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Editor's Note

In the course of ever evolving human civilization, there comes a time period which radically transforms it. Year 2020 has unquestionably been such a time period. With the outbreak of pandemic COVID-19, coupled with advances in the field of computer science and engineering, the human civilizations are witnessing extraordinary political, social, economic and ethical transformations. The availability of faster data processing and humongous storage capabilities along with super fast data networks have paved a path for new technologies like AI, Machine Learning, and Block Chain to come out as an interdisciplinary solution to complex problems. Considering these changes, we have decided to fulfil our duties as an educational institution to let our society know the current happenings in the field of Computer Science.

I seek immense pleasure to present our newsletter ALLENBYTES to avid readers of technology. I believe that our efforts would receive not only appreciation but suggestions to improvise for our readers.

Wishing you a prosperous and healthy time ahead!

-Sudeep Pandey

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“Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road.” - **Stewart Brand**

Google's pull down of user tracking cookies

Google founders Larry Page and Sergey Brin had written in their paper “The Anatomy of a Large-Scale Hypertextual Web Search Engine” published in 1998 that business models for commercial search engines is 'advertising', which results in an inherent bias towards advertisers pushing them away from the needs of consumers in turn resulting in poor quality search results.

Google has said it would end support for cookies in Chrome by early 2022 once it figures out how to address the needs of users, publishers and advertisers. Cookies are strands of codes that are used to target advertisements. They are delivered to the user's browser and then they tag along as the visitor moves on to other websites. The company said in a blog post last month that it will only use “privacy-preserving technologies” that rely on

methods like anonymisation or aggregation of data. Chetna Bindra, product manager of Google explained FLoC i.e. Federated Learning of Cohorts (FLoC). She said that businesses can reach people with “relevant content and ads” using a new way called FLoC that creates clusters of large groups of people with similar interests and keeps their identity private on the browser. FLoC can provide an effective replacement signal for third-party cookies. They claim that advertisers can expect at least 95% of the conversions per dollar spent when compared to cookie based advertising.

Google's move is likely to put pressure on other players like Facebook, as it happens to be the market leader in digital advertising

- Manjula Tripathi

Developing Immune System for Cyber Security

With an advent of technological development and ease it creates for humans, there has certainly been a constant need to develop defensive technology for safeguarding information and systems. As technology advances, cyberthreats continue to get more prevalent and complicated having capacity to disrupt business operations, destroy critical information and break technical infrastructure in a matter of not few days but few hours. Modern cyber attacks are getting smarter than human defence systems with an incorporation of Offensive Artificial Intelligence. Cybercriminals are intellectually turning to this Offensive AI to widen attacks and evade already existing defence system making it imperative for organisations to build an improved auto immune system to survive these modernised cyber attacks. As per the latest research conducted by Datatrace, the world leader in AI cybersecurity, 60% of IT & ITES organisations confirm that automated attacks are outsmarting the human responses thus becoming an existential threat. One of such most dangerous weaponised AI tools, Deepfake could even pass the biometric test and create fake videos of public figures with a manipulated speech.

Considering the increase in sophisticated attacks and the scale to which they are engaging human responses it becomes inevitable to develop Defensive AI that is equipped to detect unprecedented AI based cyber attacks and deal with them with minimum human intervention. And so, most of the business leaders are adopting Defensive AI that traces what's considered as a normal activity in the business and anything that appears to be abnormal or a potential threat is detected and rectified. They possess the ability to transform their defence system per say, thus being immune even to unfamiliar AI-based cyber attacks. This helps them in dealing with those abnormalities that have never appeared before. Keeping pace with the development on the offensive side of AI implementation, along with advancing digital plethora organisations need to quickly reform strategies to adopt defensive AI to protect their digital assets and have an upper hand on the new wave of AI-based cyber attacks. All they need is to have more vigilant IT teams using efficient and effective defensive AI tools.

-Priyanka Antervedi

Is Sandesh app an Indian alternative to WhatsApp?

