code / are / compiled / why / into / identification / print / an/?.....
7. scan / how / a / does / retinal / work / ?.....
8. fingerprint/ what / compared / is / scanning/ to ?.....

Exercise 5. Ask your group mate to answer questions from ex.1 and ex.4.

Exercise 6. Translate the sentences into English.

1. Департамент транспортной безопасности объявил о планах использования технологии распознавания лиц во всех аэропортах и терминалах.
2. Многие современные автомобили уже оснащены биометрическим комплектом стартера.
3. Основными стандартами аутентификации в беспроводных сетях являются стандарты IEEE 802.11, WPA, WPA2 и 802.1х.
4. Все последние модели смартфонов оснащены дактилоскопическими сканерами, которые используют не только для повышения безопасности устройства, но и для выполнения ряда других функций.
5. Вы знаете, как проходит процедура подтверждения личности при осуществлении платежа?
6. Некоторые навесные замки со сканером отпечатков пальцев можно открыть дистанционно при помощи специального приложения на смартфоне.
7. Для оформления биометрического паспорта необходимо не только сдать отпечатки пальцев, но и пройти процедуру сканирования сетчатки глаз.
8. Могу ли я предоставить выделенный доступ другим пользователям на Яндекс диске?
9. Механические противоугонные устройства стоят дешевле, чем электронные сигнализации, они проще в установке и использовании.
10. Емкостные сканеры являются сегодня наиболее широко используемыми устройствами для получения изображения отпечатка пальца.

VI. SUPPLEMENTARY READING

Read the text and express your opinion about “Fly to Gate” service. Identify its advantages and disadvantages.

FLY TO GATE

Gemalto, a provider of digital security, and IER, a provider of terminals and air and rail travel networks have teamed to create "Fly to Gate," an end-to-end, self-service airport experience for travelers, according to a press release.

A Fly to Gate departure solution encompasses mobile or fully automated check-in stations, bag drop points, border control, security and boarding gates.

Fly to Gate supports multimodal biometric checking, including facial recognition, document verification and integration with immigration systems. Multimodal biometric checking corresponds to the standards of security and operational efficiency for airports and airlines.

Fly to Gate offers flexibility to meet individual requirements, as well as the potential to make virtually all traveler

handling processes automatic. By putting the passenger in control of their airport experience, the Gemalto/IER approach reduces queuing, as well as the stress and strain associated with air travel.

[Text is adopted from URL: <https://www.secureidnews.com/news-item/self-service-airport-id-and-travel-experience-from-gemalto-ier/>]

Answer the questions based on the text.










1. What self-service will soon appear in the airports?
2. What procedures will it encompass?
3. What security operations will it support?
4. How will it reduce airport stress and strain?



VII. SPEAKING

Exercise 1. Look at the pictures and guess the types of biometric authentication matching the icons and the words from the table.

Retina recognition	Hand geometry	Signature recognition
Face recognition	Authentication	Privacy protection
Voice recognition	DNA matching	Fingerprint recognition

