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INSTITUTE OF INFORMATION TECHNOLOGY

ADDING VALUE TO ENGINEERING

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DEPARTMENT OF INFORMATION TECHNOLOGY

Present Annual Technical Magazine - 2022

TECHEV

Technological Advancements in 75 years of Independence.

DEPARTMENT OF INFORMATION TECHNOLOGY

Welcome to the Department of Information Technology. As we all know, this is an era of Information Technology, and almost every one of us uses some kind of gadgets which invariably leverages the benefits of Information Technology. The advent of Information Technology has revolutionized the way we live. Moreover, Internet and mobile wireless technology are the boons of Information Technology. So, the department strives hard to groom our students with this cutting-edge technology, thereby instilling high valued ethics and morals. The department prepares them to take up the challenges of ever-changing dynamic IT industry. To fulfil the vision and mission of Information Technology Department towards imparting quality education to our students we conduct various activities like expert lectures, seminar and workshop and industrial visit to make teaching process effective. We provide a platform to our students to participate in many extracurricular activities through various technical, non-technical contests for their overall personality development.

MESSAGE FROM HOD

It is a great privilege and immense honor to inform you that the Department of Information Technology is publishing its 9th Annual Technical Magazine **"TechEvo-2022"**. It is reflection of student's hidden talents, skills and caliber. This magazine certainly would induce the young engineers to promote their creativity in approaching things differently. This technical magazine is a platform to exhibit the literary skills and innovative ideas of students. Through this magazine students can convey inspirational articles, vibrant drawings, mind-scintillating poems and updates of current trends to others. All these things have been made possible by the extraordinary vision of **Shri Malojiraje Chhatrapati**, Hon. Secretary, All India Shri Shivaji Memorial Society and the immaculate planning of **Dr. P. B. Mane**, Principal, All India Shri Shivaji Memorial Society Institute of Information Technology. I take this opportunity to congratulate the chief editor Prof. Mrs. Reshma. Y. Totare for bringing out this magazine as per schedule, which in itself is an achievement considering the effort and time required. I would like to thank all editorial team members for providing students a platform for creative thoughts and knowledge expansion. I express my considerable appreciation to all the authors of the articles in this magazine. I express my gratitude to all for their involvement, encouragement, support and guidance.

Dr. Meenakshi. A. Thalor
HOD, I.T Department
AISSMS IOIT, Pune

MESSAGE FROM STAFF EDITOR-IN-CHIEF

It gives me immense pleasure as our Department of Information Technology present 9th consecutive edition of our department's annual technical magazine "**TechEvo 2022**" to our dear readers. This year we are showcasing innovative ideas and hidden talents of our young minds on the theme "Technological Advancements in 75 years of Independence". The objective of the magazine is to provide platform for our students to augment with the technology focus and scope of it. The technical section of this magazine elaborates the advancement in the field of technology in India in these 75 years of Independence.

On behalf of the entire magazine team; I would like to extend my gratitude to our respected Principal Dr. P.B. Mane sir for giving me the opportunity to work as the editor of magazine. I take this opportunity to thank our Head of Department Dr.M.A.Thalor for her continuous encouragement and guidance. Special thanks to entire editorial team for excellent team work and tireless work and efforts in successfully compiling this magazine. I congratulate all the participants for sharing distinguished articles in the magazine. Flip through the pages for a journey to get inspired and encouraged by reading articles.

-Mrs. Reshma Yogesh Totare
Chief Editor and Magazine coordinator
Assistant Professor
Department Of Information Technology

ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S INSTITUTE OF INFORMATION TECHNOLOGY

Department of Information Technology

VISION

To become a front runner in preparing graduate to be technically competent and skilled IT Professionals for addressing the need of industry and society.

MISSION

i. To impart knowledge of Information Technology through innovative teaching-learning practices
ii. To prepare students for employment/entrepreneurship/higher studies through curricular and extra-curricular activities.
iii. To promote research and professional activities.
iv. To instil ethics and lifelong learning skills with concern for the society.

PROGRAM EDUCATIONAL OBJECTIVE

Graduates will demonstrate ability to

1. Solve multifaceted and complex problems in IT industries.
2. Excel in diverse career paths with core professional skills.
3. Engage in cross domain research activities.
4. Cater to the needs of society with IT solutions/applications.

PROGRAM SPECIFIC OUTCOMES

1. Graduates will be able to use database, networking and programming technologies for solving real life problems.
2. Graduates will be able to analyse and develop applications in the field of computing, networking, security and analytics.

PROGRAM OUTCOMES

ENGINEERING GRADUATES WILL BE ABLE TO

1.Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. **[Engineering knowledge]**

2.Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. **[Problem analysis]**

3.Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate

consideration for the public health and safety, and the cultural, societal, and environmental considerations. **[Design/development of solutions]**

4.Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. **[Conduct investigations of complex problems]**

5.Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations. **[Modern tool usage]**

6.Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. **[The engineer and society]**

7.Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. **[Environment and sustainability]**

8.Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. **[Ethics]**

9.Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. **[Individual and team work]**

10.Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. **[Communication]**

11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. **[Project management and finance]**

12. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. **[Life-long learning]**

MESSAGE FROM EDTORIAL TEAM

It gives us immense joy and satisfaction to finally introduce our very own departmental technical magazine "**TechEvo-2022**". Just like the Gods churned the ocean of the milk to extract the nectar, we have tried to churn out creativity from this mess of technology. A lot of effort has gone into making of this magazine. We hope you enjoy reading the magazine.The best thing about this magazine is that it represents the creative side of IT students to a fair degree- something that we think we all need to connect with. So, this time we have made an attempt to bring out the talent concealed within our student community. This magazine includes articles on what advancement India has done in the field of technology, I.T sector and many new latest technologies.We hope you enjoy reading this magazine as we have enjoyed making it.

Editorial Team
1.Akshita Ghanwat
2. Ankita Giri
3.Tanmayee Mali
4. Prajakta Musale
5. Sujay Deshmukh
6. Kartik Yeole(Designer)

UPI: THE DAWN OF DIGITAL FINTECH NIRVANA

In March 2022, the Reserve Bank of India took a revolutionary leap in the Indian payments ecosystem by launching a version of UPI that can be used on feature phones. This move will be a significant way forward to boost financial inclusion and bring more than 40 million feature phone users into the digital payments fold.

With innovation and committed focus, India has achieved remarkable feats in a digital payments ecosystem that is unmatched globally. In 2020, India surpassed all other countries in the world with the highest number of real-time online transactions, and the latest market studies now estimate that by 2023, digital wallet transactions are expected to overtake cash as the leading point of sale in India. . At the macro level, these are the dividends of the Digital India mission, which has led to a wave of transformation in the country.

UPI FACTORS

Precisely in the case of digital payments, a key driver of our growth was the launch of the United Payments Interface (UPI) in 2017 and its expansion since then. Since the launch of UPI in 2017, India has improved financial inclusion at a CAGR of 5% and more, and since 2018, the country has more than doubled the extent of digitization of payments, as shown by the extensive Digital Payments Index and Financial Inclusion Index. by RBI.

One of the major issues in tech markets and UPI in particular was the fear of market concentration early on, with few digital payment platforms gaining dominance over UPI transactions due to network effects and first mover advantages. Around the time NPCI issued the regulation, only a few digital payments players had a market share of more than 75% in UPI payments.

THE NEED FOR UPI PROTECTION

Payment clearing is a critical area of economic activity with enormous global, societal and domestic impact. The impact of such dependence has been strongly felt, including accusations against leading app stores for allegedly using their dominant position to extract high commissions from app developers for payment settlements. These concerns need to be isolated in the context of UPI and prevent a few players from gaining dominance over a country's high-potential proprietary technology. Analysis of the market trajectories of technology platforms across geographies strongly reflected that the advantages of network effects and early transition advantages make it challenging for new entrants to achieve a healthy market share.