Indian Government is making continuous efforts for the initiative "Digital India". The launch of "Sandesh App" is one of those optimal efforts. National Informatics Centre developed this app for ensuring official confidentiality and privacy. Sandesh app is emerging as an Indian communication platform. This app was initially available for only official communication but now accessible for everyone. Many scholars quoted that "Sandesh" app is an Indian alternative to WhatsApp as both are instant messaging apps. If we make comparison between WhatsApp and Sandesh app, we will find that almost all features are same including chat, sharing video/photos and so on. Limitations of data or video/audio size are same in this Indian app like WhatsApp. We need to remember one inevitable rule in "Sandesh App" that user is not allowed to change his number or e-mail id after creating his account in this app whereas WhatsApp allows this to its users. "Sandesh" app has many additional features too such as checking weather of your city. "Sandesh" app can be a replacement of WhatsApp in India if National Informatics Centre emphasises on making this app more useful for instant communication. Moreover this app will definitely make India more self-reliant in the sector of digital communication.

- Alka Chandra

Chinese Cyber Attack

Why India should worry?



The world has witnessed a souring relationship between China and India. Recent evidence of Chinese government-linked company's attempt to monitor the digital footprint of thousands of Indian citizens has added fuel to fire. Earlier Indian Express had reported that a Shenzhen-based technology company, Zhenhua was monitoring over 10,000 Indian people and organisations that included influential political and industrial figures, bureaucrats, scientists, sports persons etc. Goldman Sachs-backed cyber intelligence firm Cyfirma said that

a Chinese hacker group Stone Panda had identified faults in the IT infrastructure and supply chain software of Bharat Biotech and the Serum Institute of India that have developed Covaxin and Covishield. Companies like Stone Panda attack vaccine companies to extract the companies' intellectual property and gain a "competitive advantage over Indian pharmaceutical companies". However, it can also be the part of their long-term strategy where they are distracting in order to target other important activities in near future.

-Jainandini Singh

5G Technology & India's initiative to adapt to it

5G is the fifth generation technology which telecom companies started utilizing all over the world in 2019. It is the next technology following 4G network. 5G is emerging as a revolution in telecom industry globally. Its purpose is to provide a better and agile connectivity to most cellular phone users.

In many advanced nations, the top most telecom companies have begun its testing and trials. Countries like China, South Korea and US have led the race by deploying 5G even before Europe, Middle East, Africa and Asia Pacific could start using it. India had also decided to adopt this revolutionary change in technology, and so in 2018 it had made plans to start 5G services as soon as possible.

India's leading private telecom companies, Reliance Jio Infocomm, Bharti Airtel have been insisting on the allocation of 5G frequency bands to give it a start. Though Indian government has shown its inclination to initiate the launch yet most of the telecom players are currently lacking sufficient financial resources to invest and develop the required 5G ecosystem.

Jio is the only Indian Telecom Company that is all set with its existing telecom network to pioneer in providing 5G services in India in the later part of 2021. Reliance Jio Infocom already has required resources to set up a native 5G infrastructure. However, Jio can conduct field trials of its 5G solutions only after it purchases 5G spectrum.

-Kawaljeet Kaur

Techvita : Quiz on IT

1. An American computer scientist who coined the name "Artificial Intelligence" in 1956 was _____.
2. Name the first computer to beat world's chess champion, Garry Kasparov in 1997. _____
3. What is the name of World's first humanoid robot citizen _____?
4. Deep Learning is (subset/ superset) of Machine Learning?
5. An application of artificial intelligence (AI) that provides systems the ability to learn and improve automatically from experience without being explicitly programmed is named as _____
6. A method of testing a machine's human-level intelligence, named after Alan Turing, is _____ test.
7. Wanna Cry is a popular _____.
8. The Artificial Intelligence method that analyses natural human language, is called _____
9. Which is the most popular programming language used in AI? _____
10. A system of interrelated, internet-connected objects that are able to collect and transfer data over a wireless network without human intervention is known as _____.

Answers:
(1) John McCarthy (2) IBM's Deep Blue computer (3) Sophia.
(4) Subset (5) Machine learning (6) Turing (7) Ransomware
(8) (NLP) Natural Language Processing (9)
Python (10) The Internet of Things (IoT)

