## This Issue

**4th**
**RANK IN UP**

**Private Engineering Institute by the Education World India (2020-21)**

## Editor's Note

Warm greetings to all the readers of AllenBytes!

We are pleased to share with you the second release of our newsletter.

The inspiration behind this newsletter was to provide a platform where students and faculties can participate and share their ideas and views on various topics and news of interest. It would also be a snapshot of the various activities and advancements taking place in the domain of Computer Science & Engineering.

We are making our best efforts to keep our users engaged by incorporating a few head scratching puzzles. I hope the content may enhance the knowledge of our readers and meet their expectations.

I would also like to take the opportunity to thank all the faculty members and students who have made their contribution in bringing this newsletter to reality. I also owe my thanks to all the members of the editorial board for their altruistic contribution.

I extend my deepest gratitude to Campus Director of Allenhouse Colleges Prof. (Dr.) Bhagwan Jagwani, Director of Allenhouse Colleges, Dr. Ruby Chawla and Director of Allenhouse Institute of Technology, Prof. (Dr.) Somendra Shukla for their guidance and suggestions for bringing forth the best of our efforts.

We sincerely hope that readers will find the articles interesting, relevant and knowledgeable leading to a diverse view of modern issues. We welcome valuable suggestions and comments from our readers.

**- Ms. Richa Mishra**

## Impact of AI & ML

Have you ever encountered instant suggestions while sending emails and spams to a website? Do you know what it is? No! This has only happened with Artificial Intelligence (AI) & Machine Learning (ML). Artificial Intelligence has become an integral part of our lives. From email to website navigation to cabbage travel, etc. It is all done using AI & ML.



Artificial Intelligence came into existence by doing human mobilization on machines. In general, AI represents a decrease in human effort in the workplace or elsewhere by providing the necessary guidelines and information to machines. These machines are programmed to act like humans and are as intelligent as humans

Machine Learning abbreviated as ML is part of Artificial Intelligence (AI). It is also designed to incorporate lessons from the data, to find patterns and terms, and to present decisions with little or no human intervention. Machine learning solutions have initiated many new lessons such as automation of mathematics and big data solutions in a seamless way.

Artificial Intelligence and Machine Learning help individuals and businesses achieve important goals, gain insight, drive critical decisions and create exciting and innovative products and services.

**Mr. Aviral Awasthi,** Asst. Prof. (CSE)

## Metaverse – The Future Social Universe

When first mentioned by Neal Stephenson in his novel Snow Crash published in the year 1992, the term Metaverse sounded a next to impossible reality that could ever take shape in future. However, very recently when it was taken into consideration for transformation of the most popular social media platform, Facebook by its CEO Mark Zuckerberg, the concept has again gained momentum in technical discussions among experts.

Metaverse is more precisely a shared virtual space that is dominated by virtually augmented physical reality. It uses shared 3D virtual spaces and the internet to connect people in a virtual world. Facebook is looking forward to creating history by being the first metaverse social platform by introducing its first foray with virtual reality workspaces.

Facebook's transitioning into a metaverse company isn't a big deal with the presence of its already existing virtual reality arms like Oculus and Facebook Horizons that are all set to aid in the mission. However, a collaborative virtual space is more practically expected with an interest expressed by Microsoft recently.

This would be the first time the term metaverse would change its course by getting into the mainstream from alluring gaming and sci-fi realms, making it possible for augmented virtual reality to finally reach the masses.

However, as the concept and technology gain popularity and humans use augmented reality powered avatars to be at different places at the same time, it may become difficult for them to draw a line between what's actual and what's not. Well! It doesn't stop here; metaverse is ready to build connections with blockchain to make possible a decentralised ownership of digital assets that can be used for purchases in the virtual world taking it a step further towards reality.

**Ms. Priyanka Antervedi,** Asst. Prof. (Management)

# PEGASUS – Concern over privacy

As the meaning suggests – an immortal horse having wings, Pegasus has been known as the sharpest among all spywares available today to penetrate into phones and perform "total surveillance", whether android or iOS. The interrupting intrusion into any phone without even leaving any traces of its activities is the USP of this malware.

Pegasus can creep into any phone via exploiting unknown vulnerabilities such as just a click on the malicious URL, exploiting any bug in voice calls through various apps such as Whatsapp, etc. or even through a missed call or SMS. It is highly capable of accessing all data on the phone including messages, emails, chats, call-logs, geographical location, camera, mic and the encrypted files. It can also capture screenshots, perform key-logging, monitor browser history and cookies and intercept audio-video calls.