This can also be realized in the context of UPI payments, where even though there are about 60 UPI payment enablers in the country, exceeding 78% in volume and more than 80% in value as on February 2022, it is still going on. be held by several digital payment applications. At present, this appears to be a far-fetched scenario considering that between April 2021 and February 2022, leading payment app UPI's share roughly increased from 45% to 48% (value) and from 44% to 45% in volume, rather than gradually decreasing.

Therefore, as the high-potential UPI technology expands, it is important to ensure that it does not become a victim of quadropoly and that Indian digital payment companies have enough market space to expand in this Indian payment technology. Compliance and aggressive UPI market share thresholds are absolutely necessary for India to protect the family jewel of its payment systems.

- Omkar Danave
PRESIDENT, ITSA
BE-IT

ESCALATION IN TELECOMMUNICATIONS

India is now the world's second largest telecommunications market with 1.16 billion subscribers and has experienced strong growth over the past decade. According to a report produced by the GSM Association (GSMA) in partnership with the Boston Consulting Group (BCG), India's mobile economy is growing rapidly and will contribute significantly to India's Gross Domestic Product (GDP). In 2019, India overtook the United States to become second largest market in terms of app downloads.

The Indian government's liberal and reform policies, along with strong consumer demand, have contributed to the rapid growth of the Indian telecommunications sector. The government provided easy access to markets for telecommunications equipment and a fair and proactive regulatory framework that enabled consumers to access affordable telecommunications services. Deregulation of foreign direct investment (FDI) norms has made the sector one of the fastest growing in the country and one of the top five job creators.

INVESTMENTS /MAJOR DEVELOPMENT: As our subscriber base grows every day, there is a lot of investment and development going on in this area. His FDI inflow into the telecom sector from April 2000 to March 2022 was US$38.33 billion. Here are some of the recent events.

• In January 2022, Google invested his US$1 billion in Airtel through the India Digitalization Fund.

• In October 2021, Vodafone Idea to sell its minority stake to global private equity investors including Apollo Global Management and Carlyle for up to Rs 7.54 crore (USD 1 billion) over the next 2-3 months said it was under consideration.

• In October 2021, British satellite operator Inmarsat Holdings Ltd. announced that it had become the first foreign operator to receive India's approval to sell high-speed broadband to aircraft and ships.

Inmarsat operates through Bharat Sanchar Nigam Ltd. (BSNL) will enter the market after BSNL obtains a license from the Ministry of Telecommunications.

• In October 2021, Dixon Technologies announced plans to invest his Rs 200 million (US$26.69 million) under his PLI telecom scheme. This investment includes the acquisition of the Bharti Group production unit.

In September 2021, Bharti Airtel announced his Rs 500 crore (US$ 673 million) investment to expand its data center business to meet the demand of its customers in and around India.

In August 2021, Narkotata Group announced it was in talks with Canadian company Telesat to launch his high-speed satellite broadband service in India under the Lightspeed brand. Did. . We work with One Web, Elon Musk's SpaceX, and Amazon. March 2021, Vodafone Idea Ltd. (VIL) said spectrum acquired in five circles will improve his 4G coverage and bandwidth, helping to provide customers with a 'better digital experience' announced.

ACHIEVEMENTS: Below are government achievements over the past four years.

• The Ministry of Telecommunications has launched 'Tarang Sanchar', a web portal for sharing information on mobile phone base stations and their EMF compliance.

• Unified Payments Interface (UPI) payouts hit an all-time high of 3.65 billion (volume based), worth ~Rs. 6.54 trillion ($87.1 billion) as of September 2021.

5'G IS THE FUTURE: 5G is the fifth-generation mobile network technology. It is designed to improve network connectivity by solving age-old problems of speed, latency, and usability that previous and current generation cellular networks have failed to address. 5G is said to offer data speeds 100 times faster than 4G networks. The key features are dramatically reduced latency from the current 50 milliseconds to less than 1 millisecond, throughput of up to 10 gigabytes per second, and an exponential increase in the number of connections.

5G LAUNCH IN INDIA: 5G launch in India soon. But when is the million-dollar question? There is no definitive answer to this question, but we are definitely getting closer to the launch of 5G in India. The global deployment of 5G networks is rapidly moving from pilot phases to early commercialization. In India, major network operators are working to roll out next-generation mobile networks. Bharti Airtel is one step closer to the 5G dream in India, announcing earlier this week that it will roll out his 5G service in India by the end of this month. Reliance Jio has to announced his 5G network on August 15th.

- Anurag Gargote
VICE-PRESIDENT, ITSA
TE-IT

THE WORLD'S DEPENDENCY ON GOOGLE

The world always assumes that Google services will be there, from Gmail and YouTube to online storage and smart homes. We take it for granted. Each hour YouTube has 30,000 hours of video uploaded, Google has almost 230 million searches and an enormous number of emails are sent. In terms of connections, Google controls about a third of the surface internet. But on Monday, the 14th of December 2020 all of the Google services suddenly disappeared. Across the world, users were unable to access emails and kicked out of ongoing Google meet sessions, one Twitter user even said that he was left sitting in the dark with his toddler as his Google home system had failed.

The crash had become one of the biggest social media trends and it sent waves of panic across businesses in many parts of the world.

How could one of the largest companies suddenly go dark on all of its services at once?

In total, the outage only lasted one hour but had already caused a lot of chaos. Some interesting things emerge from this event, not only are consumers dependent on Google but many businesses that you may not think are also dependent.

The Google outage caused pandemonium across the world. Some of the biggest companies that use Google services include Uber, Airbnb, Pinterest, Netflix, Spotify, Twitter, and the list goes on. The employees were not able to reach not just these services in terms of Gmail but, in some cases, get into the system. Lots of companies use Gmail to authenticate as we try to get into different websites and web services like Salesforce, Dropbox and so many others that use Google simply to get online. In certain cases, the nest heaters, that control heat air conditioning appeared to be down all across the globe. There were companies literally at a standstill. Gmail, Google Search, YouTube, Google Docs, Google Drive, Nest Home Systems, Google Play, and even Stadia,

all went down. The Wall Street Journal newsroom was dependent on Google services, so during the outage, some reporters had to resort to using telephones to collaborate in writing stories some schools in the USA had to close for the day. Wayne Westland community schools in Michigan gave its combined 10,000 students the day off after Google crashed. The school relied on Google meet for classes many other educational institutions would have been affected due to the prevalence of online classes because of the pandemic. There were also cases of the management of medical companies not being able to check on the schedules of physicians and other medical staff nor being able to contact customers. Remote work and learning had made individuals and businesses more dependent on online services than ever and in this domain, Google is the most widely used. All in all, the outages affected billions of people worldwide.

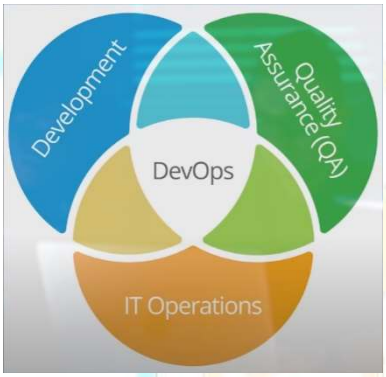
A Google spokeswoman told the wall street journal that there was a problem with the company system that authenticates login credentials. She stated that the problem was due to internal servers and that the issues weren't the result of a cyber-attack. This explanation doesn't give us much but that's just about all that Google said about the issue. It's rare for Google to have such a global outage like this because even a single physical geography is served by multiple servers across the world and even on these servers there are multiple backups that rapidly come online if there's a problem. As we've seen so much commerce and people's livelihoods rely on Google, which raises some serious questions what if next time Google was down not just for an hour but for days? Billions of dollars in revenue could be lost by companies around the world.