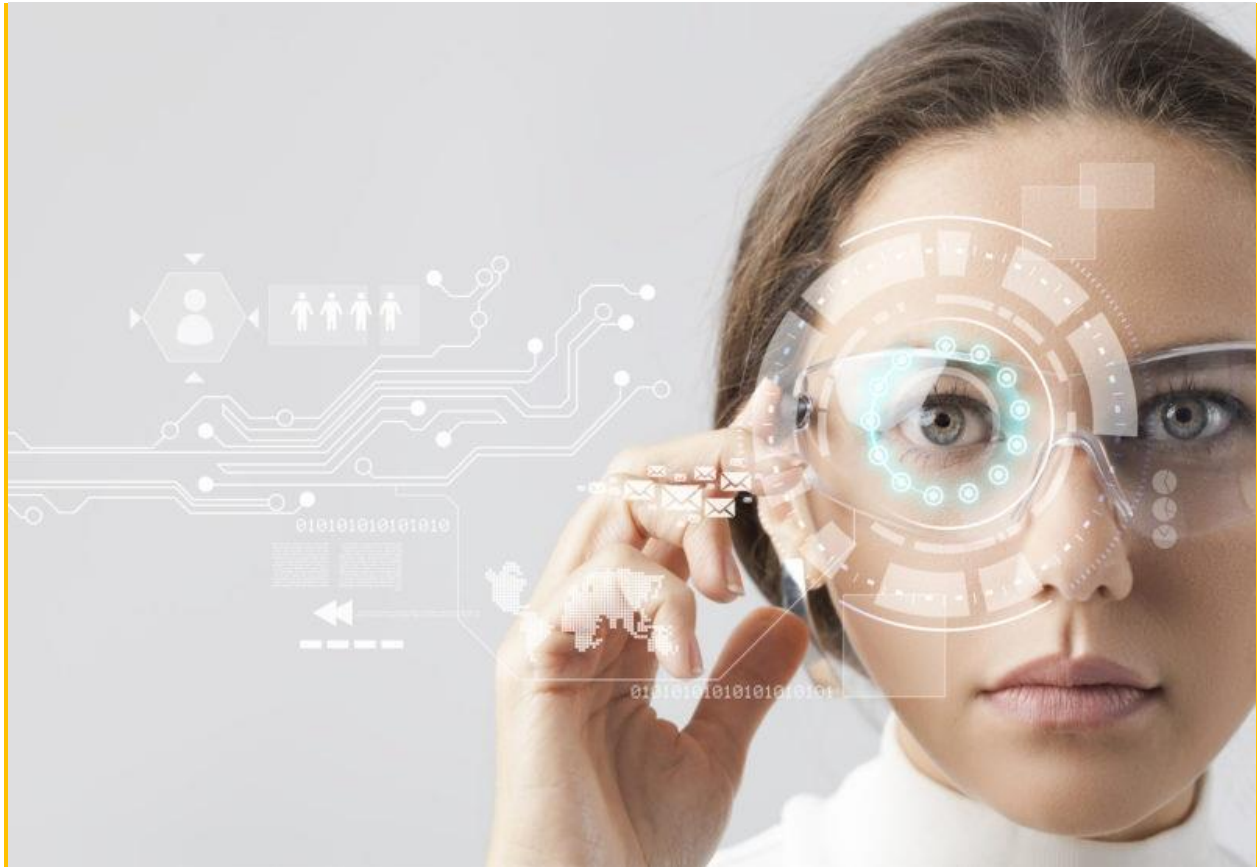
		
		
		

- Work in pairs and speak about the places where these kinds of biometric authentication can be used.
- Which types of biometric authentication are more reliable than others? Give your arguments.
- Share your experience of going through biometric authentication.

Exercise 2. Prepare a presentation about one of the methods of biometric authentication.

UNIT

7



HUMAN ENHANCEMENT

Preview

Answer the questions:

1. How would you like to enhance your mind and body?
2. Do you know any modern technologies used to do that?
3. Can you give any examples of how modern technologies are used to make lives of people with physical disabilities easier?

I. READING



Read and translate the text

YOU ARE ALREADY A CYBORG

Elon Musk says: “You are already a cyborg”. Why? Your smartphone enhances your mind, your **spectacles** enhance your vision, and your **pacemaker** (if you have one) regulates your heartbeat. Our **environment** is increasingly wired, sensor-filled, and digitally connected – and so are we! This trend will only continue.

New marketable applications for advanced technologies are designed to help humans to be stronger, smarter, better-looking and **to cultivate new abilities** that seem like superpowers **by the standards of** the past.

Here is one of the new devices and technologies that could soon enhance you in body and mind: RFID chip.

Microchips are not new, but the practice of routinely implanting them in humans is. Already, biohackers are getting chipped, many of them **undergoing** the **DIY surgery** in tattoo studios. With small radio frequency identification (RFID) chips implanted in their hands or **wrists** these **citizen** cyborgs can already **eliminate** many tedious rituals from their daily lives, like carrying a **wallet** or keys.



The chip can be used **to make tap-and-go payments** and can be programmed to open a home or office door electronically. No more carrying keys down to the beach when going for a swim, and no more jogging with them in your pocket. One Australian biohacker, Meow-Ludo Meow Meow also thinks that chip implants could replace public transport cards.

But that’s just the basics. Chipping could soon be used on a national scale for identification and security. Hacking and **identity theft** will certainly **be a concern**, but **on the plus side** there will be no more **anxiety** about losing your passport when you travel!

Transhumanist candidate for Governor of California Zoltan Istvan has a chip in his wrist to open his front door. The chips can also be used in the workplace. One Swedish office complex Epicenter has already made chipping a voluntary identification option for their employees. The Belgian digital marketing firm NewFusion also began offering implants to staff in 2017.

While the fullest realization of this technology will likely be felt over several decades, it is realistic to imagine we will see these kinds of innovations improving fast and becoming more widely tested and adopted in the decade to come. You will certainly have met someone with a chip implant by 2027 and there's a very good chance you'll have one yourself.

