1. **New Technology Extracts Oxygen and Fuel from the Waters of Mars, Brings Colonisation a Step Closer**

**Currently, the only way to make oxygen and hydrogen (used for breathing and fuel, respectively) from the salty water found on Mars is by way of electrolysis – a process that is not only expensive, but would also be difficult to perform on the planet’s surface.**

And yet, the methods of electrolysis are not all the same. **Case in point, researchers at Washington University in St Louis have recently developed a simplified and less costly version of electrolysis, capable of performing well under regular terrestrial conditions, as well as conditions similar to those prevailing on the Red Plant itself.**

“Our Martian brine electrolyser radically changes the logistical calculus of missions to Mars and beyond. **This technology is equally useful on Earth where it opens up the oceans as a viable oxygen and fuel source,” said Vijay Ramani of Washington University.**

**The new system could help researchers overcome a key obstacle to crewed missions to Mars, namely – the necessity of producing oxygen and fuel on-site.**And since both public and private space agencies are considering the possibility of eventual colonisation, this issue will only become more relevant as time goes on.

**According to Ramani, the technique developed at his lab can produce 25 times more oxygen than the Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE) suite aboard NASA’s Perseverance rover scheduled to land on Mars on 18 February 2021, while using the same amount of power.**

**In addition, the system is capable of producing hydrogen that could be used to fuel the trip back to Earth, which would significantly cut down on costs and simplify the operation, while also making space missions within the Solar System more viable in the process.**

The high performance of the novel brine eletrolyser comes down to a lead ruthenate pyrochlore anode developed by the team in conjunction with a platinum on carbon cathode, as well as the optimal use of traditional electrochemical engineering principles.

“Paradoxically, the dissolved perchlorate in the water, so-called impurities, actually help in an environment like that of Mars,” said joint first author Shrihari Sankarasubramanian.

**“They prevent the water from freezing and also improve the performance of the electrolyser system by lowering the electrical resistance.” Beyond applications for space travel, the system could also be used for producing oxygen on submarines and during deep sea exploration.**

**2.Artificial inteligense**

**Artificial Intelligence refers to the intelligence of machines. This is in contrast to the natural intelligence of humans and animals. With Artificial Intelligence, machines perform functions such as learning, planning, reasoning and problem-solving. Most noteworthy, Artificial Intelligence is the simulation of human intelligence by machines.**It is probably the fastest-growing development in the World of technology and innovation. Furthermore, many experts believe AI could solve major challenges and crisis situations.

**Applications of Artificial Intelligence First of all, AI has significant use in healthcare.**Companies are trying to develop technologies for quick diagnosis. Another excellent healthcare technology is IBM Watson.

**Artificial Intelligence in business would significantly save time and effort.**There is an application of robotic automation to human business tasks. Chatbots provide immediate response and service to customers.

AI can certainly make education more efficient. AI technology can discover the needs of students. Then it can adapt according to their needs. AI tutors provide study help to students. Also, AI can automate grading which results in saving a lot of time.

AI can greatly increase the rate of work in manufacturing. Manufacture of a huge number of products can take place with AI. Hence, a lot of time and effort is saved.

**Artificial Intelligence has applications in various other fields.**These fields can be military, law, video games, government, finance, automotive, audit, art, etc. Hence, it’s clear that AI has a massive amount of different applications.

**To sum it up, Artificial Intelligence looks all set to be the future of the World.**Experts believe AI would certainly become a part and parcel of human life soon. AI would completely change the way we view our World. **With Artificial Intelligence, the future seems intriguing and exciting.**

**3.My favourite game**

Dota 2 is an Action RTS game, developed by Valve Corporation.

Dota 2 is an RTS-styled MOBA-type competitive team game with RPG elements. Two competing teams (Radiant and Dire) consist of five players each. The main objective in Dota 2 is to destroy the enemy Ancient inside their stronghold. These strongholds are protected by multiple towers down 3 lanes. **Instead of building armies of units like in classical RTS games, each player controls a single Hero, a strategically-powerful unit with unique abilities and characteristics which can be improved over the course of the game. Experieёёnce is earned when nearby creeps and heroes die, and once collecting enough experience, the hero gains a level, which increases the hero's stats, and at most levels the hero gains a skill point which can be spent to unlock or upgrade one of the hero's abilities. Alongside a hero's fixed abilities, each hero has 6 inventory slots which can be filled with Items which provide various benefits and abilities.**To purchase these items, Gold is gained passively over time, by killing creeps, by killing enemy heroes and by destroying buildings.

