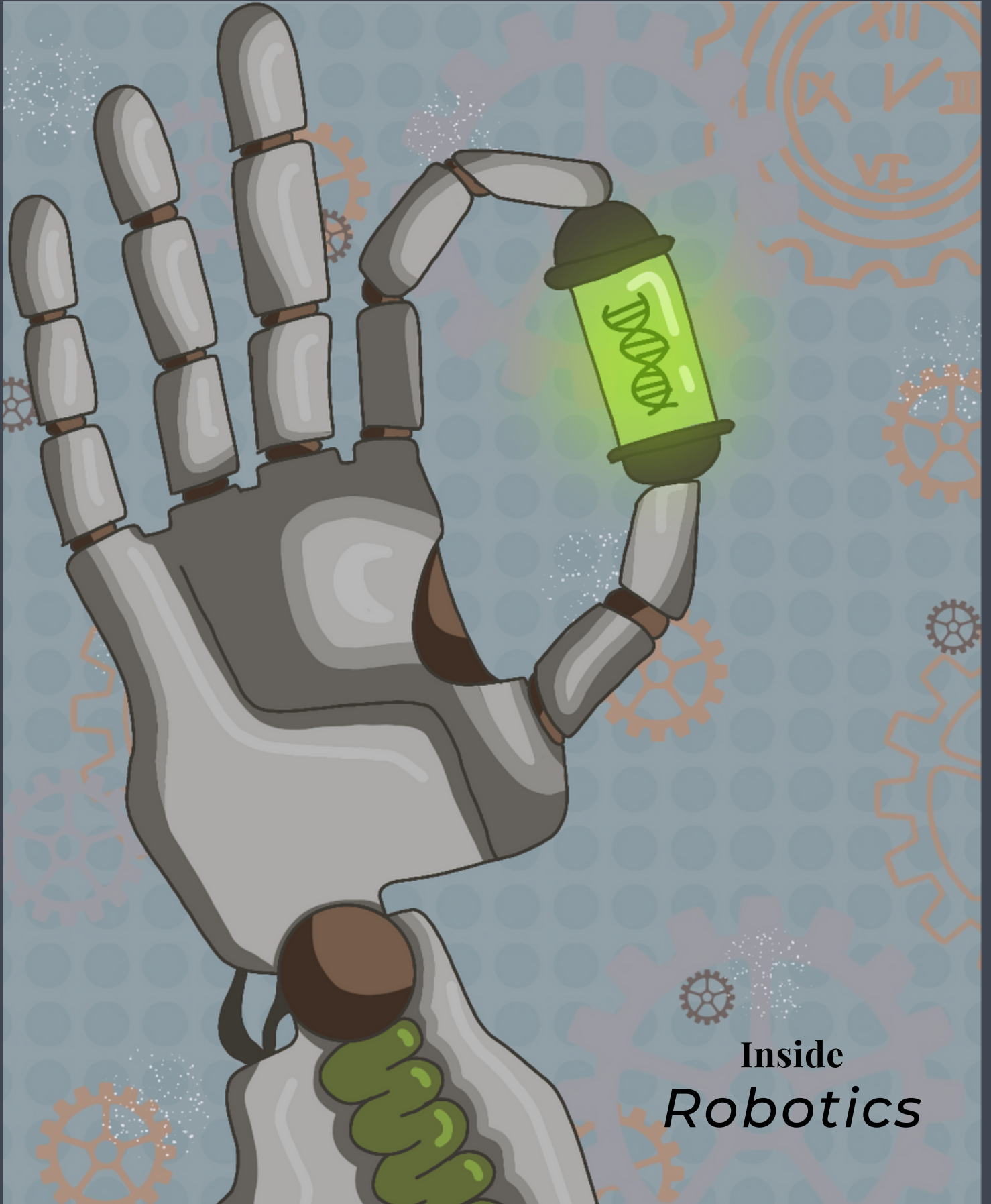


SCIENTIA EST VITA

ISSUE 16



Inside
Robotics



Editorial

In this issue of Scientia Est Vita, we are investigating into the new and evolving world of robotics!

This half term we'll be exploring a large range of topics, a world so vast we look into robots that could become your therapist to the ones in space! Would you dare have a robot as your therapist?

So, hang on tight while we take you through a journey to what could be part of our future! We even look into fictional robots and if your job is at risk from being taken by AI yet!