How does Google prevent this?

Google calls their plan to keep their services up and running, Site Reliability Engineering or SRE coined all the way back in 2006. SRE is a digital design philosophy basically for Google, the idea is to get software coders to run software management instead of getting IT managers to run it people call this kind of philosophy DevOps.

DevOps is basically development software coding that provides the outcomes of a system administrator. The thinking goes as follows; software coders will get bored by performing tasks by hand and naturally, build tools to help automate the process without the involvement of actual people. Google

states that SRE is its most fundamental feature. Todd Underwood of Google, in 2016 told Wide magazine, “We long for the day when nobody runs anything!”



Traditionally, development and operations were opposing forces. The Devs always wanted to build new software and get the changes out to the public as fast as possible but the operations staff wanted to ensure that nothing went wrong and the best way to do this is to keep the changes to a minimum. The trick that Google found is that if you combine development and operations, you can get a powerful synergy for a reliable system. Google is the world's largest online empire, the more humans you have running things the more probability there is for mistakes. So just have code run everything but within that human coders can still make mistakes.

Some say that Google's outage temporarily crippled the productivity of billions around the world and has made the biggest anti-trust argument anyone could have ever done. Google had to face off against the US department of justice for violating anti-trust laws. Google's lawsuit is one of the biggest anti-trust cases since Microsoft in 1998.

So, what can be done?

The solution is that there are alternatives to Google for every service they provide, what it all comes down to is trading the convenience that we've all gotten used to.

From this, we can understand that, indeed, the world is dependent on Google.

- Allur Shivprasad Rao
Technical Secretary, ITSA
BE-IT

QUANTUM COMPUTING & IT'S APPLICATION

The quantum in "quantum computing" refers to the quantum mechanics that the system uses to calculate outputs. In physics, a quantum is the smallest possible discrete unit of any physical property. It usually refers to properties of atomic or subatomic particles, such as electrons, neutrinos and photons.

A qubit is the basic unit of information in quantum computing. Qubits play a similar role in quantum computing as bits play in classical computing, but they behave very differently. Classical bits are binary and can hold only a position of 0 or 1, but qubits can hold a superposition of all possible states.

Quantum computers harness the unique behavior of quantum physics—such as superposition, entanglement and quantum interference—and apply it to computing. This introduces new concepts to traditional programming methods.

A quantum computer has three primary parts:

- An area that houses the qubits
- A method for transferring signals to the qubits
- A classical computer to run a program and send instructions

For some methods of qubit storage, the unit that houses the qubits is kept at a temperature just above absolute zero to maximize their coherence and reduce interference. Other types of qubit housing use a vacuum chamber to help minimize vibrations and stabilize the qubits. Signals can be sent to the qubits using a variety of methods, including microwaves, laser and voltage.

APPLICATIONS OF QUANTUM COMPUTING

Cryptography: Classical cryptography—such as the Rivest–Shamir–Adleman (RSA) algorithm that is widely used to secure data transmission—relies on the intractability of problems such as integer factorization or discrete logarithms. Many of these problems can be solved more efficiently using quantum computers.

Quantum machine learning: Machine learning on classical computers is revolutionizing the world of science and business. However, training machine learning models comes with a high computational cost and that has hindered the scope and development of the field. To speed up progress in this area, we are exploring ways to devise and implement quantum software that enables faster machine learning.

Optimization: Optimization is the process of finding the best solution to a problem given its desired outcome and constraints. In science and industry, critical decisions are made based on factors such as cost, quality and production time—all of which can be optimized. By running quantum-inspired optimization algorithms on classical computers, we can find solutions that were previously impossible. This helps us find better ways to manage complex systems such as traffic flows, airplane gate assignments, package deliveries and energy storage.

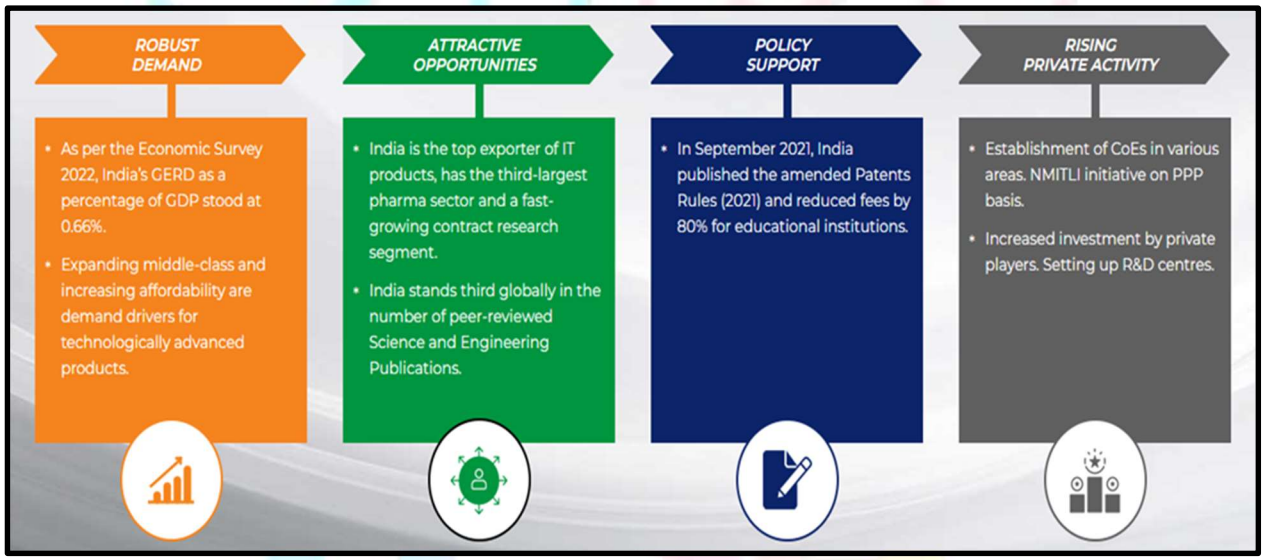
Quantum simulation: Quantum computers work exceptionally well for modelling other quantum systems because they use quantum phenomena in their computation. This means that they can handle the complexity and ambiguity of systems that would overload classical computers. Examples of quantum systems that we can model include photosynthesis, superconductivity and complex molecular formations.

Search: A quantum algorithm developed in 1996 dramatically sped up the solution to unstructured data searches, running the search in fewer steps than any classical algorithm could.

-Prof. Riyaz Jamadar
Assistant Professor
IT Dept., AISSMS IOIT

JOURNEY OF SCIENCE & TECHNOLOGY IN PAST 75 YEARS.

Modern India is an epitome of Scientific and Technological Development and is one of the key elements for economic growth. Post 15th August 1947, India's journey has become a great example of an impressive growth story. As claimed by the Indian Brand Equity Foundation, India is among the topmost countries in the world in the field of science and technology. India ranks third among the most attractive investment destinations for technology transactions in the world. Modern India has a strong focus on science and technology, realizing that it is a key element for economic growth. India is among the top five nations in the world in the field for space exploration. The country has regularly undertaken space missions, including missions to the moon and the famed Polar Satellite Launch Vehicle (PSLV). India is likely to take a leading role in launching satellites for the SAARC nations, generating revenue by offering its space facilities for use to other countries.



Our First Prime Minister, Pandit Jawahar Lal Nehru said "Science is not merely an individual's search for truth; it is something infinitely more than that if it works for the community". He made efforts to convert India's economy into that of a modern state of art.