**Let's understand what is Spyware-**

A Spyware is a malware (a software built with a specific malicious intent) which is designed such that it can penetrate any computer device and collect all the data from it, without seeking any consent from the device owner. It also monitors the data and all the activities performed on the device. Then, these activities and data can be used for commercial or other purposes. Data such as Usernames-Passwords, account PINs and information, Credit-Debit card details, tracking browsing activities, etc. are involved in spying and monitoring via such malwares.

This leads to the misuse of private data and the device is left open to data breaches along with several other issues such as downgrading the performance of the hardware, the network and other user activities. It also sends the personal data to an attacker.

**Modus-Operandi:**

**Penetration** – Entering a device through any website, app, installation package, link or file attachment.

**Spy and gather data**–through various modes of data input such as: keystrokes, capturing screen, etc.

**Transfer data and activities**–Sending data to the parties involved in spying or commercial activities.

**Protection from Spyware:**

As first line of defence, users must look out for reliable antivirus solutions providing capable antimalware detection and removal utilities along with other pro-active protection. Other than this, users must be highly cautious regarding providing consent to cookies.

Usage of anti-tracking browser extension with tools and utilities must be done. An important practice is to keep all the softwares updated with their latest versions along with purchasing /downloading of softwares or apps having appropriate licences and from relevant app stores/sources. Users are required to be careful while granting permissions to apps and softwares and must keep the Pop-up blockers 'enabled' all the time.

**Mr. Anubhav Bewerwal,** Asst. Prof. (CSE)

## Brain-Computer Interface

Brain-computer interfaces (BCIs) receive brain signals, analyze them, and translate them into instructions which are transmitted to output devices that perform the required actions. BCIs do not use normal neuromuscular exit routes. The main purpose of BCI is to replace or restore useful work for people disabled by vascular disorders such as amyotrophic lateral sclerosis, cerebral palsy, stroke or spinal cord injury.

From the first demonstrations of spelling based on electroencephalography and single-neuron-based technique to control the device, researchers continue to use electroen-cephalographic, intracortical, electrocor-ticographic, and other highly sensitive brain signals to control signals, robotic arms, prostheses, wheelchairs, and other devices. Brain-computer communication systems can also seem useful in recovery after stroke and other illnesses. In the future, they can add assistance to surgeons or other medical professionals. Brain-computer interface technology is gaining focus of faster growing research and development business that excites scientists, engineers, doctors, and society as a whole.

Its future successes will depend on development in 3 key areas.

Brain- computer interface require simple, portable, secure, and capable signal recovery hardware working in all areas. Secondly, Brain-computer interface programs need long-term validation by real use cases of people with severe disabilities, and practical and effective models should be made for their wide distribution. Finally, with every day, the functional integrity of BCI should be improved to achieve natural muscle integrity- based work.

**Mr. Devesh Pandey** , Asst. Prof. (CSE)

# Robot Valet proposed by MIT that can safely touch a human

It has been said that robotics is the most challenging area of machine learning: even simple things, like moving a robotic arm by a small distance, are an incredibly complex engineering task.

It's a big feat for researchers to apply machine learning to design robots which can touch humans to help them in their daily life. Researchers at the Massachusetts Institute of Technology on 12th July 2021 published the details of a study in which they demonstrated a robot arm helping a human, and offered some proves to claim that this collaboration of human and robot will be safe. In the demonstration, a robotic arm has a vest in its grip, with the human's right arm through the armhole which it then slowly tugs upward to the shoulder.

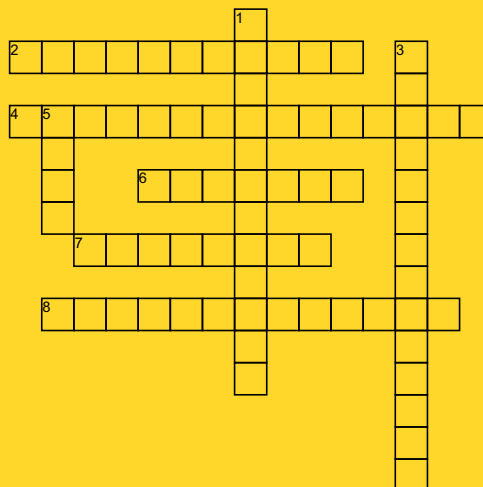The research is built upon reinforcement learning, an algorithmic approach based on machine learning, which improves itself by a feedback system.

The purpose is not only to assist humans but also to make this Robo-Human interaction safe. To ensure this, the robot has to be careful at every single moment, to avoid collisions with a person, or to minimize any harmful effects of such collisions. Balancing these two objectives is the challenge that the MIT group is set about.