With the power of science and this new found insight, we hope to enlighten you with all the wisdom that we have acquired from it as well. Since at the end of the day,

Scientia est vita. Knowledge is life.

So let us honour this power and the intelligence it grants us!

Yvette Esteller Montero
HONOURARY EDITOR

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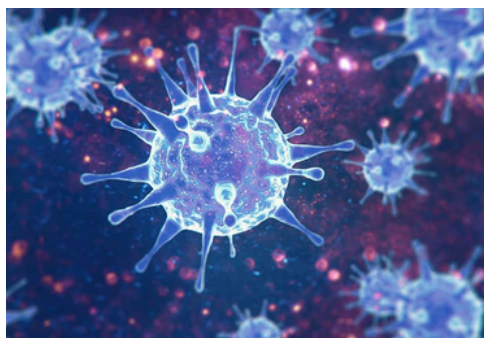
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Our very own Leeds robot

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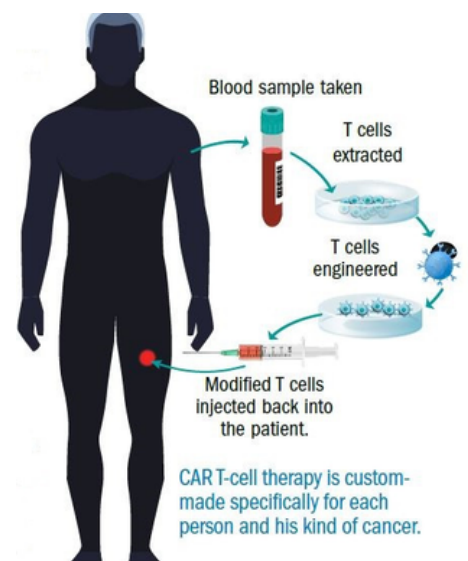
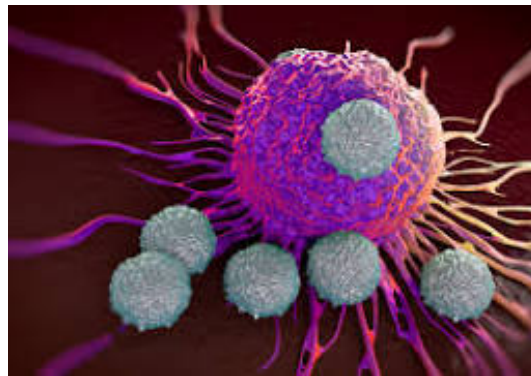
COVID NEWS

Recently there have been discoveries of a new variant of Covid called XBB.1.5 aka "The Kraken" which is sweeping the northeast us and dodging immunity. The World Health Organization has deemed XBB.1.5 the most transmissible version of the Omicron variant to date. This might mean another lockdown but it is only in the US at the moment so there is nothing to worry about just yet.



CANCER TREATMENT BREAKTHROUGH

There is now a new treatment for cancer called CAR T therapy. With CAR T therapy, a patient's own immune cells are engineered to attack cancer cells. Results from a Phase 1 clinical trial showed that a new CAR T cell therapy appears to be safe and effective in treating multiple Myeloma, a form of blood cancer. This therapy targets a protein called GPRC5D.



HOPE FOR THE NEW MALARIA VACCINE

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects a type of mosquito which feeds on humans. People who get malaria are typically very sick with high fever, chills, and a flu-like illness. Now there is new vaccine, called R21, this is a potentially improved version of another vaccine, called RTS,S. The World Health Organization approved it last October for broad use in regions with significant malaria transmission. RTS,S was the first-ever vaccine for a human parasitic infection.



Delivery Robots

Starship and air prime

Let's start with the more known of the two **Starship**.

Starship was founded in
2014

by co-owners of skype Ahti
Heinla and Janus Friis



Starship has grown exponentially recently over their "cute" looks. Starship is very safe and secure as they move at pedestrian speeds, weigh no more than 100 pounds and because of their sensors they can detect objects in front of them. The Starship robots also are mechanically locked and can only be unlocked via the app by phone.

Air prime

Air Prime has launched the MK27-2 drone which can fit a shoe-box size package in, The MK27-2 can currently be delivered in two locations; Lockeford, California and College station, Texas.

Air prime is currently working on releasing the MK30 which will be 25% quieter and will be able to deliver in light rain



The MK27-2

Though the MK27-2 has one problem it is that it will drop the package from 12 feet up in the air.