Dota 2 has a heavy emphasis on tactics and team co-ordination, and a deep amount of strategy focused on building up strength as fast as possible, optimal itemization, and selecting what order to upgrade your hero's spells.

**4. Computer viruses**

**A computer virus is a software program designed to interfere with the normal computer functioning by infecting the computer operating system (Szor, 2005). These viruses have the capability of spreading from one computer to another.**They are also capable of multiplying.

**These viruses can spread from one computer to another through an internet connection and sharing of floppy disks, flash discs and any other external and portable device that can transfer data from one machine to another.**

**The virus programs are not-self generated within a computer system.**However, they are designed and produced by computer hackers.

**In addition, downloading files from unsecure sources allows viruses to gain access to a computer. Viruses can also be hidden within some software. For instance, during software installation, viruses are allowed to infiltrate into computer files.**

Viruses have become a major challenge to several companies across the world. **However, some measures can be taken to regulate the spread of these computer viruses. For instance, the use of an updated antivirus program sourced from a reputable vendor offers computer protection against most.**

**It is also possible to erase crucial information from hard disc drives using viruses. This information may be data collected from a crime scene, banking records, confidential files, and even important government files . The use of viruses can manipulate important computer information such as bank records resulting into an individual accessing vital and confidential records.**The development and use of viruses has always been aimed at committing crime either directly or indirectly.

**5. Cyber security**

**Protection of networks, data, programs, and other sensitive information from unauthorized access, change, and destruction is known as cyber security. Cyber security is a major concern in this era where the use of computers has become ordinary for everyone.**With the development of technology and the internet’s availability to most of the public, the pathway of cyber crimes has also increased.

Malware, spyware, ransomware, fraud, phishing, etc. are the different types of viruses used in a cyber-attack. **Hackers gains access to someone’s computer systems easily if the user of that computer clicks on infected web pages, links, malicious websites, or unintentionally downloads a dangerous program. Cyber security plays an important role in preventing some difficult and heinous crimes like blackmailing, fraud transactions through another account, leakage of personal information.**

**It is the responsibility of every citizen to spread awareness among everyone and keep their system and network security updated to prevent cyber attacks from happening worldwide.**

**6. In the beginning**

For thousands of years, humans have needed to count. **Families needed to know how many animals, how much food and how much land they had.**This information was important when people wanted to buy and sell things, and also when people died or got married. **There were many different ways to count and write down the numbers. The Sumerians had three different ways: they used one for land, one for fruit and vegetables and one for animals. They could count, but they had no easy way to do calculations.**

**Around 1900 to 1800 ВС, the Babylonians invented a new way to count which used place values.**This meant that two things decided the size of a number: the digits and their position. Today, we still use place values to count. We can write any number using only ten digits (0-9): for example, 134 means 1 x 100, 3 x 10, and 4x1.

Between 1000 and 500 ВС, the Babylonians invented the abacus. **It used small stones which they put in lines.**Each line of stones showed a different place value. To do calculations they moved stones from one line to another.

Although an abacus can be very fast, it is not really a machine because it does not do calculations automatically. **In the seventeenth century, people began to build calculating machines. In 1640, the French mathematician Blaise Pascal made an Arithmetic Machine.**He used it to count money. **During the next ten years, Pascal made fifty more machines.**

**In the 1670s, a German called Leibnitz continued Pascal's work and made a better machine. Leibnitz's machine was called the Step Reckoner It could do more difficult calculations than Pascal's Arithmetic Machine. Interestingly, Leibnitz's machine only used two digits (0 and 1) for doing calculations - just like modern computers! In fact, calculating machines like Leibnitz's Step Reckoner were used for the next three hundred years, until cheap computers began to appear.**

**7.getting the message**

**Although the first email message was sent in 1971, electronic messages began nearly two hundred years earlier. Telegraph machines used electricity to send messages along wires from one place to another.**The first telegraph machine was built in 1774. But for the next sixty years, the machines were very large and difficult to use, In the 1840s, an American inventor called Samuel Morse built a better kind of telegraph which only needed one wire. He also invented a special code for messages - Morse Code.