The work can be read in detail in a paper titled "Provably Safe and Efficient Motion Planning under Uncertainty for Human-Robot Collaboration," by MIT Ph.D. student Shen Li, lead author, along with Nadia Figueroa, Ankit Shah, and Julie A. Shah. The work is expected to be presented at the 2021 Robotics: Science and Systems conference.

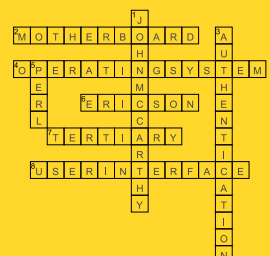**Ms. Richa Mishra,** Asst. Prof. (CSE)

## CROSSWORD PUZZLE

**Across**
2. Where is RAM located
4. What is LINUX
6. Who was the Founder of Bluetooth ?
7. USB is which type of storage device
8. The component of an Expert system is____

**Down**
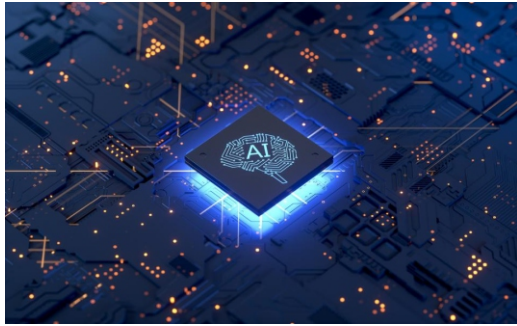1. Who is known as the -Father of AI"
3. Verification is process of
5. language is not commonly used for AI?

Solution:
Across:
2. MOTHERBOARD
4. OPERATINGSYSTEM
6. ERICSON
7. TERTIARY
8. USERINTERFACE

Down:
1. JOHNMCCARTHY
3. AUTHENTICATION
5. MEMORY

## Big Data Analytics using AI

As we know world is evolving around Digital life , Artificial intelligence is technology which involves development of application, system and software whereas Big Data is a modern analytics that allow companies to make more data- driven decisions than even before. Artificial intelligence provides big data users to automate and improve complex predictive and descriptive data analysis that would have been high time consuming and tedious if was performed by humans.

The integration of artificial intelligence and big data has surprisingly enhanced the way organizations interact with their information and clients.

Business intelligence, data analytics forecasts are most influenced by AI and Big Data. Loyal clients are crucial to every successful organization which is why every company has introduced AI into its Big Data to remain competitive. AI and Big Data are among the most revolutionary ideas in the modern world. With the increase of global data on an exponential scale, AI technologies are closely tracking behind the scene, the farreaching impacts of which have become even more apparent on a day-to-day basis. Over the years, AI and Big data have increasingly developed faster and the future comes close to applying both technologies in each sector. We expect AI and Big Data will have a brighter future, where these two would be put in the right combination.

Artificial intelligence and big data. IEEE intelligent systems.

**Anushka Jain,** B.Tech (CS 2nd Year)

## Application Programming Interface (API)

API is Application Programming Interface. It is a software that allows two applications to talk to each other.

How do API's work?

Let's imagine you're a customer at a restaurant.The waiter(the API) functions as an intermediate between customers like you(the user) and the kitchen(web server). You tell the waiter your order(API call),and the waiter requests it from the kitchen. Finally the waiter will provide what you ordered. So, API is like an abstraction of the web server.

**Types of API's:**

**1. Open APIs:** It is also known as public API, as these API are available publically.

**2. Partner API's:** A developer needs specific rights in order to access this type of API because they are not available to public.

**3. Internal API's:** Also known as private API's.They are internally used within a company.

**4. Composite APIs:** It can combine different data and service API's. It's execution speed is much high.

How to manage API risks: One of the risks is poor Coding. We can resolve these errors through education mindset.

Benefits of API's: Cost saving and improved productivity are the main benefits of API's.

Conclusion: It is a powerful tool with high execution speed.

**Riya, Dhawan,** B.Tech (CS 2nd Year)

## How the Number Crunching Phenomena Happens

Ever wondered how some numbers are magically generated by computers in frequent uses such as cryptographic keys, interactive games, security applications etc. Day by day, we strive toward betterments in technology and one of the milestones we covered was how the computer was able to pick a single or even a collection of numbers or alphabets. One of the methods to produce purely random numbers is with the help of thermal noise. Thermal Noise is obtained from fluctuations in a resistor that generates a voltage source, thus providing us a purely random output.