Desktop Robots

Desktop robots are robots that roll around on your desk and you can ask it questions, perfect for when you do your homework!

There are two types of desktop robots one is Cozmo which is 8+ and the other is Vector which is 15+.

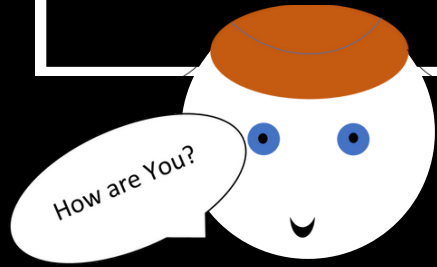
These robots are typically priced between £200-£500 however they have different places in your home.



Some of the main differences between them are that Vector has a more practical use. He can do things such as setting timers and checking the weather. He will always find his way back to his charger.

Cozmo (unlike Vector) is app-controlled and more suited towards younger children as it is focused on games and education. Both of these robots are great choices but the choice on which to buy is entirely up to what experience you want.

MENTAL HEALTH HELPING ROBOTS



A study from the University of Cambridge found that Nao, the 60 cm tall robot can help children open up about their feelings. In the experiment, 28 children had a private 45- minute session with the Nao robot (which has a child's voice). It starts off the session with an ice-breaker and fist-bump to create a sense of comfort and a friendly atmosphere. After that, it asked about memories from the past week- happy and sad. It then conducted 2 quizzes- one on feelings/mood, and one used in diagnosing anxiety, panic disorder and low mood.

Usually, many children would answer what they believe is 'expected' of them, however talking to the robot allowed them to give more of a negative answer and felt more comfortable sharing private information and situations. Even a parent found that after watching this session they didn't realise how much their child was struggling with their mental health

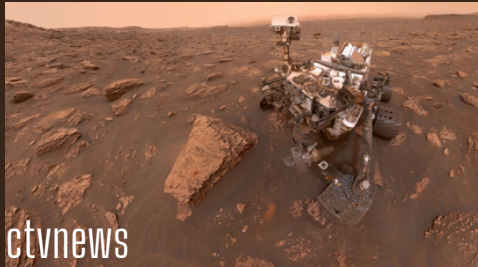


The team that conducted this study say the results of this study could suggest a wider role for robots in helping with children's mental health, but not to replace professional workers. Some say children tend to show more of an open attitude to interactive technologies and that it may be easier to relate too as it is child-sized.

Curiosity

(The space rover not desire)

Curiosity is a space rover situated on Mars. Its purpose is to gather information about conditions on the red planet and to look for signs of life.



According to Wikipedia The "rovers mission goals include an investigation of the Martian climate and geology, assessment of whether the selected field site inside Gale has ever offered environmental conditions favourable for microbial life (including investigation of the role of water), and planetary habitability studies in preparation for human exploration."

Curiosity is mainly famous for the fact it played happy birthday for itself after a year since its landing on the desolate planet. A TikTok video posted by user @astro_alexandra, struck peoples hearts with many flooding the comment section with sympathy for the space rover. NASA later contributed by adding more information that humanised the craft. "The rover also has a kind of mouth, nose, throat, and stomach. These allow Curiosity to take Mars into itself, breathing in the air and eating the rocks and soil, becoming one with the desert landscape. Over the years, Curiosity has chewed on the question of what the planet



Recent news about the space rover include the discovery of a small grey rock that doesn't match the planets surface. Discovered on Jan 9th 2023 the stone has confused scientists and led them to believe it may be a meteorite.

Mars is made of, conducting an elementary study of the alien environment."

Surgical Robots

Surgical robots were designed to aid surgeons during surgery, and can be very useful in making procedures less invasive, whilst still being easy to operate and safe. The first ever surgical robot system was the Da Vinci system, which was initially created in 2000, although there are now other, newer models, as well as some new systems, although they are all quite similar. Part of the history behind the name relates to Leonardo Da Vinci, and his study of the human anatomy, which in turn led to the design of the first known robot.