II. NOTES

regulate [ˈrɛɡjələt]	регулировать
heartbeat [ˈhɑːtbi:t]	сердцебиение
increasingly [ɪnˈkriːsɪŋli]	всё более
RFID [ɑːf aɪˈdi], radio frequency identification	радиочастотная идентификация
biohacker [ˈbaɪəʊˈhækə]	биохакер
advanced [ədˈvænst]	продвинутый, развитый
practice [ˈpræktəs]	практика
routinely [ruːˈtiːnli]	повседневно, на регулярной основе
to implant [ɪmˈplænt] a chip	вставить чип, чипировать
implant [ˈɪmˌplænt]	имплантант
human [ˈhjuːmən]	человек
DIY, 'do-it-yourself' [diː aɪ waɪ]	сделанный самостоятельно
tattoo studio [tæˈtuːˈstjuːdi,ʊ]	тату-студия
ritual [ˈrɪtʃuəl]	ритуал
electronically [ˌɪlekˈtrɒnɪkli]	посредством электронных устройств
jogging [ˈdʒɒɡɪŋ]	пробежка
Australian [ɒˈstreɪliən]	австралийский
Belgian [ˈbeldʒən]	бельгийский
Swedish [ˈswɪːdɪʃ]	шведский
basics [ˈbeɪsɪks]	основы
passport [ˈpæs.pɔːt]	паспорт
transhumanist [trænsˈhjuːmənɪst]	трансгуманист
candidate [ˈkændɪdət]	кандидат
governor [ˈgʌvənər]	губернатор
voluntary [ˈvɒləntərɪ]	добровольный
firm [fɜːm]	фирма

III. VOCABULARY

1. enhancement [ɪnˈhɑːns,mənt] human enhancement [ˈhjuːmən]	улучшение, совершенствование расширение возможностей человека
---	--

to enhance one's mind ['maɪnd]	усиливать умственные способности
2. spectacles ['spektəkəlz]	очки
3. pacemaker ['peɪs, meɪkər] Your smartphone enhances your mind, your spectacles enhance your vision, and your pacemaker regulates your heartbeat.	кардиостимулятор Ваш смартфон делает вас умнее, очки улучшают ваше зрение, а кардиостимулятор регулирует сердцебиение.
4. environment [ɪn'vaɪrənmənt]	окружающая среда, окружение
5. to develop new marketable applications New marketable applications for advanced technologies are designed to help humans to be stronger, smarter, better-looking.	разработать новые востребованные на рынке приложения Новые востребованные на рынке приложения новейшим технологиям создаются, чтобы помочь людям быть сильнее, умнее, красивее.
6. to cultivate ['kʌltɪ, veɪt] new abilities	развивать новые способности
7. by the standards ['stændədz] of smth These new abilities seem like superpowers by the standards of the past.	по стандартам чего-л. Эти новые способности кажутся суперспособностями по меркам прошлого.
8. to undergo [ˌændə'ɡoʊ] to undergo a surgery ['sɜ:dʒəri]	переносить, претерпевать перенести операцию
9. wrist [rɪst]	запястье
10. citizen ['sɪtɪzən] citizen cyborg ['saɪbɔ:g]	гражданин гражданин-киборг
11. to eliminate [ɪ'ɪlɪmeɪt] smth. to eliminate a tedious ['ti:diəs] ritual from one's daily life	устранять что-л., избавиться от чего-л. избавиться от утомительной рутины в своей повседневной жизни
12. wallet ['wɒlɪt]	бумажник
13. to make a tap-and-go payment [tæpən'ɡoʊ 'peɪmənt]	производить «оплату в одно касание»
14. to be used on a national scale [skeɪl] Chipping could soon be used on a national scale for identification and security.	использоваться в общенациональном масштабе Чипирование, возможно, скоро будет использоваться в общенациональном масштабе в целях идентификации и безопасности.
15. identity theft [θeft]	кража идентификационных данных

16. to be a concern [kən'sə:n] Hacking and identity theft will certainly be a concern.	вызывать озабоченность Взлом и кража идентификационных данных, безусловно, будут вызывать озабоченность.
17. on the plus side [plʌs saɪd]	плюсом является...
18. anxiety [æŋ'zaiəti] about smth. But on the plus side there will be no more anxiety about losing your passport when you travel!	тревога по поводу чего-л. Плюсом является то, что больше не будет тревоги по поводу утери паспорта во время путешествий!
19. to be adopted [ə'dɒptɪd]	применяться, осваиваться

IV. COMPREHENSIONCHECK

Exercise 1. Answer the questions by choosing the correct variant(s).

1. Why can we be called cyborgs?

- a) Our environment is increasingly wired.
- b) We use various electronic devices to enhance our body and mind.
- c) The trend to use electronics will continue.
- d) We all have wires inside.

2. What is NOT true about the RFID chip implants?

- a) Chipping has been made a voluntary identification option for some employees.
- b) Chipping is already used on a national scale for identification and security in some countries.
- c) There is a chance you will have met someone with a chip implant by 2027.
- d) People with the RFID chip will have no anxiety about hacking and identity theft.