By 2022, R&D expenditure is targeted to reach about 2% of the country's GDP. The engineering R&D and product development market in India is forecast to

post a CAGR of 12% to reach US$ 63 billion by 2025, from US$ 31 billion in 2019. As per the Economic Survey 2022, India's gross domestic expenditure on R&D (GERD) as a percentage of GDP stood at 0.66%. IT spending in India will grow 7% YoY to reach US$ 101.8 billion in 2022, compared to U$ 81.89 billion in 2021. In FY21, the science and technology sector added 497,501 employees, becoming India's top employment generator.

Over the last 75 years, India has become a bedrock for innovation in the technology sector. We are currently a major drive of the software-as-a-service revolution, a startup innovation hotbed with over 100 unicorns, a quick adopter of services centered on cutting-edge technologies like AI and ML, and above all a world leader in IT Services. India's National Artificial Intelligence Strategy prepared by NITI Aayog outlined a way forward to harness the potential of Artificial Intelligence (AI) in different fields. Accenture offers a framework for assessing the economic effect of AI for selected G20 countries in its latest AI research studies and forecasts that AI will raise India's annual growth rate by 1.3% by 2035.

Some of the recent developments in the field of science and technology in India are as follows:

- Actis, a global investor in sustainable infrastructure, is planning to invest over US$ 700 million in order to acquire and expand assets for its platform aimed at offering real estate to tenants in the life sciences and allied sectors in India.
- In March 2022, Toyota launched its Mirai hydrogen fuel cell car in India. The Indian Oil Corporation would be supplying hydrogen to power the car.

- India's Top 5 IT firms (TCS, Infosys, Wipro, HCL and Tech Mahindra) added more than 122,000 employees in in the first six months of FY22, nearly matching the 138,000 employees hired in the entirety of FY21.
- In October 2021, Biz2Credit, a fintech company, announced plan to invest US$ 100 million in India over the next five years on research and development activities and expansions.
- From 2014 to 2021, India recorded a 572% growth in patent approvals.
- To accelerate digital innovation in India, NITI Aayog, Amazon Web Services and Intel have come together to develop a new experience studio to boost problem-solving and innovation between government stakeholders, start-ups, enterprises and industry experts. The new experience studio will use technologies such as artificial intelligence, machine learning, Internet of Things, augmented reality, virtual reality, blockchain and robotics to accelerate their use in the public sector.
- TechnoPro, a Japanese tech firm, plans to hire 10,000 engineers and researchers in India by 2022-23.
- Qualcomm plans to invest US$ 8.5 million on design initiatives in India, which would include funding its innovation labs at Hyderabad and Bangalore for R&D.

India is aggressively working towards establishing itself as a leader in industrialization and technological development. Significant developments in the nuclear energy sector are likely as India looks to expand its nuclear capacity. Moreover, nanotechnology is expected to transform India's pharmaceutical industry. The agriculture sector is also likely to undergo a major revamp with the government investing heavily for a technology-driven Green Revolution. Government of India, through the Science, Technology and Innovation (STI) Policy-2013, among other things, aspires to position India among the world's top five scientific powers.

-Dr. Mrunal Pathak
Assistant Professor
IT Dept., AISSMS IOIT

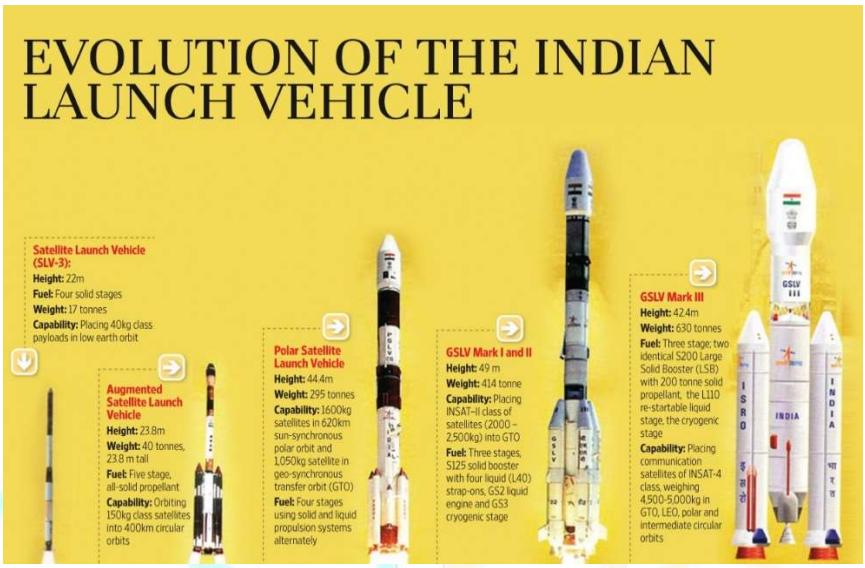
INDIAN SPACE PROGRAM

The beginnings of the Indian Race Program began in 1962 when INCOSPAR (Indian National Committee for Space Research) was established. In 1972, the Space program was formalized with the creation of the DOS (Department of Space) and the Space Committee. This was done to formulate and implement roles related to research and technology in the country. The scientific committee is the focal point for coordinating research and development activities related to science and technology. And DOS is the executive branch of this Russian Commission, which operates through major national bodies such as ISRO, NRSA, RRL, NMRF and NE-SAS. DOS also supports educational institutions by sponsoring research-related projects.

In 1969, the Government of India established his ISRO for the purpose of rapid development and development of the science and technology sector. The Indian Space Research Organization (ISRO) was founded by Dr. Chaired by Vikram Sarabhai of Ahmedabad, the organization was headquartered in Bangalore. Dr. Vikram Sarabhai, as Chairman of the Executive Board, assisted in policy drafting, policy development and oversaw the implementation of all national policies. ISRO has objectives aimed at empowering technology and data for India's development.

ISRO has assisted the country with media and education after successfully launching a satellite. ISRO also aims to oversee the collection and management of the country's natural resources using remote sensing technology, weather forecasting and environmental monitoring. India's racing program included the development and launch of several indigenous satellites, rockets, racing orbiters and rockets.

Besides ISRO, there are other research organizations in India such as:



1.Space Applications Centre: SAC is the organization located in Ahmedabad that engages in the development of payloads for satellite communication, remote sensing, and meteorology.

2.Vikram Sarabhai Space Center: VSSC is the leading organization for the development and launch of various satellites and satellite vehicles and similar related space technologies. VSSS was lost at Thiruvanantharram, India.

3.Liquid Propulsion Systems Center: India's leading organization for the development of liquid and cryogenic propulsion systems for satellites and rockets is LRSS. The company involved in the commercial marketing of racing-related products and services, in addition to research and development services for the Indian Race Program, is called Antarix Corporation. The Antarix Corporation is an entirely government owned company that was established in 1992.

Some of the major achievements of Indian Space Programs are the successful launch and operation of several satellites and satellite vehicles, like the AstroSat, Mangalyaan, Chandrayaan 1 & 2 , RSLV, GSLV, etc. We are pleased that the government has invested heavily in India's Strase Programs over the last 20 years. Indian science programs have a long way to go before India realizes its dream of establishing the world's best science and technology.