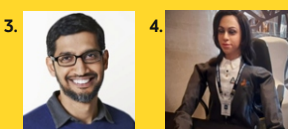Similar techniques to generate an arbitrary output, such as Atmospheric Noise, Nuclear Decay are also popular in the Computer Science. What makes Hardware Random Number Generation more reliable is that there is no requirement for pseudo-random techniques like hash algorithms or searching and sorting as our readings are dependent on natural properties that keep changing over time. It is commonly used in Internet Encryption Protocol such as Transport Layer Security and expected to be an integral part of decentralized projects in forthcoming times.

**Mohammad Alim,** B.Tech (CS 2nd Year)

## Who's Who ?

**Q. Identify the following logo:**

1. 2.

**Q. Identify the faces:**

3. 4.

**Q1**

.................. is an Indian-born American computer architect who defined and developed several widely used technologies, including USB (Universal Serial Bus)

**Q2**

..................................... is an Indian-American billionaire businessman and philanthropist. He is a founding board member and one of the first investors in Google.

**Q3**

......................... is an Indian-born American Business Executive. He is the Executive Chairman and CEO of Microsoft.

## Mind - The Most Important Part of us

The most important part of us is our mind. Brain is just the hardware but the mind creates the software i.e. our thoughts. We need to care for our mind, feed it with positive thoughts, water it with the right energy and exercise it with knowledge and wisdom.

Like in a garden when care is invested, flowers bloom and give us fragrance. Similarly when you feed your mind with care, it shall repay you with good ideas, vision and good thoughts, thus helping us to develop into a persona of positive aura.

Whenever there is a negative situation, I tend to react very negatively to it. I tend to have a lot of negative thoughts and experience a lot of difficulty, then I blame the situation and I feel I am facing punishment due to it.

But I need to understand the fact that the biggest punishment I experience is due to my own NEGATIVE THOUGHTS - the more I free myself from such thought I can be free from any kind of punishment.

SO, LET'S WORK ON IT!!

**Dr. Rubby Chawla**
Director, Allenhouse Colleges

## India's AI Based Start-ups

Artificial Intelligence is undoubtedly an extraordinary innovation being utilized in ground-breaking and unanticipated ways across the world. Besides the government pushing for digitization and enhanced AI drives, many firms have entered the arena by way of launching new AI and data science-related start-ups. Let us take a glance at some of the booming AI researches and start-ups in India:

1. Staqu –Staqu is a Gurugram-based startup that specializes in security software to help mitigate crime by employing an AI-based facial recognition technology to detect criminals in crowded environments.
2. Blue Sky Analytics –This is a start-up that provides environmental data on real-time basis by using AI which is high resolution and high frequency in response to air pollution.
3. Intello Labs – This start-up works with the agricultural industry to provide solutions such as image detection, analysis, grading and testing of commodities such as tomatoes, potatoes, corn, onions, wheat, etc.
4. Niramai – This start-up uses a technology that it calls 'Thermalytix', which is a thermal sensing device that scans the chest area for early detection of cancer signs.
5. Artivatic Data Labs – This is an end-to-end AI infrastructure framework based on deep-tech, machine learning technologies and in-depth analogies of genomic science, neuroscience, and psychology, thereby enabling creation & implementation of intelligent products and solutions.
6. SigTuple – SigTuple aids in the efficient analysis of visual medical data by creating intelligent screening applications using AI.

With around 5,00,000 people working in this sector, India's Artificial Intelligence start-up atmosphere looks promising

**Prof. (Dr.) Bhagwan Jagwani**
Campus Director, Allenhouse Colleges

### Infosys
Raghvendra Yadav | Mohd Arsalan

### TATA CONSULTANCY SERVICES
Tanushri Vishwakarma | Vaishnavi Dixit

### Tech Mahindra | IBM
Mohd. Hassan Raza | Prashant Joshi

### jaro education
Vaishnavi Dixit | Tanzil Ali

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### HCL
Silky Gupta | Tausif Ansari
Mariyam Kauser | Mahima Sharma

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**Teaching-Learning-Assessment Best Practices in CS/IT**

A Case Study with two related Courses
Computer Programming and Design and Analysis of Algorithms

By
**Dr. Mohammed Javed**
Assistant Professor, Department of IT
Indian Institute of Information Technology (IIIT-Allahabad)
Email: javed@iiita.ac.in

Allenhouse Institute of Technology & Management Institutions, Kanpur
June 12, 2021

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**Tuba Khalid** B.Tech-CSE | **Saransh Batham** B.Tech-CSE
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