3. What is NOT directly stated in the text?

- a) RFID chips can help people become better-looking.
- b) If your RFID chip is programmed to open your door electronically, there is no more need for jogging with your keys.
- c) RFID implants have replaced public transport cards.
- d) The chip can be programmed to open a car electronically.
- e) Chipping is already used in the workplace by some companies.
- f) Innovations like the RFID chip will be widely tested and adopted in the next decade.

Exercise 2. Answer the questions according to the text:

1. What words are used in the text to speak about our present day environment?
2. How can new technologies help humans?
3. What is an RFID chip?
4. What parts of the human body are RFID chips most often implanted in?
5. Where do biohackers often undergo the DIY surgery?
6. How do RFID chips make life easier for biohackers?
7. Why will people with the RFID chip have no anxiety about losing a passport?
8. What examples of the use of RFID chips in the workplace are given in the text?
9. When will we probably meet someone with an RFID implant?

Exercise 3. Number the titles for the paragraphs, putting them in the correct order:

- ___ Predictions for use of chips in the future
- ___ Advantages and disadvantages of the use of chipping on a national scale.
- ___ Examples of the use of chipping for identification.
- ___ The spread of chipping among biohackers
- ___ The motivation behind the development of many advanced technologies
- ___ Convenient ways to use RFID chip
- ___ The reason we can be called cybermen.

V. EXERCISES

Exercise 1. Give the English equivalents to the following words and expressions:

1. востребованные на рынке приложения _____
2. по стандартам прошлого _____
3. избавиться от утомительного ритуала _____
4. производить «оплату в одно касание» _____
5. развивать новые способности _____
6. использоваться в общенациональном масштабе _____
7. беспокойство по поводу потери паспорта _____
8. перенести операцию _____
9. окружающая среда _____
10. плюсом является _____
11. кража идентификационных данных _____
12. применяться, осваиваться _____

Exercise 2. Match each vocabulary word with its definition. Note that there are more definitions than the words.

- | | |
|--------------------|--|
| _____ wrist | 1: regularly |
| _____ wallet | 2: fear and stress |
| _____ pacemaker | 3: a way to use something |
| _____ application | 4: to walk under ground |
| _____ ritual | 5: surrounding conditions |
| _____ to cultivate | 6: tiring and boring |
| _____ to adopt | 7: to remove something completely |
| _____ citizen | 8: a device to help the heart beat in the right way |
| _____ to undergo | 9: to help grow |
| _____ to implant | 10: part of the body between the hand and the arm |
| _____ to eliminate | 11: to accept |
| _____ anxiety | 12: to have, to experience |
| _____ tedious | 13: to insert |
| _____ environment | 14: a person who lawfully lives in a country |
| _____ routinely | 15: a small case for keeping banknotes and credit cards. |
| | 16: series of actions always done the same way for religious or other reasons |
| | 17: a person with an chip in his body |

Exercise 3. Find the listed words in a word search puzzle. The words are placed vertically, horizontally and diagonally.

Q W B Z Y H Z X I A S J	ANXIETY
C H M C I T I Z E N S N	CITIZEN
O L W K Z O E Y C E P M	CONCERN
N J P A H U Y I T K E B	CULTIVAE
C G S W U E L A X R C I	ELIMINATE
E N V I R O N M E N T U	ENVIRONMENT
R E T A V I T L U C A N	PACEMAKER
N M E Z M Y S I I X C D	SPECTACLES
C O L I Y O V T L C L E	SURGERY
S Q L P A C E M A K E R	UNDERGO
C E A Z Y R E G R U S G	WALLET
X Y W A I X C J W P G O	WRIST

Exercise 4. Translate the sentences into English.

1. Эта технология была освоена совсем недавно.
2. Этот проект будет принят в общенациональном масштабе.
3. Если у тебя нет наличных в бумажнике, это не должно быть предметом беспокойства: ты можешь производить оплату в одно касание банковской картой.
4. Положительный момент в том, что кража идентификационных данных будет невозможна.
5. По стандартам прошлого, искусственный интеллект – это невероятно продвинутая технология.
6. Чтобы развить новые способности, некоторые биохаkers переносят несколько медицинских операций.

VI. SUPPLEMENTARY READING

1. Answer the following pre-reading questions:

- ✓ What sci-fi books or films do you know which are about enhancing the human mind or body? What improvements are suggested? Do you think such enhancements are possible to achieve in the near future?
- ✓ What weaknesses of the human body would you eliminate if you could?

2. Read the text. Note the pronunciation of the following words:

exoskeleton [ˌeksouˈskelətən] – экзоскелет

tissue [ˈtɪʃuː] [ˈtɪʃjuː] – ткань

endurance [ɪnˈdʒʊərəns] – выносливость

spinal cord injury [ˈspaɪnəl kɔːd ˈɪndʒəri] – травма позвоночника

recreation [ˌrekriˈeɪʃən] – отдых, развлечение

EXOSKELETONS



The Terminator was “a cybernetic organism: living tissue over a metal endoskeleton.” But that was in 1984 and the concept was fictional. Jump ahead to the 2020s and *you* could be a different kind of cyborg – one that wears a metal *exoskeleton* over your biological body.