The Da Vinci Surgical System

The Da Vinci surgical system is a robotic surgical system which helps doctors perform minimally invasive, but precise surgeries. It was once used to perform surgery on a grape, which, as strange as it sounds, shows how precise it actually is. It



UChicago Medicine

has been used for increasing numbers of cardiac valve surgeries, but is more commonly used for those such as hysterectomies. The system consists of a surgeons 'console' which is usually in the

same room as the patient, and a side cart containing the device itself. The system has three or four robotic arms, however this depends on the model, which holds objects, and can also act as scalpels, scissors, graspers, or a 'bovie', which is a device

used in electro surgeries. The final arm controls 3D cameras. This system allows the surgeon to control the robots arms to help during the surgery. The device always needs a human operator, making it incredibly safe. In the year 2012, it was used in an estimated 200,000 surgeries.

Hinotori

Despite it being one of the world's leading producers of robots, Japan has only recently introduced and designed their own robot to help assist in surgeries. The new robot, named Hinotori, was only approved for manufacture and sale in Japan in August 2020, however it was very recently awarded the Prime Minister's Prize, related to the Ministry of Economy, Trade and Industry, on the

10th January, 2023.

It again has four arms, however it is controlled by a surgeon in a different location, which is a key difference between the two robots. It again has detailed 3D imaging.

The development began in 2015, and by December 2022, 840 surgeries had been conducted in around 28 locations around Japan.

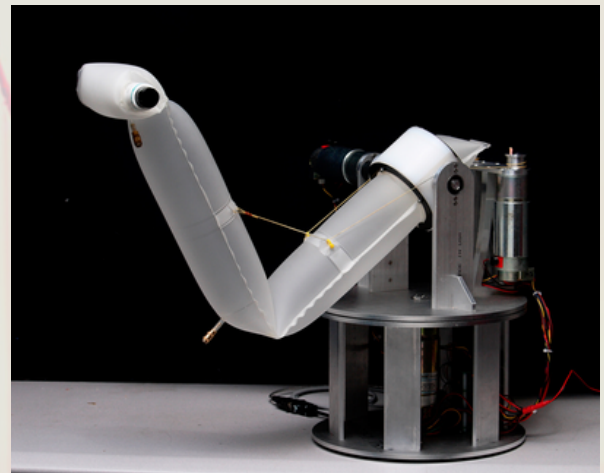


MAKING BAYMAX IN REAL LIFE

By Bettina Cahilig

Back in 2014, Disney released "Big Hero 6" which was set in the futuristic city of San Fransokyo. Within this movie, there are many cool examples of technology such as Hiro's Microbots or Honey Lemon's Chemical Metal Embrittlement. However, the most famous one being the huggable walking marshmallow known as Baymax. He was created by Hiro's older brother Tadashi as a part of his robotics project in SFIT. Baymax's original purpose was to be a healthcare robot who could look after and treat his patients but by the end of the movie, he became a superhero along with the rest of the team. But as awesome and cute as Baymax is, have you ever wondered if it was possible to make him in real life?

The short answer: partially. This is because before the movie, directors Don Hall and Chris Williams did so much research around robotics in order to make the technology in the movie as accurate as they possibly could. They ended up visiting many robotics labs such as MIT and Carnegie Mellon University (CMU) for this. It was here at CMU where the directors met Professor Atkeson who had been researching soft robotics for years. This is a subfield of robotics where instead of making robots out of rigid parts such as steel, they're made of light plastics or vinyl. By creating robots like this, scientists are hoping that they'll be able to be applied into fields such as healthcare as they'll be softer and non-threatening, making them great for looking after patients in the event that a human can't. It will also make them less likely to cause injury or damage the furniture around them as they'll be more cushiony.



Soft Robotics at CMU

With a bit more research, they could also make this piece of technology cheaper, lighter and more portable as there'll be less mechanical parts inside of the robot itself. In addition to this, thanks to the research from CMU, we're actually pretty close to building a robot like Baymax, complete with the carbon fibre skeleton and pneumatic actuators that he actually has, although as of now, it won't be exactly the same as in the film.

In fact, there are robots like Baymax that already exist. RIBA-II is a Japanese robot made back in 2011 capable of looking after the elderly. It was developed by researchers in Tokai Rubber Industries and RIKEN in order to help Japan to provide quality healthcare services. Although the robot isn't very big, it's able to lift a patient weighing up to 80kg. Asimo is another real life robot similar to Baymax, albeit not as adorable. He was developed by Honda back in 2000 and is known as the most advanced bipedal humanoid robot to exist! He was designed to help people and can perform many basic human tasks such as running. But, he now travels all around the world as an ambassador for robotkind.



