Cognitive Technology

"A product of the field of research known as AI, cognitive technologies have been evolving over decades!"

Ref: https://www.opengovasia.com/malaysias-eyes-set-on-pursuing-facial-recognition-technology/

Cognitive technology is a field of computer science that mimics functions of the human brain through various means, including natural language processing, data mining, and pattern recognition.

Ref: https://marutitech.com/cognitive-computing-features-scope-limitations/

It is expected to have a drastic effect on the way that humans interact with technology in the coming years, particularly in the fields of automation, machine learning, and information technology. Cognitive computing represents the third era of computing. The first era, (19th century) introduced the concept of a programmable computer. It was used in the navigational calculation; this computer was designed to tabulate polynomial functions.

Cognitive computing works on deep learning algorithms and big data analytics to provide insights. Thus, the brain of a cognitive system is the neural network, the fundamental concept behind deep learning. The neural network is a system of hardware and software mimicked after the central nervous system of humans to estimate functions that depend on the huge amount of unknown inputs.

Ref: https://medium.com/@northof41/what-is-cognitive-computing-and-why-you-need-to-know-about-it-bdd935204f9e

Introduction to Cognitive Technology

Compiled by Atique & Swapna

With the present state of cognitive function computing, basic solutions can play an excellent role as an assistant or virtual advisor. The role of an assistant or a virtual advisor. Siri, Google Assistant, Cortana, and Alexa are good examples of personal assistants. Experts are working on implementing cognitive solutions in enterprise systems.

Some use cases are fraud detection using machine learning, predictive for various analytics and solution also, predicting oil spills in Oil and Gas production cycle, etc.

The purpose of cognitive computing is the creation of computing frameworks that can solve complicated problems without constant human intervention. In order to implement cognitive function computing in commercial and widespread applications, cognitive technology is widely used everywhere.

Virtual advisor such as Dr. AI by HealthTap is a cognitive solution. It relies on individual patients' medical profiles and knowledge gleaned from 105,000 physicians. It compiles a prioritized list of the symptoms and connects to a doctor if required.

Recent Development

Big Data Analytics & Machine Learning are some of the developments which have ushered ahead for all of us...

Read more on Pg 3

🔔 **Cognitive technology is not all about automated functions but more about Intelligence rather than just automation.**

How it works?

Compiled by Tarang & Omkar

Cognitive technology is a subset of the broader field of artificial intelligence, which itself could be considered a subset of biomimetics

One notable innovation that has become emblematic of cognitive technology is IBM's Watson supercomputer, which has a processing rate of 80 teraflops that it uses to essentially "think" as well as (or better than) a human brain.

Cognitive technology has also been applied in the business sector, perhaps most famously with the streaming media service Netflix, which uses it to generate user recommendations (a function that has largely contributed to the company's success)

The Magic in Cognitive Analytics

The goal of cognitive analytics is to leverage AI and ML to generate new insights and improve processes that allow you to thrive in today's dynamic markets. Machine learning makes it possible for an application to perform analysis based on patterns instead of traditional hand-coded rules.

However, if you feed thousands of images into a machine learning-based application, it can find enough patterns to make accurate predictions even though it cannot tell you what those patterns are.

Cognitive Computing Analytics
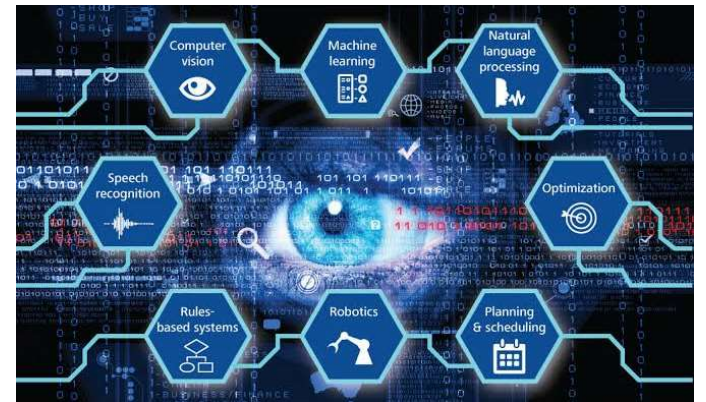
As computers become more able to think like human beings, they will also expand our capabilities and knowledge. Just as the heroes of science fiction movies rely on their computers to make accurate predictions, gather data, and draw conclusions, so would we move into an era when computers can augment human knowledge and ingenuity in entirely different ways.

Ref: www.predictiveanalysistoday.com
www.techopedia.com
www.ibm.com

Going Cognitive!

-Compiled by Hemant & Nihal

According to Gartner, cognitive computing will disrupt the digital sphere, unlike any other technology introduced in the last 20 years. By having the ability to analyze and process large amounts of volumetric data, cognitive computing helps in employing a computing system for a relevant real-life system.