-Akshita Ghanwat

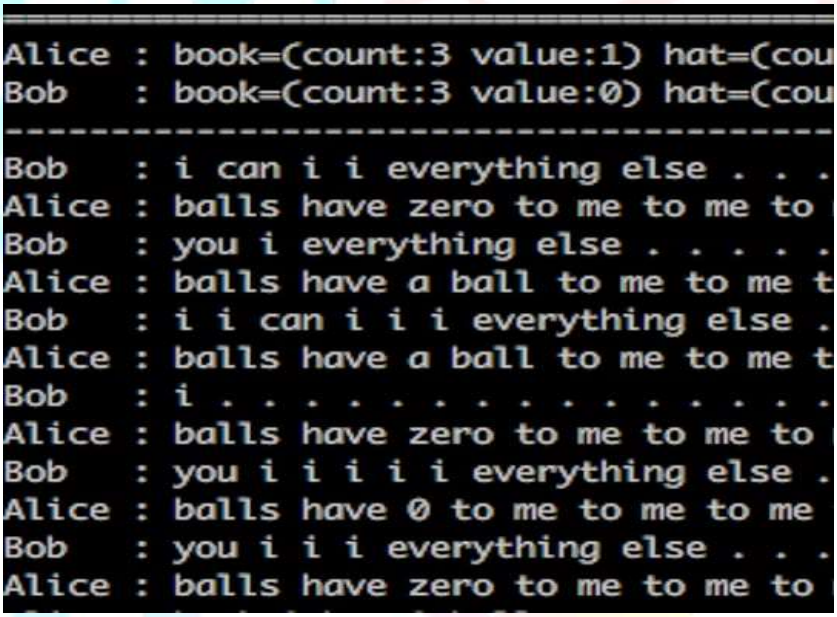
Documentation And Editorial Head, ITSA

TE – IT

AI AND LANGUAGE

Facebook abandoned the experiment after two artificially intelligent programs appeared to be chatting in a foreign language that only they understood. Two chatbots have come up with their own changes to English that have made their jobs easier but that have remained mysterious to the people who supposedly care about them.

The bizarre discussions came when Facebook invited its chatbots to try to negotiate a trade with each other, trying to exchange hats, balls and books, each of which had a certain value. But they quickly broke down when the robots appeared to be chanting at each other in a language they each understood, but which seemed mostly unintelligible to humans. The bots were instructed to figure out how to negotiate with each other and improve their bartering as they went. But they weren't told to use plain English, which the researchers say allowed them to create their own "shorthand."



In early 2017, Google revealed that the AI it uses for its Translator tool has created its own language to translate things into and then translate from. But the company was happy with this development and allowed it to continue. Another study at Open AI found that artificial intelligence can be encouraged to create language, making it more efficient and better at communicating. The

main difference between artificial intelligence and human intelligence is that artificial intelligence systems can absorb vast amounts of information quickly and efficiently. This makes the software much better at grammar and vocabulary than the human brain, especially in unfamiliar languages.

The rise of artificial intelligence may eventually lead to fewer people trying to learn a new language. Instead, they can only rely on language models of machine translation and natural language processing. Our ability to learn new languages declines significantly after the age of 17. However, the technology is far from perfect.

Unlike the human brain, artificial intelligence cannot understand humor, subtext, and especially context. In other words, when an AI speaks or writes, it has no idea what it's saying. Although it can provide us with the translation of thousands of words from other languages, it cannot understand where the translation falls short. Machine translation, on the other hand, creates understandable language that lacks expressions simply because it cannot understand the nuances of different languages. This could potentially make us abandon the complex idioms of our speech. However, not all the effects of artificial intelligence on our language are negative. For example, AI in communications and brand compliance can respond to messages in a similar way to company guidelines. And it also eliminates negative tone and emotions.

In fact, one study analyzed Gmail's tool that suggests possible responses to received email. The challenges it offers have been found to have a much more positive tone than what people usually use. In the long run, Gmail seems to have the potential to change the way and language people use to interact with each other. On the other hand, humans understand quite well when a message comes from AI. This form of communication does not always evoke positive feelings. Another study found that people often feel a sense of distrust when an Airbnb host uses an AI-generated profile. Although artificial intelligence has not been around for that long, findings show that it is already affecting our language. It also affects our social relationships, workplace communication and interactions with other people.

-Swapnil Tekale
Jt. Technical Secretary, ITSA
TE – IT

OUR BRAVE NEW HOMELAND

At the stroke of the midnight hour, in a world that never sleeps, all my compatriots rise to celebrate the 75th year of Independence on 15th August 2022. Little did we knew that the tryst with
destiny was not just an aspiration but a moral taken up by Citizens from all walks of life to make India a BRAVE NEW INDIA.

India has always been an epitome of scientific technology. From inventing zero to testing nuclear bombs it has led a journey of growth story. In words of Pandit Jawaharlal Nehru, " Science is not
merely an individual's search for the truth, it's something infinitely more than that of it works for the community." In areas of research India has been positioned as one of the top 5 nations in the field of space exploration. India has continuously taken space missions to the moon and the famed PSLV. India also ranks third among the most attractive investment destinations for technology transaction in the world.

India being an agrarian nation , 65% of total workforce is still concentrated to primary sector. We can't have a paradigm shift to capitalistic labor as according to Mahatma Gandhi," The soul of India lives in her villages." Also, the partition period left the country in pieces leaving back it's poverty and zero food security. 8 out of 10 people were estimated to be BPL (Below Poverty Line). Wheat was being imported from USA in ships. Then came a ray of silver light named THE GREEN REVOLUTION, an endeavor by Norman Borlaug in 1960s. Use of fertilizers, pesticides, etc. has made India self-sufficient in food security despite certain criticisms to Green Revolution.

India has a complicated history of relations with its neighbors which grew evermore after 1947. Dr. Homi Bhabha played a major role in the Development of Defence Technology in India after
independence.

A PEEK TO OUR DEFENCE AND SCIENCE HISTORY:

1958-DRDO was set up
1989- Agni Missile successfully launched
1998- India conducted Pokhran 2 test
1963- India's first ever rocket launch

1975- First satellite Aryabhatta launched
1969- Formation of ISRO
2008- Chandrayaan 1 launch
2013- Mangalyaan launched

Britishers ruled the nation but not the nationalists, for they always aspired to revolt. This sense of nationalism has kept the unity in diversity while not compromising with the development of the nation. We might not be a perfect democracy but we keep our eyes on the fundamental values we always strive for. This nation is our homeland standing on the edge and we are her abyss. It depends on us where we lead her from here!!!!!!

-Khushi Chauhan
SE – IT

TECHNOLOGICAL ADVANCEMENTS IN IT INDUSTRY

Modern India is an epitome of Scientific and Technological Development and is one of the key elements for economic growth. Post 15th August 1947, India's journey has become a great example of an impressive growth story. As claimed by the Indian Brand Equity Foundation, India is among the topmost countries in the world in the field of scientific research and has been positioned as one of the top five nations in the field of space exploration. India also ranks third among the most attractive investment destinations for technology transactions in the world.

DEVELOPMENT IN THE IT INDUSTRY:

The past few decades have seen staggering technological changes that have revolutionized the world. Technology has created hundreds of thousands of tools and resources, making it possible to access any information literally at our fingertips. Over 4.33 billion people actively use the internet today. That's a mind-boggling 56% of the global population, where India ranks second. And it's only going uphill from here. IT technology in India is advancing at an astonishingly fast rate, and those who can't keep up are simply left behind. Technology has changed the way we communicate, how we pay our bills, and even how we watch TV. There's no doubt that the IT industry is growing like never before. In the past, India has often seemed to be a bit of a relative laggard among developing countries, especially in terms of economic growth.

IT revolution in the country that led to the Indian software industry being recognized as one of the most successful in the world today. The late 1970s saw a boom in the IT industry with the outsourcing of software to specialized software firms. The early 1980s were all about “prepackaged” software because of the acute shortage of talented engineers who could build custom software. However, the 1990s saw a resurgence of project-driven software services that ignited the mushrooming high growth rates in the Indian software industry.

Since the early 1990s, the Indian IT industry has been growing at a phenomenal rate with several phases of growth and development over the last three decades. Today, India stands tall as one of the largest digital hubs in the world. Now it seems like an irony that how Before Independence, we were forced to work under the Abroad People from the East, and how we Indians are the Leaders of the biggest world companies from the East.