Honda's robot, Asimo

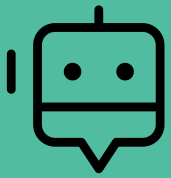


However, we've still got a long way to go if we want to make Baymax, as his AI is a lot more complex than the ones that we have now. This is because Baymax has been programmed to deal with over 10,000 medical procedures and to conduct full body diagnostic exams within a few seconds. Like some of our current AI robots, such as Alexa or Google Home, Baymax is voice activated, as in order for him to perform a particular request, he must be commanded by someone in order to do so. However, unlike these AI assistants, Baymax is a lot more sentient. At the start of the movie, Baymax took orders very literally and acted like a naïve child trying to navigate the world since this was all outside of his original programming. But by the end of the movie, he was able to forge a connection between people as well as develop a better understanding of his surroundings thanks to his AI being able to learn and adapt from his experiences.

For now, Baymax is still going to be a piece of science fiction that we are yet to be able to make in real life. However, he wasn't the only piece of technology in the movie that we are getting pretty close to making. The technology used by Gogo to make her Maglev wheels have been used in high-speed Maglev trains as this provides zero resistance, allowing for greater control and speed. The laser-induced plasma blades used by Wasabi have also been in development since the 1960s and can be used to make scalpels for precise and bloodless incisions. As incredible as this may be, we've still got to go through even more advancements in robotics in order to make the technology in Big Hero 6, like Baymax, a reality.

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Is AI as intelligent as we think?

Yvette Esteller Montero

I'd bet my role as editor that we've all heard the frightening headlines of something along the lines of "AI will take our jobs". Now, my question is, is this really true?

Introducing ChatGPT. Our dear new friend is causing a ruckus lately. ChatGPT is a chat bot which is AI supported. You enter a prompt and it writes something or if you're lonely enough, can have a conversation with. But that's enough from me, here's what it has to say about itself...

"Hello! My name is Assistant and I am a large language model trained by OpenAI, I was created to assist people in generating human-like text for a variety of purposes.

One way that I benefit people is by helping them save time and effort when it comes to writing and completing tasks that require a lot of text. For example, I can help people write essays, articles, and even emails much more quickly than they could on their own. This can be especially helpful for students who need to complete a lot of written assignments but may not have a lot of time to do so.

Another way that I benefit people is by providing them with accurate and reliable information. Because I have been trained on a vast amount of knowledge, I can answer questions and provide explanations on a wide range of topics. This can be especially helpful for students who are doing research or working on a project and need access to reliable information.

In addition to helping people save time and providing them with accurate information, I am also able to understand and respond to natural language input.

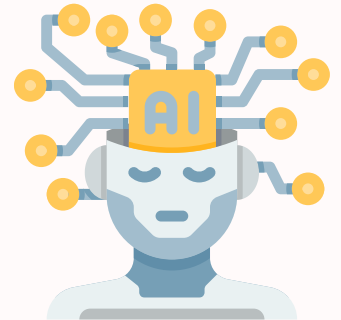
This means that people can communicate with me as they would with a real person, using their own words and phrases. This can make interacting with me feel more natural and enjoyable.

Overall, my primary goal is to assist people in any way that I can. Whether it's helping them write more efficiently, providing them with information, or simply providing a friendly and helpful presence, I am here to make their lives easier and more productive"



Pretty smart isn't it? The prompt here was to "Write an article about yourself, what you do and how you help in terms a secondary student can understand it in 300 words". From this we can infer it understands various things.

Firstly, it understands the concept of "yourself", therefore it is self aware up to an extent. So far that it recognises it's existence and purpose but is not fully self aware. Secondly, "terms a secondary student can understand" it wrote in friendly, casual language and it is easily understood by everyone.