Why would you? If you’re in the military, particularly in combat, an exoskeleton can dramatically enhance your strength and endurance and allow you to carry more supplies when moving on foot.

If you're just a regular human, then carrying supplies is probably not a big concern. But back pain likely is. Sure, an exoskeleton may not help an office worker much, but it could be a big help to factory workers and manual laborers. In the near future exoskeletons could help laborers to use the correct muscles when lifting and allow them to lift more weight safely.

More profoundly, if you suffer from spinal cord injuries an exoskeleton could help you to walk again. Elderly people with mobility issues could also benefit from the technology.

The transhumanist politician Zoltan Istvan also thinks that exoskeletons could soon transform sport and other forms of recreation by helping us to reach new physical peaks and compete at a different level.

[Text is adapted from <https://bigthink.com/10-human-body-modifications-you-can-expect-in-the-next-decade/>]



Paralyzed from the waist down, Steven Sanchez walks with the aid of an exoskeleton. Image credit: MIT Technology Review/SuitX

1. What ideas does this text NOT discuss? (Choose one or more answers)

- a) Exoskeletons can give people back pain.
- b) Exoskeletons will allow you to walk longer without getting tired.
- c) Exoskeletons can help teach little children how to walk.
- d) Sports competitions will be different if sportsmen use exoskeletons.

2. What is TRUE about exoskeletons? (Choose one or more answers)

- a) Exoskeletons consist of living tissue.
- b) After wearing an exoskeleton for a while a person becomes stronger.
- c) Office workers do not need exoskeletons as much as factory workers do.
- d) Exoskeletons could help some old people to move around more.

3. What is the best title for paragraph 3?

- a) Back pain in different working environments.
- b) The benefits of exoskeletons for manual workers.
- c) How regular office workers can get help carrying supplies.
- d) A big concern about safety.

4. What 5 categories of people mentioned in the text can benefit from exoskeletons? _____, _____, _____,

_____.

5. What other categories of people can exoskeletons benefit? In what way would exoskeletons be beneficial for them?

VII. SPEAKING

Exercise 1. Among other things, transhumanists want humans to live longer lives. Do you think everyone will want to use new technologies to be able to live for 150 years? How will our lives change if this becomes possible?

Exercise 2. What questions would you ask a biohacker if you had a chance to interview one? Prepare a list of questions, then act out an interview with one of your classmates playing the role of a biohacker.

Exercise 3. Prepare a presentation on one of human body modifications expected in the next decade. Here are some possible topics:

- ✓ Bionic Vision
- ✓ Augmented Vision
- ✓ Smart Contact Lenses
- ✓ 3D Printed Body Parts
- ✓ Brain-computer Interfaces
- ✓ Dating in Virtual Reality

Exercise 4. Do you think the technologies listed in Exercise 3 can be hacked? Describe some of the possible scenarios showing how an unauthorized access to technologies enhancing human body and mind can be dangerous.

Exercise 5. Watch a video “Hacking Implanted Medical Devices”. Note the meaning of the following words:

defibrillator [di: 'fibrileitə] – дефибрилятор

cardiac arrest – остановка сердца

hearing impaired – человек с полной или частичной потерей слуха

hearing aid – слуховой аппарат

cochlear ['kɒkliə] implant – кохлеарный имплантант

skull – череп

auditory nerve – слуховой нерв

exploits – вредоносный код, эксплуатирующий уязвимость ПО

grand mal seizures – приступ эпилепсии

After watching the video, answer the following questions:

- 1. Which type of devices is not mentioned by the speaker?**
 - a) Wearable
 - b) Embeddable
 - c) Invincible
 - d) Implantable

- 2. How does each of these devices function?**
 - a) cochlear implant;
 - b) diabetic insuline pumps;
 - c) Internet-enabled defibrilator.

- 3. What possible scenarios of hackers' attack does the speaker give for each of the following devices:**
 - a) cochlear implant;
 - b) diabetic insuline pumps;
 - c) Internet-enabled defibrilator.