In the 1920s, a new kind of electronic message was invented - the telex. **A telex machine could send a message to any other telex machine in the world.**They did not use telephone or telegraph wires -they used telex lines.

In the 1980s, people began to buy personal computers. **Soon, it was possible to send email messages from one PC to another, but both people had to be part of the same email system. There were several different email systems, and it was not possible to send messages from one system to another.**For this reason, emails did not immediately become popular. In the 1990s, people began to use the Internet and the Web. **This made it easier to send email messages because there was only one system. Emails soon became a very popular (and very cheap) way to send messages to anywhere in the world. later people started to send another kind of electronic message: they used their mobile phones to send text messages. Now they could send or receive messages in any place any time.**

Text messages use their own kind of language. **Long text messages are not easy to send or read, so people find ways to make them shorter.**

For example, when you write a message in English, you can write “RUOK?” (Are you OK?),

**8. the future (prediction about computers)**

Today there are hundreds of millions PCs in homes all around the world. **It is not easy to make predictions about computers!**You can only look at the recent past and try to see where we are going in the future. **Since the first computers were built, they have become smaller and more powerful every few years. Will computers get smaller and smaller in the future? Probably not, for two reasons, firstly, by the year 2020 the transistors on computer chips will be as small as possible. Secondly, a verу small personal computer is difficult to use (and easy to lose). At the moment, it is possible to build a computer which you can put in your pocket, or wear like a watch, perhaps this is as small as we need.**

**There are still many things which are very easy for humans but very difficult for computers: for example, understanding language. Some computers can understand words when a person speaks, but they cannot really have a conversation - they can only follow instructions.**However, this kind of software is getting better every year. **Soon, we will probably be able to talk to a computer in the same way that we talk to a friend. Most people think that computers will do many different jobs in the world of the future - perhaps they will drive taxis or work in shops. But to do these jobs, they will need to see and understand the world around them.**

**Moore's Law says that the number of transistors on computer chips doubles every eighteen months. This has been true for the past thirty years but bу about 2020 we will have the smallest transistors possible. Then a new kind of computer will be necessary. At the moment, scientists are building the first quantum computers. In the future, these will be much faster and more powerful than any computer that we have now. Or perhaps a different kind оf a computer will appear before then. That is why it is difficult to make predictions about the future of computing: the future is often closer than you think it is.**

**9. the first computers**

The word 'computer' used to mean a person, not a machine. **In the nineteenth century, builders and technicians needed to know the answers to very difficult calculations in order to do their work.**They did not have the time to do these calculations themselves, so they bought books of answers. **The people who did the calculations and wrote the books were called computers.**

**In the 1820s, a British mathematician called Charles Babbage invented a machine that did very difficult calculations automatically. He called his machine a Difference Engine. He began to build his machine, but he did not finish it because he had a better idea. (Babbage never finished anything - he always had a better idea and started working on something new.) In fact, more than a hundred and fifty years later, some technicians from the Science Museum in London built Babbage's Difference Engine.**It is still in the museum today. The machine weighs about three tonnes, and it is nearly two metres tall and three metres wide. **Babbage did not finish making the Difference Engine because he started work on a machine called an Analytical Engine.**The Analytical Engine could do more: for example, it had a kind of memory. **This meant that it was possible to write programs for it, building on each answer and doing more and more difficult calculations.**For this reason, the Analytical Engine is often seen as the first real computer. **However, Babbage never finished building this machine either!**

A woman called Ada Lovelace worked with Babbage. She was the daughter of Lord Byron, a famous English writer. Ada was an excellent mathematician and understood Babbage's ideas (most people did not). **She knew that she could do amazing calculations with the Analytical Machine, and she wrote a program for it. Although the machine was never built, Ada Lovelace was still the first computer programmer in the world.**

Babbage's ideas were ahead of their time. **Slowly, over the next one hundred years, inventors began to build better calculating machines.**One of the best inventors of the 1930s was a German called Konrad Zuse. In 1938, he built his first machine, the Zl, in his parents' living room in Berlin. **His later machines, the Z3 and Z4, were like modern computers in many ways.**They used only two digits (0 and 1) to do all the calculations. **Also, Zuse wrote programs for his machines by making holes in old cinema film. When he put the film through the machines, they could 'read' the programs and do very long and difficult calculations.**