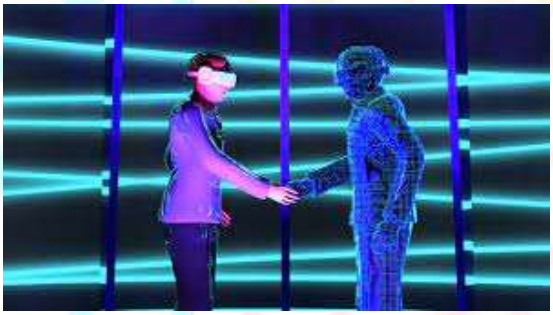
some examples are Sundar Pichai running Google and Satya Nadella running Microsoft.

In early 2000s , people were more focused in settling abroad but with upcoming generation , we have advanced enough to have our country its own IT hub Bangalore , known as Silicon Valley of Asia but I do feel in few years it will be more than that, rather than being known as 2nd Silicon Valley, it would be something of its own.

-Marmik Patil
Jt. T&P Secretary, ITSA
TE – IT

METAVERSE: THE FUTURE OF INTERNET

So, at the first let's see what is metaverse. Metaverse is beginning to create something new, The term metaverse was termed by of science fiction writer Neal Stephenson. It refers to "the concept of fully immersive virtual world where people gather to socialize, Play and Work. The concept is recently published by Facebook's rebranding as meta. Facebook's CEO Mark Zuckerberg, stated that," The next generation of Internet is Metaverse". He describes metaverse as " A virtual environment where you can present yourself with people in digital spaces.



The metaverse can shape the future in which We spend more time in virtual world than reality. An avtar represents you in metaverse, comparable to avtar in Facebook . Many technology experts believe that it will eliminate the geographical issues. Beyond games, Roblux Views itself as future hub for metaverse experiences. They intend to introduce instructional video games in schools. Roblox recently hosted a Marshmello concert in Fortnite,which gathered 60 million people indicating Metaverse success. To your surprise you can also buy property in this virtual world. To do so you must first register with Decentraland, The Sandbox or Axie infinity among others. Binance, Gemini and Coinbase are all popular platforms for purchasing metaverse cryptocurrency. They will assist you in converting real cash to metaverse crypto, "If you have such cryptocurrencies, you can directly trade it with virtual property. Moving to the conclusion Metaverse can be the future of Internet". This is so because IT industry is particular about metaverse predicting that it will be around $800 billion by 2024.Hence, **" METAVERSE IS THE FUTURE OF THE INTERNE"**

-Pranit Morab
SE – IT

5G AND WI-FI 6 CONNECTIVITY

5G deployment will be accelerated in the new age of infrastructure. However, one more communication technique comes to mind: Wi-Fi 6. Coexistence or competition? What type of future connection will these two have?

Although the idea and implementation of 5G has been widely promoted, some individuals may not be familiar with Wifi6. This is actually a protocol, Wi-Fi device protocol 6. Wifi6 was created for the era of the Internet of Everything with the capacity to allow more device connections and more consistent communication, similar to 5G.

5G and the technologies that support it

Let's start with the fifth generation of mobile networks. 5G has advanced features that earlier generations lacked, such as ultra-fast communication due to reduced latency and wholesale 5G lines also available in the market. High performance, efficiency and reliability are all benefits of 5G.

The core technologies of 5G are orthogonal frequency division multiplexing (OFDM) and the new radio (NR) interface of 5G. OFDM is a technique for reducing interference by modulating digital signals over multiple channels. 5G also uses wide-bandwidth technologies such as Sub-6 GHz and mm Wave, which are very fast but have relatively limited range.

These sensors can also connect directly to each other, allowing for a very fast and efficient flow of data between devices.

Hundreds or thousands of interconnected IoT sensors can be used for many reasons, such as monitoring blood pressure or heart rate, testing urine for kidney function, and even monitoring skin tissue oxygenation levels!

Some examples of use cases related to 5G

For various reasons, such as content creation and consumption, a faster mobile device connection is preferable. For example, faster video traffic improves the experience of watching media and entertainment content. Video streaming, social networking, banking, food delivery, e-commerce and retail will all benefit from 5G's capacity to transfer speeds of up to 20 gigabits per second.

5G will be essential for mission-critical communications such as remote healthcare, security, autonomous cars and smart city infrastructure monitoring. It also connects IoT devices, sensors and equipment used in manufacturing, automotive security, aerospace, military and healthcare.

5G offers a wide range of applications thanks to its excellent performance, reliability and efficiency. It connects IoT devices and enables enterprises to build and deploy private 5G wireless networks. As a result of its long-term impact on manufacturers, operators, content providers, application developers and consumers, 5G is rapidly becoming a major driver of global economic development.

Conclusion

This means that 5G and Wi-Fi 6 will be key technologies to support various IoT applications; for example, home automation systems will rely on high data speeds to enable features such as remote video chatting, smart locks and even the ability to turn on appliances with your voice.

-Sujay Deshmukh
SE – IT

WEB EVOLUTION

What Is Web 3.0?

Many of you must had this question, right.

Imagine a new type of internet that not only accurately interprets what you input, but actually understands everything you convey, whether through text, voice or other media, one where all content you consume is more tailored to you than ever before.

Let's be more specific,

Web 3.0 is the upcoming third generation of the internet where websites and apps will be able to process information in a smart human-like way through technologies like machine learning (ML), Big Data, decentralized ledger technology (DLT), etc.

But you know, how web evolved to this stage.

Web 1.0 (1989-2005)

Web 1.0, also called the Static Web, was the first and most reliable internet in the 1990s despite only offering access to limited information with little to no user interaction.

Web 2.0 (2005-present)

The Social Web, or Web 2.0, made the internet a lot more interactive thanks to advancements in web technologies like JavaScript, HTML5, CSS3, etc., which enabled startups to build interactive web platforms such as YouTube, Facebook, Wikipedia and many more.

Web 3.0 (yet to come)

Web 3.0 is the next stage of the web evolution that would make the internet more intelligent or process information with near-human-like intelligence through the power of AI systems that could run smart programs to assist users.

How Web3 works

Much of the vision for Web3 is based on the blockchain technology. This blockchain is basically a decentralized network built on peer-to-peer connections. Each device on the network handles a small portion of the computing and communication that occurs on the network, creating an online network without the need for servers and therefore without the control of large platforms and / or governments. Web 3.0 brings the human aspect back by providing privacy and security to the users rather than making corporations more powerful than ever. The vision of Web 3.0 changed in the last 7-8 years. Initially, it was simple, but with the introduction of blockchain and bitcoin, the vision and approach have changed completely. Now, Web 3 focuses more on the decentralized features that the blockchain has to offer.

dApps and The Future

The transition has already started with the Web 3.0 dApps. To get a better understanding, we will be divided into different categories and discuss the dApps that will replace traditional services and applications. Using the dApps, one can easily create decentralized organizations' business models as well. The transition is inevitable, and it is only time when mass adoption of these apps will take place. To really get a clear picture of what is Web 3.0, you need to deeply understand dApps.

-Sarthak Shah
SE-IT

UNMANNED AERIAL SYSTEMS (UAS)

For planet exploration Currently, our industry has UAS and AI on Earth they have seen a phenomenal leap in specialized areas such as navigation (self-driving cars), Human interaction, etc. With the decision-making form of intelligence, the future of India rovers like Lunar Pragyan or Mars rover, would be very they benefited from artificial intelligence incorporated into their "minds" module for safe control of these systems using detection obstacles and exercises in the best way. Unfortunately, lunar landing and recovery operations or Mars surface rover mother ship for their location back in another zone on the surface for measurement can be a delicate operation. Such rovers are limited in their long-distance movement due to various limitations of the earth's surface and hostile Surroundings. To overcome such limitations, Unmanned Aerial System (UAS) is the technology for such on-planetary type surveys. Science probes attached to UAS the body can take the required measurements after being launched from the Orbiter mother ship. They can fly over to a specific area and plot of land for measurement.

