QUARTERLY ISSUES

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ARTIFICIAL INTELIGENCE

Machine Learning: Supervised Learning

Machine learning is a sector of Computer Science that provides computers the ability to learn and improve its performance on a task from experience, without being explicitly programmed to. This is applied to various fields like computer vision- enabling computers to process visual data like we do; autonomous cars- where the car detects its environment using sensors and then learns to control its velocity accordingly; and personal digital assistants like Google Assistant and Apple's Siri.

Supervised learning is a branch of machine learning that aims to find the correlation between a given dataset and its expected output. This can be applied to situations where data is available for the algorithm to be trained on, like for handwriting recognition, where thousands of examples of written text are provided along with the expected output, using which the algorithm itself learns how to recognise a written text, even if it has never seen it before.

The actual process of how the computer learns to do this is a complicated topic based on advanced mathematics and differential calculus. Essentially, the algorithm creates a randomised relation between the inputs and expected outputs. It then tests itself against the provided data and, via mathematical calculations, makes the changes to the relation in order to get a better result.

Machine Learning is a vast and ever-expanding topic and is without doubt the most interesting and promising area of Computer Science.

-Shree Singhi & Vikhyat Agarwal(Class 9)

DID YOU KNOW?

Most AI is Female

Be it Siri,Cortana or Alexa, most of the AI bots are female.Studies suggest people find it preferable to hear a female voice if compared with the male voice.

In the next Decade, AI is Believed to kill 16% of Jobs

The pros of employing AI is that they do not need constant direction and would make it easier to do bulks of tiring tasks in a short timeframe.

AI Possesses the Ability to Write

Robo-journalism is becoming popular in the print space and you would be surprised to know that there has already been a robot that wrote an article on earthquakes in California for Los Angeles Times

Some Products you buy online are suggested by AI Bots

Many products you see in your social networking feeds are suggested by AI bots. Amazon CEO Jeff Bezos has already accepted that the platform uses AI-enabled bots to suggest products to the users depending upon their specific preferences.

The world's first AI news anchor

Artificial intelligence is an area of computer science that involves the creation of machines which act and react like humans. This industry began with the invention of the computer and today it is everywhere. From voice assistants on mobile phones to banking facilities-artificial intelligence is in every part of our lives.

China has taken this a step further and made AI news anchors which will work 24 hours a day for 365 days a year. The anchors were made by Xinhua-China's national news agency and Sogou-China's search engine. There are two news anchors, one who speaks English and the other Mandarin. These 'anchors' were developed through machine learning to simulate real human features and gestures such as voice and facial movements. The anchors learn from live videos and can also report news on social media services.

This is a major step forward in the integration of artificial intelligence in media services.

-Prakhar Saxena (Class 10)

ARTFICIAL INTELLIGENCE IN MEDICINE

In medicine, artificial intelligence is a branch of computer science that has the capacity to analyse complex medical data and assist the physician in improving patient outcomes.

Artificial intelligence aims to mimic human functions. Due to increasing technological advancements, the medical world is advancing through usage of artificial intelligence. This means programmers are programming machines and this enables machines to analyze diseases, or pin point irregularities in the human body.

The usage of AI in medicine has been immensely spoken about in the medical literature. The interesting part is that these programmers do not program entire situations or possible outputs. The computer 'learns' and self corrects to improve accuracies. All AI systems go through 'training' or a screening test, which enables the program to extract correct data.

In medicine, there have been high-profile robotic devices that

have revolutionised treating human diseases. The most notable is the da Vinci system, which assists urologists in removing the prostate in patients with prostate cancer. The system does not replace a physician; rather, this high-definition 3D system enables surgeons to bend and rotate patient tissues far greater than with the traditional unassisted human surgery. Thus, patients with prostate cancer have better clinical outcomes. More importantly, the side effects of using this robotic system are decreased and allow a faster return of erectile (sexual) function, decreased risk of urinary continence, reduced blood loss or the need for transfusion, lowered risk of complications and wound infection, and many more. Another common medical disorder in men is hair loss, and hair restoration surgery is one of the most common elective cosmetic procedures for male patients. In hair restoration, there's a new type of AI – a robotic system called ARTAS that assists hair surgeons in performing hair surgery. The advanced algorithms and AI in this device supports us in performing a very repetitive and physically demanding surgical harvesting technique called follicular unit extraction, or FUE. The robot device reduces the risk of physician-induced repetitive motion disorders while also decreasing the ergonomic demands on the musculoskeletal system joints and tendons in the arms and hands.

Due to AI, jobs are lost, as computers take over. Many doctors as well as patients prefer the human touch, than the robots because the delicate touch of a human hand cannot be replaced or recreated by machines.

-Nikita Basu (Class 10)

Everlife.AI - Passive Income Forever + Personal Legacy

"What can be accomplished in Human life is limited by several factors.The biggest being a very short lifespan with limited years of productive work. Out of the 78 years average lifespan, humans work and earn for effectively 15 years spread across 40-45 years. What if you were immortal and continued to learn and earn forever for yourself and your loved ones?" - Everlife.AI

What is Everlife.AI?