**10. the paperless office**

**Stephanie Breedlove and her husband founded Breedlove & Associates 16 years ago to help families who hire a nanny with the crushing burden of paperwork that this entails.**There are pay stubs to be sent, federal and state tax returns1 to be filed, pay schedules2 to be updated and other trails of exceedingly boring paper. **Much of the firm’s small office in Austin, Texas, is taken up by 100 paper-filled filing cabinets. An office manager spends 25 hours a week shuffling paper between desks and drawers. At peak times the office becomes “a sea of paper”, with colour-coded stacks3 on conference tables, floors and chairs.**With luck, this will soon be a thing of the past. **Last year Breedlove decided to go paperless.**It is now about halfway there, says Ms Breedlove. **The constant flow of information between Breedlove and its clients now goes via e-mail, with forms attached as PDF files.**The next step is to roll out an online service so that clients can log on to manage their accounts. **Only the Internal Revenue Service still insists on paper for some things but even it claims to be going electronic soon.**Fewer trees will die and less ink will be squirted, but that is not her primary motivation, she says. **It is that everyone — clients and staff — is sick of paper. The clients tend to be young, middle-class families with toddlers; they are good with technology and already pay bills online, use e-tickets on planes, e-file their tax returns and Google recipes rather than using cookbooks. And Breedlove’s 16 employees are in their 20s, native to Facebook and instant-messaging and baffled by the need for paper.**Now everybody is happier. **Next year the firm expects to be completely paperless.**A decade ago this scenario was brought up only in sardonic jokes. **Instead of the paperless office promised by futurists, offices and homes seemed to be drowning in more paper than ever.**In the digital era people were exchanging much more information, but neither technology nor behaviour had caught up. They were printing e-mails for archiving and Word documents for marking up by hand. **But as it turned out, that was the very year when demand for office paper began declining. Office workers in rich countries will reduce their consumption of paper year for the foreseeable future. Older people still prefer a hard copy of most things, but younger workers are increasingly comfortable reading on screens and storing and retrieving information on computers or online. As new generations of office workers leave university — where their class notes and syllabuses are online these days — they take their habits with them.**They like digital information because it reduces clutter . It can be “tagged” and thus filed into many folders instead of just one physical file. It can be searched by keyword. It can be cut, pasted and remixed. It allows for easier collaboration, through features such as “track changes”. It can be shared across an ocean as easily as across a desk. Increasingly, it resides in the Internet “cloud” and can be accessed from anywhere, not just in the office. By contrast, paper tends to get torn, stained, burnt, soaked and lost. **Information thus appears to be becoming paperless roughly as transport has become horseless.**When cars came along, the number of horses in America dropped at first, but the number is now roughly back to where it was in the late 19th century. As a share of the trips people take, horses have become insignificant. But they are thriving for special occasions and sport. Paper, too, has a future — for the fine copy of the “Iliad”, the women’s fashion magazine and the memorable certificate. But nobody, least of all the staff at Breedlove, will shed a tear for those stacks of tax forms on the carpet.

**11.the liquefaction of hardware**

Imagine a personal computer that has two souls: One moment it is your work machine, then it becomes an entertainment centre.

Thanks to a process called “virtualisation”, such computers are now being created, and if this process continues , it will change computer radicaly.

To make better use of the virtualization they were sometimes split into smaller “virtual machines”

Today “virtual disks ” began to gain popularity, because thank to them even large files can take only seconds to upload if they already exist somewhere on one these firms’s disks.

The virtualization of PCs is now under way, many organizations begin to work with virtualized PCs.

In the long run, smartphones and other mobile devices may also become shells to be filled as needed.

There is certainly no lack of demand in virtualization, because it lowers costs by enabling firms to make better use of their servers and buy fewer new ones.

The virtualization of servers is well understood, but for PCs and mobile devices the technique has yet to mature.

Still, analysts believe virtualization will win out.

Moreover, virtualisation makes it much easier to add new servers or storage devices.

A “bring your own computer” or “BYOC” movement has already emerged in America. Companies pay their employees a stipend, which they can use to buy any PC they want — even an Apple Mac.

At the same time more and more “digital natives” enter the workforce. They have grown up with the freewheeling Internet and do not suffer boring black corporate laptops gladly. Giving workers more freedom while helping firms keep control may prove to be the biggest benefit of virtualization