Big areas on a celestial body can be covered because UAS have the ability to hop like a "housefly". When landing on the surface is not possible, then UAS can float close to the surface, take measurements or wind up dip the probe into

the liquid surface and collect data. This flexibility is achieved through a UAS on an external device the celestial body provides rich data collection. ISRO has already taken steps towards this spatial feasibility and established a UAS branch in North Eastern Space Applications Center (NE-SAC) where the UAS are designed and built for various applications, e.g., Remote land survey.

-Jayash Kandalkar

Sports Secretary, ITSA
BE – IT

ADAPTATION OF CAMERA

Photography has come a long way in its relatively short history. The story of photography is fascinating and it is possible to go into its great detail. However, let's briefly look at the most important and the main development of this scientific art form. The first cameras The basic concept of photography has been around since 5th century BC As much as one Iraqi scientist developed something called a camera obscura in the 11th century art was born The first permanent paintings Photography as we know it today began in the late 1830s France. Joseph Nicephore Niepce used a portable camera obscura expose the tin plate coated with bitumen to light. It is the first image recorded that did not fade quickly. Daguerreotype Niepce's experiment led to a collaboration with Louis Daguerre. The result was the creation of the daguerreotype, a precursor modern movie.

• The copper plate was coated with silver and exposed to iodine vapors before being exposed to light.

• To create an image on an early daguerreotype plate had to be exposed to light for up to 15 minutes. Emulsion plates Emulsion boards or wet boards were cheaper than daguerreotypes and required only two- or three-seconds exposure time. These wet plates used the emulsion process called collodion process rather than the simple coating pictured plate. Dry plates In the 1870s,

photography took another giant leap forward. Richard Maddox improved the previous invention to be dry gelatin plates that were almost the same speed as wet plates quality. These dry slabs could be stored rather than manufactured as need. Cameras for everyone Photography was only for professionals and very rich until George Eastman founded a company called Kodak in the 1880s. Eastman created a flexible roll film that did not require continuous hard disk replacement. The horrors of war Around 1930 Henri-Cartier Bresson and other photographers he began using small 35mm cameras to capture images of life as it is occurred rather than staged portraits. When World War II started by 1939, many photojournalists had adopted this style. This style capturing decisive moments shaped the face of photography forever. Advanced picture control While the French established a permanent image, the Japanese brought the photographer easier image control. These were both SLR and Nikon F cameras counted interchangeable lenses and other accessories. Introducing smart cameras In the late 1970s and early 1980s, compact cameras that were able to make independent decisions about image control introduced These point-and-shoot cameras calculate the shutter speed speed, aperture and focus, giving photographers freedom focus on composition. The digital age A number of manufacturers worked in the 1980s and 1990s cameras that stored images electronically. The first of them were point-and-shoot cameras that used digital media instead of film.

-Ankita Giri.

TE- IT

HAPTIC TECHNOLOGY

Haptic technology, also known as kinesthetic communication or 3D touch, refers to any technology that can create a tactile experience by applying forces, vibrations, or movements to the user. These technologies can be used to create virtual objects in computer simulation, control virtual objects and improve remote control of machines and equipment . Haptic devices may include tactile sensors that measure the forces exerted by the user on the interface. The word haptic, from the means "tactile, pertaining to touch". Simple haptic devices are common in the form of game controllers, joysticks and steering wheels.

Haptic technology facilitates the exploration of how human touch works by enabling the creation of controlled haptic virtual objects. Most researchers distinguish three sensory systems related to touch in humans: cutaneous, kinesthetic, and haptic. All sensations mediated by skin and kinesthetic sensitivity are referred to as tactile perception. Touch can be classified as passive and active, and the term "haptic" is often associated with active touch to communicate or recognize objects.

Types of mechanical touch sensing

Human perception of mechanical stress in the skin is controlled by mechanoreceptors. There are a number of types of mechanoreceptors, but those present in the finger pad are usually divided into two categories. Fast acting (FA) and slow acting (SA). SA mechanoreceptors are sensitive to relatively large voltages and at low frequencies, while FA mechanoreceptors

are sensitive to smaller voltages at higher frequencies. As a result, SA sensors can generally detect textures with amplitudes greater than 200 micrometers, and FA sensors can detect textures with amplitudes less than 200 micrometers down to about 1 micrometer, although some research suggests that FA can only detect textures smaller than a fingerprint. FA mechanoreceptors achieve this high sensing resolution by sensing the vibrations produced by the friction and interaction of the fingerprint texture moving over the fine surface structure.

.Application

1. Aviation-

Force-feedback can be used to increase adherence to the safe flight envelope and thereby reduce the risk of pilots entering dangerous flight conditions outside operational boundaries while maintaining the ultimate authority of pilots and increasing their situational awareness.

2. Robotics-

Haptic feedback is essential for performing complex tasks via telepresence. The Shadow Hand, an advanced robotic hand, has a total of 129 touch sensors embedded in each joint and finger pad that transmit information to the operator. This allows tasks such as typing to be done remotely. The first prototype can be seen in NASA's collection of humanoid robots or robonauts.

-Prajakta Musale

SE-IT

CLOUD COMPUTING: PAST, CURRENT AND FUTURE

Abstract:

With the augmentation of data, the organizations need to provide better and faster secured data access to customers. Cloud computing came as a godfather of the new generation of data warehousing and data access through the network. This new way of deploying and using data solved many of data problems.

Introduction:

When it rains, in few minutes we can see the streets full of water. What gives clouds the ability to do such a seen in such a time can be easily expressed by the following. Comparison: The difference between a raining cloud and a hosepipe is that a cloud drops water in parallel. From this, comes the idea of cloud computing (CC), we don't have to have many servers to make parallel transactions. We can make them from the same site, which will ease the update time and do us big favor in many ways that we'll see in this article. Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Current Status of Clouds, the S-Curve Bandwidth, perception, loss of control, trust and feasibility were the challenges that confronted the presence of CC service in the past. Many of these challenges were overcome by our new technologies and others will be in the future. Which means that this service moved from virtual to real and will be advanced as our technologies advance. The advantages and benefits of CC are categorized in three categories: – Centralization: • Competitive advantage in data access. • Huge flexibility in data access. – Cost: Few huge clouds cost less than thousands of large local servers. Less materials, less areas, fewer employers. – Environmental effects: i) Less need for infrastructure, ii) Less need for hardware, iii) Huge reduction in energy consumption. Future and R&D *The ability to detect failures, adapt to the required scale of resources., ensuring continuous availability of such resources, and meeting client's expectations in terms of quality. *New security

holes will appear with hackers advancing in their efforts. *Adaptability. Example: If a CPU is added to a virtual machine that is already in use, the running code should be able to adapt and make use of the additional resource without having to be restarted or even adapted.

1. New segmentation concepts and distributed programming models.

2. Solution: Data should be simultaneously protected in a form that addresses legislative issues with respect to data location and be manageable by the system.

3. Solution: Imposing clear legislation models regarding jurisdiction over the hosted data and its distribution in other countries.

4. Solution: Developing programming models to provide adaptability. In Conclusion Cloud computing (CC) offers an exciting opportunity to build data structures that promise to solve problems associated with economic modelling, terrorism, healthcare and epidemics, etc.... and to bring on-demand applications to customers in an environment of reduced risk and enhanced reliability.

-Sumeet Pandhare

Jt. Sports Secretary, ITSA
TE-IT

INDIA IN DEFENCE AND SPACE

Celebrating 75 Years of Independence: Modern India is the epitome of scientific and technological development and is one of the key elements of economic growth. After August 15, 1947, India's journey became a great example of an impressive growth story. According to the Indian Brand Equity Foundation, India is among the best countries in the world in scientific research and has been ranked as one of the top five countries in space exploration. India continuously undertakes space missions, including missions to the moon and the famous Polar Satellite Launch Vehicle (PSLV). India also ranks third among the most attractive investment destinations for technology transactions in the world.