- 4. What is the speaker's explanation of the reason for possible hacking attacks?**

- 5. What other reasons for hacking various implanted devices can you think of?**

- 6. Do you think these body implants should be used even though they are potentially dangerous? Explain.**

5 Tips on How to Make a Great Presentation

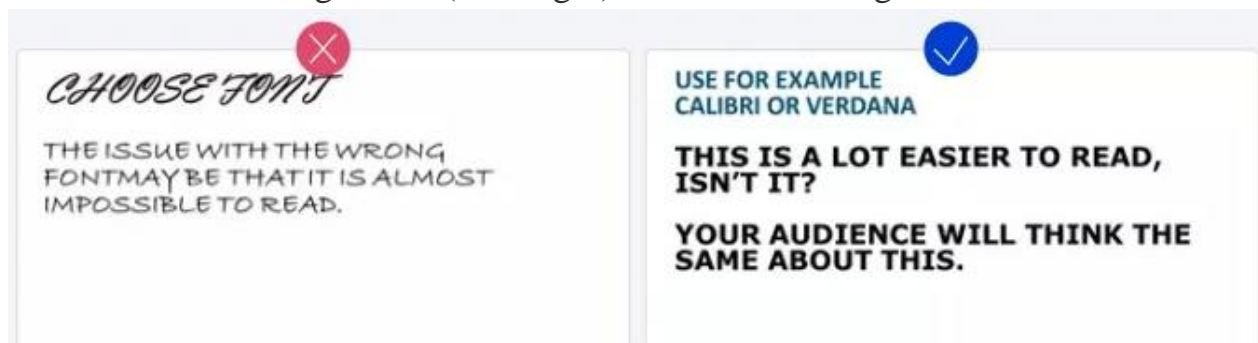
1. Keep the text on the slide short and to the point.

- Follow **5x5 rule**: you should have a maximum of 5 text lines on a slide with no more than 5 words in each. Use key points instead of full sentences.



2. Choose the appropriate font

- Choosing the wrong font can easily make your text unreadable to your audience. Try to pick a classic font available on all computers.
- Use sans serif fonts and 32 point font size for text. Anything smaller is difficult to read.
- Make important lines of text and facts look bigger, bolder, and brighter than the others.
- Use contrasting colors (dark/light) for text and background.



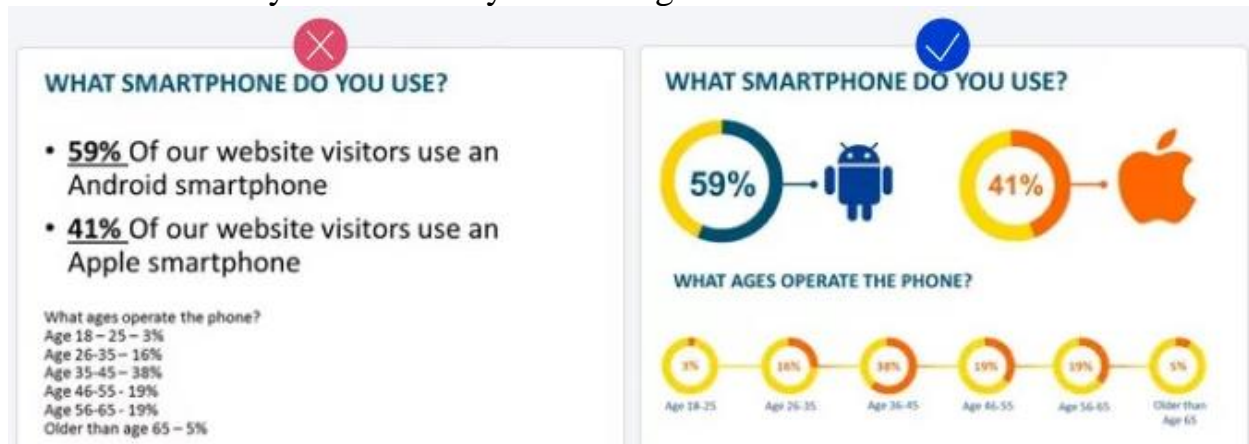
3. Use good quality images

- Images should reinforce and complement your message. They should be impactful, not space-fillers. Empty space on the slide will actually enhance readability. Don't clutter the slide with images unless they add value.

4. Present data visually as much as possible

- Whenever your presentation contains a lot of data, it's better to use visual formats to communicate this data instead of just using text.

- Use various graphs and charts.
- For example, pick the doughnut graph to show your percentages in the middle of the graph (see the picture below). That way, your audience immediately understands your message.



!!! Remember that older versions of Windows may not support video or audio playback in a PowerPoint presentation or complex transitions from slide to slide, so if you want to make a fancy presentation, make sure you have the software needed to present it to the class.

5. Structure your presentation

The general structure of a presentation has an **introduction**, a **main body**, and a **conclusion**.

1) In the **introduction** to your presentation, you need to:

- **greet** the audience;
- **introduce yourself** and the **topic**;
- **arouse interest** – ask a question, tell a story;
- state the **purpose** of the presentation;
- outline the **structure** of the presentation – tell them what you are going to tell them;
- **optional**: include a slide where you **provide definitions and/or translation of key terms and concepts**.