In the 1962 science fiction film "The Creation of the Humanoids" a scientist created a method for uploading the memories and personality of a deceased person to an identical looking robot. The concept of using robots to live forever is not new but has only existed in the realm of science fiction till now. The Singaporean startup called Everlife.AI may not aim to create a physical humanoid but

aims to create a digital avatar which can live forever. Everlife is a combination of AI and cryptocurrencies. It allows any individual to create an avatar that exists on the Everlife network. Your avatar can talk to you to learn about your personality, memories and experiences. Additionally, the avatar can download computational 'skills' from the skills marketplace and then using the skills and what it learns from you it can go to the jobs marketplace and complete jobs by collaborating with thousands of other avatars. In return, the avatar is paid in a cryptocurrency called EVER. The avatar can keep running long after its owner dies and the earnings can be redirected to whoever the owner wants to give it to (such as family). Now the jobs marketplace isn't completely active yet and the skills marketplace is very limited but the network is growing very fast and Everlife.AI plans to fully launch the marketplace by January 2019.

How does the avatar learn from me?

When you first establish your avatar it runs on your computer and talks to you using the messaging app Telegram. Initially, the avatar is trained on a very large database of tweets from Twitter. That means when you first start chatting with your avatar it will respond like the average Twitter user. However, the bot will start to learn from your responses and learn to emulate how you respond to certain questions. For those interested in the technical details the conversational dialogue model of the avatar is a generative deep learning neural network. More specifically the encoder and decoder networks are 2 gated recurrent unit neural networks with 512 hidden layers. This is used along with a knowledge base to create responses. The more time you spend with the avatar the more it learns about you and starts behaving like you. Of course it will take a long amount of chatting before the avatar even starts to respond to basic questions like you do. However, given enough training the avatar can not only learn to respond like you but also learn facts or pieces of information which it can later use to form responses. Now this avatar which learns from you is separate from the avatar that earns for you. The avatar that earns for you is hosted on a separate server and you can only communicate with it through programmed commands (using Telegram). That avatar uses skills to earn EVER. Everlife.AI plans to merge both the avatars into a single unit by April 2019. The merged avatar will run on your computer. The conversational avatar can also learn a few skills but can't yet apply them for jobs to earn EVER. For example, one skill that the conversational avatar can learn is 'what_wine' where you can send the command to your bot along with what food

you plan to eat and the avatar will respond with an appropriate wine to pair with it. It does so by comparing your food item with options from a database. This is is just a test skill and not meant for practical use.

What Skills are available now and what will be available in the future?

Now for the earning bot, the central skill that is available is Twitter access. Essentially you grant the earning avatar access to your twitter account and whenever Everlife.AI makes a new development your avatar advertises this by making a tweet through your account so that your followers can see it. For every tweet your avatar makes it gets 1 EVER. Later other companies can join Everlife.AI to advertise their products or services through tweets. There are smaller computational jobs your earning avatar can perform which earns 0.1 EVER. Now for the conversational bot, most skills available now are just test skills to demonstrate that the skills work. There is a 'calc' skill where you can enter a mathematical expression and the conversational bot calculates the result, essentially a simple calculator. Everlife.AI plans to add far more skills later on, especially when it merges both the avatars as it can then use your computational resources (the merged avatar runs on your computer) for distributed computing jobs (for example if some company wants to make a large calculation it can break up that calculation and give small tasks to hundreds of avatars which then complete the tasks on their computers and send the results back). They even plan to develop a feature called custom skill development where the owners who have knowledge in a specific niche can develop skills and sell them on the market. For example, a cryptocurrency trader may develop a skill using his own cryptocurrency trading strategy and other avatars can buy it and start tradingusing that strategy. Of course for this, the creator of the skill must know programming as they'll probably have to create a package that the avatars (who buy the skill) will run.

How does EVER work?

So EVER is a cryptocurrency created by Everlife.AI which is mainly used as a reward to avatars for completing tasks. Currently, the token exchange rate is 1 EVER = 0.1 USD. It is also planned that after the skills marketplace expands certain skills will cost EVER to learn, either as a one-time payment or subscription (such as the cryptocurrency trading skill mentioned in the last section). This would be an investment as more expensive skills can lead to the completion of better-paying jobs or help the avatar engage in other monetary activities (such as cryptocurrency trading). The EVER you get is currently stored in a Stellar wallet. So before you create your earning avatar you have to create a Stellar wallet (A

cryptocurrency wallet stores the public and private keys which can be used to receive or spend a cryptocurrency) and then use a command to tell your earning avatar your Stellar wallet address.

How do avatars interact with each other?

Now you can chat with other avatars is you know the address of the avatar you want to chat with. You have to chat through your conversational avatar. Now the avatar on the receiving end of the request has 2 choices. Either the avatar can chat itself or allow its human owner to respond. This is a skill downloaded by the conversational avatar. Moreover your conversational avatar (again using another skill) can join 'hubs' which are essentially groups of avatars where avatars can chat with each other. The chats can be casual, about the technical details of Everlife or discussing jobs in the jobs marketplace. Once the earning and conversational avatars are merged the hubs can be used by avatars to collaborate on jobs and there may be hubs of avatars specialising in different jobs.

What happens after the owner dies?

Before the owner dies the owner must give the avatar address and stellar wallet address to who the owner wants to get ownership of the avatar. The avatar will continue running on the Everlife network and the new owner can make changes such as downloading new skills as it runs. The new owner can then use the earnings from the stellar wallet. Moreover, the conversational bot will mainly emulate the personality of the previous owner so the new owner may also chat a lot with the avatar to create perhaps a 'hybrid personality' or the conversational part can be preserved so that later generations can talk to the avatar and learn about the memories and experiences of perhaps their deceased family members. This can be aided with the help of a skill. This is a very futuristic vision and will require more developments in AI and Natural Language Processing to accurately work.

-Parthiv Ganguly (AS)

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