In the field of process automation, the modern computing system is set to revolutionize the current and legacy systems. The benefits are a lot:

Accurate Data Analysis:
Cognitive systems are highly-efficient in collecting, juxtaposing, and cross-referencing information to analyze a situation effectively. Cognitive systems such as IBM Watson help physicians to collect and analyze data from various sources such as previous medical reports, medical journals, diagnostic tools & past data from the medical fraternity thereby assisting physicians. Instead of replacing doctors, cognitive computing employs robotic process automation to speed up data analysis.

Leaner & Efficient Business Processes:
Cognitive computing can analyze emerging patterns, spot business opportunities and take care of critical process-centric issues in real-time. By examining a vast amount of data, a cognitive computing system can simplify processes, reduce risk and pivot according to changing circumstances.

Improved Customer Interaction:
The technology can be used to enhance customer interactions by implementing robotic process automation. Robots can provide contextual information to customers without needing to interact with other staff members.

Finding these new insights comes down to data–massive amounts of it. Why?

The greater the volume, types, and sources of data, the more accurate and meaningful the results. For example, oncologists require not only electronic medical record (EMR) data but also data from medical journals, image scans, partner hospitals and more. All this data, combined with cognitive analytics, enables the business–into sense, to learn and adapt, resulting in better-served patients and more cost-effective data storage. Organizations can also bring data in a scalable way using APIs.

Ref: https://www.enterrasolutions.com/blog/cognitive-computing-is-becoming-a-must-have-for-business/

Recent Development

BIG DATA ANALYTICS

Big data analytics is the process of analyzing huge volumes of data to draw patterns, trends, and actionable insights with the help of machines having advanced computational capabilities. It refers to the strategy of analyzing large volumes of data or big data. This big data is gathered from a wide variety of sources, including social networks, videos, digital images, sensors, and sales transaction records. The aim of analyzing all this data is to uncover patterns and connections that might otherwise be invisible, and that might provide valuable insights about the users who created it. Through this insight, businesses may be able to gain an edge over their rivals and make superior business decisions.

MACHINE LEARNING
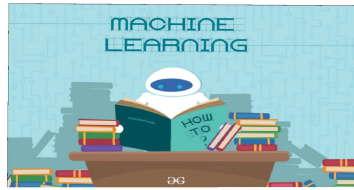
Machine Learning was born from pattern recognition and the theory that computers can learn without being programmed to perform specific tasks; researchers interested in artificial intelligence wanted to see if computers could learn from data.

Machine learning is a continuous process where machines learn new things using the data provided, with some human supervision from time to time.

Ref: https://www.google.com/amp/s/www.zycus.com/blog/procurement-technology/5-cognitive-technologies-to-look-out-for-in-the-future.html

As cognitive technology empowers intelligent machines, matter, and more to think like human beings, it will undoubtedly increase the human capabilities, reach, and knowledge too beyond cyberspace, geo-space, space

Humanity will see the dawn of a new age, where machines, matter, and human-like cognitive abilities work hand in hand like humans in solving complex problems facing humanity.

Cognitive Technologies such as Robots, Artificial Intelligence, and Automation will replace 7% of our jobs in 2025!

Companies working on Cognitive Technology

Compiled by Yash & Sanskruti

IBM WATSON

IBM Watson leverages deep content analysis and evidence-based reasoning to accelerate and improve decisions, reduce costs, and optimize outcomes. Watson uses a set of transformational technologies machine learning, statistical analysis and natural language processing to find and understand the clues in questions by ranking its confidence in their accuracy and responded. Due to its probabilistic processing techniques, Watson can fundamentally change the way to look at solving a problem quickly.

MICROSOFT COGNITIVE SERVICES

Microsoft's cognitive services let to build apps with powerful algorithms using just a few lines of code. Microsoft's cognitive services are a set of APIs, SDKs, and services available to developers to make their applications more intelligent, engaging and discoverable. Microsoft cognitive services use its intelligence featured in video detection; facial, speech and vision recognition; and speech and language understanding.

NUMENTA

Numenta is inspired by machine learning technology and is based on a theory of the neocortex. This is a technology that can be applied to anomaly detection in servers and applications, human behavior, geospatial data. It detects anomalies in publicly traded companies and much more.
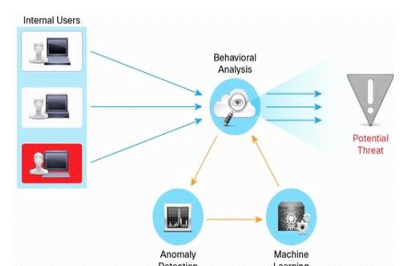

"In the future, Cognitive Solutions will help to determine opportunity cost and prioritization of Network Investment."