2) In the **body** of your presentation arrange your points in a logical order and then provide information to support each of them. Practice your speech at home to make sure:

- you know how to pronounce all the words correctly;
- you know how long it will take to do the presentation in class.

3) A good **conclusion** includes:

- **Summary**. List what goals your audience have achieved, what knowledge they got, and tell how this information can help them in the future.
- **Thank** your audience for viewing the presentation.

TEST ON UNITS 1-3

I. Choose the correct translation of the word or expression (40 points):

1. относиться к чему-то, отсылать
a) to gain b) to comprise c) to intertwine d) to refer
2. вероятное событие
a) outcome b) event c) snapshot d) effort
3. слишком трудоемкий
a) pure b) overwhelming c) comprehensible d) vast
4. шаблон
a) pattern b) volume c) snapshot d) range
5. отдельно взятый, определенный
a) tedious b) repetitive c) likely d) particular
6. продвижение
a) range b) velocity c) promotion d) beyond
7. кредит
a) credit b) loan c) promotion d) outcome
8. вероятность
a) may b) will c) likelihood d) revenue
9. на всём протяжении
a) throughout b) beyond c) broad range d) estimatingly
10. хранилище
a) loan b) account c) vault d) scoring
11. breach
a) нарушение b) ограничение c) извлечение d) отслеживание
12. account
a) степень b) счет c) доступ d) хранилище
13. value
a) строка b) счет c) объем d) значение
14. string
a) строка b) ярлык c) мера d) значение
15. beyond
a) продвижение b) за рамками c) внутри d) на всём протяжении
16. revenues
a) расходы b) доходы c) затраты d) вероятности
17. snapshot
a) шаблон b) снимок c) спектр d) темп
18. effort
a) усилие b) событие c) сумма баллов d) ограничение
19. volume
a) объем b) диапазон c) прогресс d) достижение
20. to keep track
a) отслеживать b) залогировать c) извлекать d) сохранять целостность

II. Fill in the blanks with the appropriate vocabulary word (30 points):

1. Companies that know how to pragmatically use big data are able to ____ the future.
a) intertwine b) predict c) double d) coin
2. The _____ of data is unstructured.
a) loan b) credit scoring c) advances d) majority
3. Big data _____ all the varieties of data.
a) determines b) incorporates c) doubles d) coins
4. _____ in processing power and speed have enabled us to move to automated data analysis.
a) constraints b) costs c) advances d) score
5. The term "data mining" wasn't _____ until the 1990s.
a) coined b) sifted through c) intertwined d) estimated
6. The volume of data produced is _____ every two years.
a) coined b) incorporating c) reduced d) doubling
7. The _____ of tokens is that if they are breached, they have no meaning.
a) disadvantage b) advantage c) vault d) measure
8. The token is _____ to the vault to retrieve the real value for use in the authorization process.
a) submitted b) retrieved c) breached d) reduced
9. The problem of protecting personal data is _____ to the problem of protecting cryptographic keys from unauthorized access and use.
a) submitted b) retrieved c) breached d) reduced
10. Only authenticated users should get access to _____ resources.
a) corrupted b) aware c) breached d) encrypted

III. Translate the sentences with emphatic constructions (15 points).

1. It is not impossible to sift through all the repetitive noise in your data.
2. It's not unusual anymore for organizations to store multiple petabytes of data.
3. It is not infrequent that important hidden connections are discovered through data mining.
4. This did have the undesirable effect of missing important events.
5. Knowing how to pragmatically use big data does help to gain new insights.

IV. Translate the sentences using *emphatic constructions* and vocabulary words (15 points).

1. Средства, которые *всё же* существовали, были сложны в использовании и не позволяли получить результат в приемлемые сроки.
2. Объемы больших данных *действительно* достигают невероятных размеров.
3. Биг дата *действительно* включает в себя всё многообразие данных.

FINAL LEXICAL TEST

I. Choose the correct synonym or definition for each word (20 points).

1. roughly:
a) very little b) logically c) small amount of d) not exactly
2. velocity:
a) probability b) a little bit of c) rare situation d) rate
3. majority:
a) most b) smaller part of c) argument d) military officer
4. ingest:
a) charge b) spoil c) eat d) encounter
5. incorporate:
a) improve b) break apart into tiny pieces c) exclude d) integrate
6. incomprehensible:
a) self-destructive b) difficult to mentally process c) clear d) understandable
7. predict:
a) try new things c) describe a possible future event
b) to tell something to an enemy d) test ideas scientifically
8. retrieve:
a) reject b) get back c) eat d) spend
9. vast:
a) to spread b) enormous c) clothing without sleeves d) computer virus
10. pure:
a) fresh b) tough c) food for babies d) clean