Five Critical Genes Related to Seven COVID-19 Subtypes: A Data Science Discovery

Mr. Zhengjun Zhang has published his research paper on application of Data Sciences towards identifying genes to find appropriate and accurate COVID-19 testing. In his article, he writes that Since the first confirmed case of COVID-19 was identified in December 2019, the total COVID-19 patients are up to 80,675,745, and the number of deaths is 1,764,185 as of December 27, 2020. The problem is that researchers are still learning about it, and new variants of SARS-CoV-2 are not stopping. For medical treatment, essential and informative genes can lead to accurate tests of whether an individual has contracted COVID-19 and help develop highly efficient vaccines, antiviral drugs, and treatments. As a result, identifying critical genes related to COVID-19 has been an urgent task for medical researchers. We conducted a competing risk analysis using the max-Linear logistic regression model to analyze 126 blood samples from COVID-19-positive and COVID-19-negative patients. Our research led to a competing COVID-19 risk classifier derived from 19,472 genes and their differential expression values. The final classifier model only involves five critical genes, ABCB6, KIAA1614, M N D1, SMG1, RI PK3, which led to 100% sensitivity and 100% specificity of the 126 samples. Given their 100% accuracy in predicting COVID-19 positive or negative status, these five genes can be critical in developing proper, focused, and accurate COVID-19 testing procedures, guiding the second-generation vaccine development, studying antiviral drugs and treatments. It is expected that these five genes can motivate numerous new COVID-19 researches. Full Research article can be read @ <https://jds-onLine.org/journal/JDS/article/75/info>

Blockchain Platform For COVID-19 Vaccine Supply Management

Four faculty members from Computer Science Department, Faculty of Automation and Computer Science, Technical University of Cluj-Napoca, Cluj-Napoca, Romania have proposed a Blockchain application for COVID-19 Vaccine supply management. In their proposed work they have said that in the context of COVID-19 pandemic, the rapid roll-out of a vaccine and the implementation of a worldwide immunization campaign is critical, but its success will depend on the availability of an operational and transparent distribution chain that can be audited by all relevant stakeholders. In this paper, they discuss how blockchain technology can help in several aspects of COVID-19 vaccination scheme. They present a system in which blockchain technology is used to guarantee data integrity and immutability of beneficiary registration for vaccination, avoiding identity thefts

Infectious disease outbreak prediction using media articles with machine learning models

Juhyeon Kim and Insung Ahn have published their work on applying machine learning model to predict Infectious disease outbreak. In their work, they write that when a newly emerging infectious disease breaks out in a country, it brings critical damage to both human health conditions and the national economy. For this reason, apprehending which disease will newly emerge, and preparing countermeasures for that disease, are required. Many different types of infectious diseases are emerging and threatening global human health conditions. For this reason, the detection of emerging infectious disease pattern is critical. However, as the epidemic spread of infectious disease occurs sporadically and rapidly, it is not easy to predict whether an infectious disease will emerge or not. Furthermore, accumulating data

and impersonations. Smart contracts are defined to monitor and track the proper vaccine distribution conditions against the safe handling rules defined by vaccine producers enabling the awareness of all network peers. For vaccine administration, a transparent and tamper-proof solution for side effects self-reporting is provided considering beneficiary and administrated vaccine association. A prototype was implemented using the Ethereum test network, Ropsten, considering the COVID-19 vaccine distribution conditions. The results obtained for each on-chain operation can be checked and validated on the Etherscan. In terms of throughput and scalability, the proposed blockchain system shows promising results while the estimated cost for vaccination scenario based on real data remains within reasonable limits.

Full Research article can be read @ <https://www.computer.org/csdl/journal/oj/2021/01/09382850/1saYu3norYY>

related to a specific infectious disease is not easy. For these reasons, finding useful data and building a prediction model with these data is required. The Internet press releases numerous articles every day that rapidly reflect currently pending issues. Thus, in this research, they accumulated Internet articles from Medisys that were related to infectious disease, to see if news data could be used to predict infectious disease outbreak. Articles related to infectious disease from January to December 2019 were collected. In this study, they evaluated if newly emerging infectious diseases could be detected using the news article data. Support Vector Machine (SVM), Semi-supervised Learning (SSL), and Deep Neural Network (DNN) were used for prediction to examine the use of information embedded in the web articles: and to detect the pattern of emerging infectious disease.

Full Research article can be read @ <https://www.nature.com/articles/s41598-021-83926-2>

Blockchain: In a Nutshell

Blockchain has been in the tech headlines for the last few months and it is predicted to be the new-age Internet for its revolutionary feature of passing on the information without letting it to be copied by either the server or user. Blockchain is made up of a connected list of records called blocks that are adjoined to each other using cryptography with each of the block holding the cryptographic hash of the previous block.

Types of Blockchain

Permissionless Blockchain: It is an open network where any user can get access of the Blockchain without an approval thus making it free of any permission requirement.