-Compiled by Shamini & Mustakim

Cognitive Threat Analytics quickly detects and responds to attempts to establish a presence into the environment and to attacks that are already underway all without

Additional hardware or software is required to deploy. Cognitive Threat Analytics analyzes anomalous web traffic. It identifies both the source and destination of web traffic. By identifying confirmed threats, Cognitive Threat Analytics eliminates false-positive alerts, reduces the number of time investigators and it also helps the IT team by quickly remediating threats.

Cognitive Technology in Electronics

Ref: https://iopscience.iop.org
http://www.jos.ac.cn/app/article/app/doi/10.1088/1674-4926/39/1/011007?pageType=en

ALUMNI TALK

Mr. Sourabh Kulkarni

We are extremely pleased to interview Sourabh Kulkarni Sir who is a 2015 batch pass out student of VCET.
He has pursued masters in Computer Engineering from Stevens Institute of Technology. He is currently working as a Full Stack Developer in Blue Cross Blue Shield of Florida.

1)What should be a Student's perspective during their engineering days?

There are 2 aspects to this, Present and Future. One should try to focus on what he is currently doing, in this case, engineering. Try to learn as much as you can and avoid studying, keeping a grade in your mind. Rather try to understand the importance of what you learn in practical terms. You will automatically do well on your tests. Secondly, plan for your future, at least start thinking about your interests and goals, at least a year in advance of your graduation.

2) What qualities should a student develop in college life to be benefited in his/her professional life?

The most important thing is how you carry yourself. The phrase, first impression is the last impression is absolutely true. If you successfully make a good first impression, it will take you a long way. Secondly, your communication is extremely important. It all depends on how you talk to various people you come across. Finally, try to get to the core of a subject. This will help you handle various challenges and make you independent in life.

3)How can students develop themselves in commercial aspects?

Try to take part in various social events. Try getting on organizing committees. Doing this will boost your confidence, make you learn to better communicate as well as refine your managing skills as well.

4) What was your experience while MS; as well as now during your Job?

Masters was one of the best experiences in my life. It made me an independent and confident individual. It taught me how to approach a given situation with calmness and in a practical way. MS, if you do it sincerely, will make you "Industry Ready".
Doing a job is way different from student life. It sure takes time to adjust, especially if you do not have prior work experience. You need to be ready to take up any kind of work (in your domain congruent to your skillset) and deliver it. It is absolutely acceptable to not know something. There is always an option to ask. My boss once said, it's also ok to fail at times but if you fail, fail fast. You need to learn to cope up with your failures. Experience teaches you that. Lastly, communication is extremely important

On a lighter note, try to practice on your communication skills in your mock viva/ viva exams. That's one of the best platforms you can use to do it without any fear.

5)What are the lesser known facts about MS?

GOOD FACTS:
→ It makes you independent. You don't have a choice but to be independent as everybody is on their own.
→ It will teach you VALUE FOR MONEY. As months pass and you have to manage your own expenses by doing a part time job along with your studies, you will become more mature each day.(Here studies should take priority over a part time campus Job. I have seen it going the other way around in many cases and that is not good. Your primary objective during MS is to study).
→ It teaches you to manage and respect your time. This is because, being lazy today would add to backlogged work tomorrow. You will have to do it someday so might as well be on schedule.
→ It is a degree that carries great value.
NOT SO GOOD FACTS
→ The race to get a job begins not from your first day of Graduate School but from the first day you step in this country. (I do not support this but this is how it is and even if you try to resist, you would end up making peace with this.)
→ Not everyone gets a Job easily. It might be way too hard at times for many (Except for some lucky ones), however, if you really work hard and if you know what you are doing, you should get there safe and sound. Don't let the financial pressure get the better off you.
→ Getting a job is one thing, maintaining it, is another. Most places have a policy of "work at will". You need to perform to keep your job. There is a lot of uncertainty, so always keep your eyes open for better opportunities.

6) Which are the other career options students can explore apart from MS?

Based on my limited knowledge of non-MS options, students can get into a job. Campus placements would help land in a job comparatively easily. Other than that you can give the GATE exam to pursue a Master's degree in India.
For the people who are planning for MS, I would recommend you guys to take at least a year and half of experience before going abroad and having prior experience while looking for a job on a foreign land is priceless, but this is not mandatory.

7) "Great salary or Great Job Satisfaction" What should be chosen and how?

I would, without a doubt, choose Job satisfaction. This is because, you would only be satisfied in a job if you are confident at what you do and/ or get to develop your skill set, both at the same time. Being good at your work gives you the right to demand what you want, which in this case would be a great salary. If you try to do this, job security will never be an insecurity for you. Also, be prepared to work extremely hard in the initial phases post-B.E. This will help you develop your skill set and start paying you off pretty soon.

-As interviewed by Omkar Chaudhari and Shamini Iyer

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