II. Fill in the blanks with the appropriate vocabulary word (30 points):

1. _____ is the “cloud” part of a cloud technologies architecture, comprising all the resources required to deliver cloud-technologies services.
a) front-end b) back-end c) scalable environment d) web-enabled client device
2. _____ refers to the delivery of the cloud service over the Internet by a third-party cloud service provider.
a) private cloud b) public cloud c) scalable environment d) on-premises cloud
3. _____ means that public cloud service providers can share their underlying hardware infrastructure between numerous customers.
a) private cloud c) scalable environment
b) multi-tenant environment d) on-premises cloud
4. Security remains _____ for businesses.
a) a likely outcome c) login credentials
b) intertwined discipline d) a primary concern
5. The process of retrieving information and rules for using it is called _____.
a) enhancement b) learning c) artificial intelligence d) automation

6. The simulation of human intelligence processes by computer systems is called __.
- a) human intelligence c) unsupervised intelligence
b) artificial intelligence d) reinforcement teaching
7. A retinal scan illuminates the complex blood _____ in a person's eye using infrared light, making them more visible than the surrounding tissue.
- a) iris b) tissues c) vessels d) channels
8. Using automated data analysis can reduce _____ and complex manual calculations and improve the accuracy of the results.
- a) public b) private c) hybrid d) tedious
9. Uninstalling an important application can _____ your computer's operation.
- a) affect b) intertwine c) retrieve d) ingest
10. With the growing use of information technology and the recent _____ in web systems, the amount of data available to users has increased exponentially.
- a) loans b) front-end c) advances d) login credentials
11. Data mining can help produce personalized advertising and geographically targeted _____.
- a) strings b) degrees c) values d) promotions
12. A database which stores the relationship between the sensitive value and the token is known as a _____.
- a) token b) tokenization c) token vault d) encryption key
13. A value that is applied using an algorithm to a plain text to produce encrypted text is known as _____.
- a) token b) encryption key c) cyphertext d) encryption practice
14. The practices of protecting cryptographic keys from unauthorized access and use are called _____.
- a) encryption practices c) token vault
b) decryption practices d) key management practices.
15. A combination of public cloud services and an on-premises private cloud, with orchestration and automation between them is known as _____.
- a) front-end b) back-end c) hybrid cloud d) scalable environment

III. Choose the correct translation of the word or expression (50 points):

1. иметь дело с к-л., ч-л
- a) to encounter b) to undergo c) to expand d) to retrieve
2. получать счет за что-л.
- a) to encounter b) to charge for c) to deliver d) to be billed for
3. радужная оболочка глаза
- a) iris b) retina c) spectacles d) tissue
4. предъявить
- a) to ingest b) to retrieve c) to submit d) to predict
5. отличительный
- a) distinctive b) vast c) plain d) tedious

6. тревога
a) anxiety b) enhancement c) conformance d) pace
7. запястье
a) vessel b) range c) chin d) wrist
8. диапазон
a) likelihood b) outcome c) event d) range
9. ограничение
a) range b) enhancement c) constraint d) beyond
10. вводить в обращение
a) to estimate b) to determine c) to charge d) to coin
11. to eliminate
a) развивать b) переносить c) устранять d) охватывать
12. to comprise
a) развивать b) переносить c) устранять d) включать
13. to take advantage of
a) поставлять b) брать оплату с c) стать лучше d) воспользоваться
14. to maintain
a) поддерживать b) получать счет c) включать d) переносить
15. particular
a) отдельный b) известный c) промежуточный d) окончательный
16. to gain prominence
a) завоевать известность c) получить четкую картину происходящего
b) приобрести клиентов d) обнаружить преимущество
17. circumstance
a) сходство b) обстоятельство c) среда d) совпадение
18. similarity
a) сходство b) обстоятельство c) среда d) подкрепление
19. to be bound
a) получать счет b) заботиться c) быть связанным d) сравнивать
20. to perform
a) захватывать b) отличаться c) поддерживать d) выполнять
21. enhancement
a) поддержание b) улучшение c) окружение d) обстоятельство
22. approach
a) подход b) доказательство c) развитие d) улучшение
23. signature
a) тревога b) авторизация c) подтверждение d) подпись
24. concern
a) запястье b) общение c) совпадение d) озабоченность
25. pacemaker
a) датчик скорости c) кардиостимулятор
b) производитель ПО d) трансгуманист

Afterword

Dear students! We hope that this textbook has helped you to acquire more knowledge of the English language in the IT sphere which will allow you to grow further in your ability to understand and perform communication in the field of your professional interests. The acquisition of this knowledge will help you to understand educational and professional video and audio content on various Internet platforms, further research such topics as Data Mining, Data Security and Artificial Intelligence. You will also be able to get into conversation with other IT specialists, to discuss state-of-the-art developments in IT sphere with people all over the world. Make sure to continue actively using English language resources to enhance your personal and professional life!

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Appendix I

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