Permissioned Blockchain: It has an access control layer attached to it that acts as surveillance on the network tracing its users and disclosing it to the network owners.

Usage in the Modern World

The all-new trending technology is used in cryptocurrencies with the pinnacle reason being that one of its popular variant, Bitcoin, which recently passed a total market cap of 1 Trillion US Dollars, was able to solve the Double Spending Problem, where the same token of digital currency was spent twice at the same instance but Satoshi Nakamoto, who devised the first blockchain database, troubleshot it with an efficient algorithm that makes multiple confirmations in less time to avoid the hassle.

What makes Blockchain unique?

Looking at the bigger picture, Blockchain Database edges past Traditional Database in terms of transparency and security as it engages decentralized nodes unlike the data on a centralized server in a traditional database that can be altered, manipulated or erased from the records. Blockchain offers innumerable advantages like no interference of a third party in bank transactions which makes it time-friendly and efficient, smart contracts can be executed in absence of human interaction and its wide range of use in other sectors like Digital Identity, Real Estate etc.

-**Mohammad Alim**
B.Tech (CSE)

References: International Journal Of Engineering Research & Technology ComputerWorld

Does an Engineer need to possess Management Skills?

The fast and rapid progress of technology has made visible changes to each sphere of our lives, and engineering is not an exception.

Engineers are hired for their technical skills, but taking the next career step to management requires a more comprehensive skill-set.

As per several studies done of late, employers look for certain management skills while recruiting engineers. If an engineer does not possess these additional skills, he/she might struggle to gain the support of his/her employees, managers and suppliers.

In this article, we are going to take a closer look at the management skills required by an engineer in today's competitive time.

Future engineers are expected to have a whole range of management skills, and this list is rapidly expanding. However, some of the most desirable skills are enumerated herein:

- Complex Problem Solving;
- Critical & Analytical Thinking;
- Complex Decision Making;
- Creativity and Openness to Innovation;
- Design Thinking;
- Project Management;
- Time Management;
- Situational Leadership;
- Teamwork;
- Social/Interpersonal Skills;
- Business Ethics;
- Negotiation Skills;
- Systems Thinking.

In order to keep pace with today's volatile, uncertain, complex, and ambiguous environment, budding engineers need to pay heed to this. Apart from honing their technical skills, they should equip themselves with the necessary management skills that would certainly help them climb the ladder of success in their professional/entrepreneurial journey.

Dr. Bhagwan Jagwani
Campus Director,
Allenhouse Colleges

Importance of Mental Health for Technocrats

Human beings are social animals and have the ability to heal themselves with required human touch and proximity. However, in most of the technical profiles especially in the field of computer science and engineering, professionals are usually engaged in creating, innovating or fixing bugs in their own silos to identify how things are not working correctly or what next is to be developed. With minimum human interaction and maximum involvement with machines their mental state gets adversely affected to an extent. A lot of software developers tend to suffer from finding fault in functioning of everything thus leading them to developing OCD (Obsessive Compulsive Disorder) at times. This has probably called for employing those people who have a better mental balance and can differentiate between what to obsess over and what to ignore, still having a drive to get to perfection.

In view of the mental hazards the technocrats may go through in the demanding market of Industry 4.0, there are a few pointers that can help

- maintain a better mental state:
- 1. Consider yourself human and not a machine.** A machine with same codes will always give the same result, whereas a human may not.
 - 2. Learn a skill outside your industry.** Stress busting skills like playing an instrument, cooking, skiing, etc can give you a fruitful mental break.
 - 3. Taking up new challenges.** This ought to be something outside work, like, adventure sports, travelling to a new location or reading a different genre.
 - 4. Have a healthy social life.** Striking a work-life balance is foremost if you want to sustain creativity. Go out with friends and family to have some good social warm up.
 - 5. Stay optimistic & thankful for what you have achieved.** It is not all who reach where you are and so be hopeful of the next day thanking god and people around for whatever you have learnt.

Dr. Rubby Chawla
Director,
Allenhouse Colleges

Allen TechTalk

on
'Adversarial Artificial Intelligence and Cybersecurity'
by
Dr. Sanjay K. Sahay, Associate Professor,
Department of Computer Science and
Information Systems,
BITS, Pilani, K.K. Birla Goa Campus.



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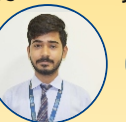
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