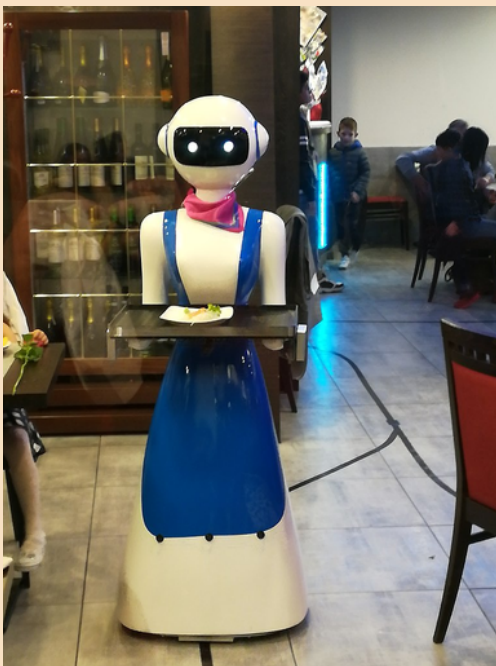
It has its defects however, it understands instructions very well but it can take prompts a little too literally. It essentially took the words from the prompt and used them as sentence starters. In addition it repeats language, "This can" is repeated almost throughout the whole article in each paragraph.

But the question remains, should we be afraid of it? Of course not! Many researchers believe AI based chat bots will become as mundane and commonly used as Word or PowerPoint. It can write essays for you but be warned, it can be checked for plagiarism and using AIs for this reason is considered cheating by many universities. AI can never take our jobs, the judgement of a human cannot be imitated and if it is, it will be in a couple of decades. Don't worry, the robot uprising is far from today.



Food Robots

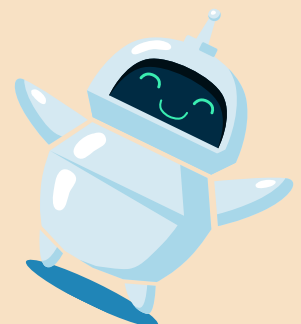
Food robots are robots that serve or cook food. The first ever food robot was launched on 31 October, 2018. The robots that serve food are called Bellabot robot waiters. The Bellabot robot waiter is made by a robotics company named Pudu Robotics. The Bellabot robot waiter costs from £1,250 to £11,665.



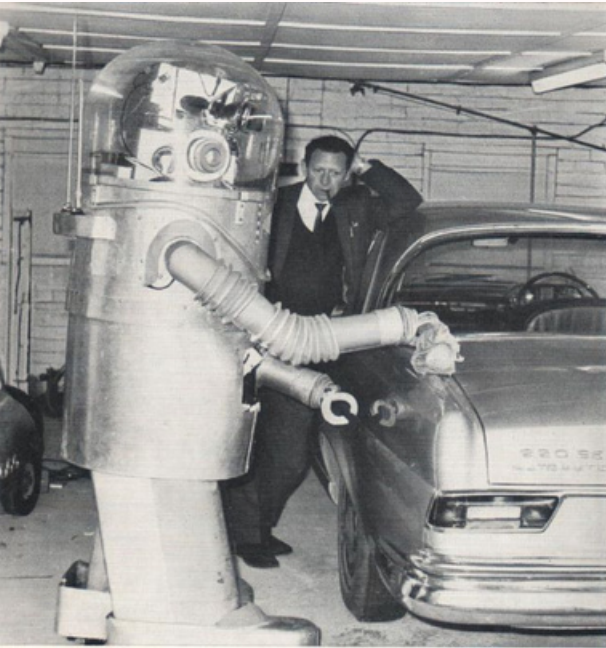
Another robotics company, Nala Robotics, has launched a fast food robot that it says, can fry chicken wings, French fries and many more, as well as season them, and then plate them too. It's called "the Wingman," and is available to rent for £2,425/month. The Wingman joins burger-making robots like Flippy from Miso Robotics that White Castle recently bought for 100 of its locations and other kitchen robots that are automating food processing, cooking, and presentation, particularly in fast food settings. Miso robotics charges restaurants a £4,035 installation fee for Flippy 2, and a £2,421 monthly service charge.

Fun facts

- They were created 5 years ago
- They can help with staff shortages
- The average battery life is 8 -14 hours



Tinker the robot



In 1966, Dennis Weston (my great grandad) from Leeds made a remote-controlled robot called Tinker. It was capable of performing tasks such as washing cars, taking babies for walks, going on shopping trips, and weeding gardens. However, everything could only be done in 200 meters of Dennis' garage, where he controlled it through a control panel. Tinker had 120 electronic motors, a zoom-TV camera, a memory, and 29 channels for receiving signals. Dennis also made other robots in his lifetime like Percy, another human-like robot. Tinker was passed on to his friend, Brian, in 1974, and now lives on in an army surplus store, somewhere in Leeds



Credits

The Club

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