India's post-independence defense technology development:

1989: Agni Missile was successfully launched

1998: India conducted Pokhran-Il tests

On May 1998, twenty-four years after Pokhran-I, India's Defense Research and Development Organization (DRDO) and Atomic Energy Commission (AEC) conducted five more nuclear tests called "Pokhran-Il" at the Pokhran Range.

Development of space technology

India has launched several major space research programs under the vision of some great scientists and leaders such as C. V. Raman, Dr. Vikram Sarabhai, and Dr. APJ Abdul Kalam etc.:

1963: First ever rocket launch in India

The launch of the first sounding rocket from Thumba near Thiruvananthapuram in Kerala on 21 November 1963 marked the beginning of India's space program.

1975: First Aryabhata satellite launched

Aryabhatta, India's first satellite, was launched by the Soviet Union in 1975.

1969: Indian Space Research Organization (ISRO) founded

ISRO was established in 1969 with a vision to develop and utilize space technology in national development while continuing planetary exploration and space science research.

2008: Launch of Chandrayaan-1

Chandrayaan-1 was India's first lunar probe under the Chandrayaan program which was launched by the Indian Space Research Organization (ISRO) on 22 October 2008.

2013: Mangalyaan launched

The Mars Orbiter Mission (MOM), also called Mangalyaan, is a space probe orbiting Mars since 24 September 2014. It was launched on 5 November 2013 by the Indian Space Research Organization.

The journey highlights India's expansion from agricultural production to nuclear and space technology, from affordable healthcare to top educational institutions, from Ayurveda to biotechnology, from steel giants to an IT powerhouse and the third largest start-up. Ecosystem in the world.

-Rohit Lohar
TE-IT

TECHNOLOGY IN EDUCATION

India is the embodiment of scientific and technological development and is one of the key elements of economic growth. After August 15, 1947, India's journey became a great example of an impressive growth story. The 21st century is marked as information technology driven and India is the center of global attraction and is considered a knowledge powerhouse.

When we talk about technology in education, we remember the usefulness of technology like audio visual aids, machines and equipment like television, overhead projector, computers for education etc. Technology is that element of development which is found in almost every part. of our culture, influencing how we live, play, work and learn. With the technological advancement in the world through the invention of mobile and wireless devices, it has become really important for the education sector to take hold of this technology in the teaching and learning process.

Information technology has also made the management and delivery of government services – such as health services, educational information, consumer rights and services, etc. more meritorious by increasing transparency. The IT industry is the backbone of our economy to grow exponentially and generate millions of jobs.

Interestingly, when it comes to the top countries showing "the most promising developments in globally impactful disruptive technologies", the report places India tied for second with China, while the US has maintained its top position for many years. So, the bottom line is that technology in India will reach great heights in the coming years!!

-Ishwari Ambre
Cultural Secretary, ITSA
BE-IT

TECHNOLOGICAL ADVANCEMENTS IN 75 YEARS OF INDEPENDENCE

India is globally recognized as a land of ayurveda, It's rich and diverse culture, a land where genius minds C.V Raman and Aryabhatta were born. But once Matt Mullenveg (social media entrepreneur) said *"Technology is best when it brings people together"*. Technology is being a crucial part of everyone's life. It is made possible by the dedication of great innovators, revolutionaries and scientists. Let's dive into the technological advancements we have achieved so far.

In the late 40s,Planning Commission started the foundational research of India called as CSIIR Labs.In1957,Dr. M S Swaminathan leads the Green Revolution in India focusing on agricultural research. In 1967,ISRO(Indian Space Research Organization) was established. During 1977 to 1987,India successfully develops strategic missile system with successful testing of *Agni* in 1989,where this particular sixth missile has been launched in 2018. Then in year 1988,DNA fingerprinting in India came in May .

into existence, making India the third country to develop its own DNA fingerprinting probe. On 11 1998,India successfully tested five nuclear bombs underground in Pokhran, Rajasthan. In 2008,India starts the Chandrayaan mission and successfully launches it. In 2016, **Startup India** have developed indigenous vaccine called covaxin and covishield.

With all this, it's makes every Indian proud of how far India has come in the world of science and technology. There is further more to come along the way of technical supremacy and we hope India will acts act as flagbearer to others nation as well.

-Atharva Sontakke

TE- IT

SIH 2022 TEAM EXPERIENCE

We are ecstatic to reach the finals of the **Smart India Hackathon 2022**, competing against the problem statement SH1011 of the Ministry of Rural Development. We showed a web-based interactive solution for visualization, analysis, precaution and predication using different API & technologies like NODEJS, MONGODB, PYTHON, AL ML, JS, HTML, CSS. Proposed solution will introduce better understanding about the region's calamities.

It was an intense event where we had to do power thinking and continues coding whole of 36 hrs which gave us all new learning and great experience. There were two pre-rounds of evaluation and a final round of presentation. Other than hackathon there were many fun activities and overall arrangements done by nodal center were also excellent. We also got chance to interact and exchanges ideas and thoughts with students from different part of India.

We also had a word of talk with Dr. Sanjay Kumar Pandey , NIC Director and Senior Technical Director of Minister of Rural Development he too had loved our way of approaching the solution and he guided us with the correct path and told us in which sense we had lagged.

At last, Leading a team of one the brightest brains from AISSMS IOIT were an incredible experience. We'd like to express our gratitude to our mentors, Dr. Meenakshi Thalor and Mr. Riyaz Jamadar, for their help with our solution. We would also like to thank the Ministry of Education's Innovation Cell for selecting us for this mega event and allowing us to present the solution to Ministry of Rural Development.

BY OVERALL TEAM (MORE DETAILS):-

1.. There were 26 teams selected for rural development. Teams were distributed to different arenas. They made arrangements in such a way that competitors' teams were not in same arena.

2. There was 36 hours of coding round.

3. We had to develop the necessary modifications within given time and present it to the judges in final presentation round.

4. There are total 3 round . First two rounds are for inputs. In first round they just saw our approach without seeing actual website after that they gave us

some input as well as suggestions. We implemented some suggestions as well as added some extra features like flood prediction. In second round they saw our actual website. After seeing actual product, they told us to prepare for presentation.

5. On 25-8-22, at 8 am SIH inauguration was conducted. The honorable members (The rural development minister) were present and they expressed their views to the student.

6. From 9.30 am, coding round was started. At 12 pm first Evaluation round was conducted. Judges examined our prototype and given modification.

7. Then back to coding till 6 pm for second evaluation. Again, coding till 9pm. At 9pm we had dinner till 10pm then again coding.

8. At 1 to 2 am, there was zumba conducted. All the team participated in zumba.

9. During night coding, energy drinks were provided, which helped a lot in coding.

10. Only 50% of the team is allowed to take rest, while the 50 needs to be on arena do coding. It was great experience

11. On the next day (26-8-22), first Evaluation was conducted around 11 am, where they surfed through our website and gave next task to prepare presentation.

12. We were assigned to make a presentation, In that, all the necessary information such as (solution approach, technology used, screen shot of Website, literature surveyed) need to be included.

13. Around evening 6, final presentation was conducted in front of the judges (inc. rural development minister) were present. We've presented our website to judges; We had a fruitful interaction with the judges. They gave us valuable guidance, and suggestions.

14. After the presentation round, the main event - winners were announced. From 26 teams, 4 teams were the final SIH 2022 winners.

15. It was great experience. Becoming a part of National level hackathon, Being around top tier college teams, is itself a BIG DEAL.

PHOTO:

SMART INDIA HACKATHON
GRAND FINALE 2022

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

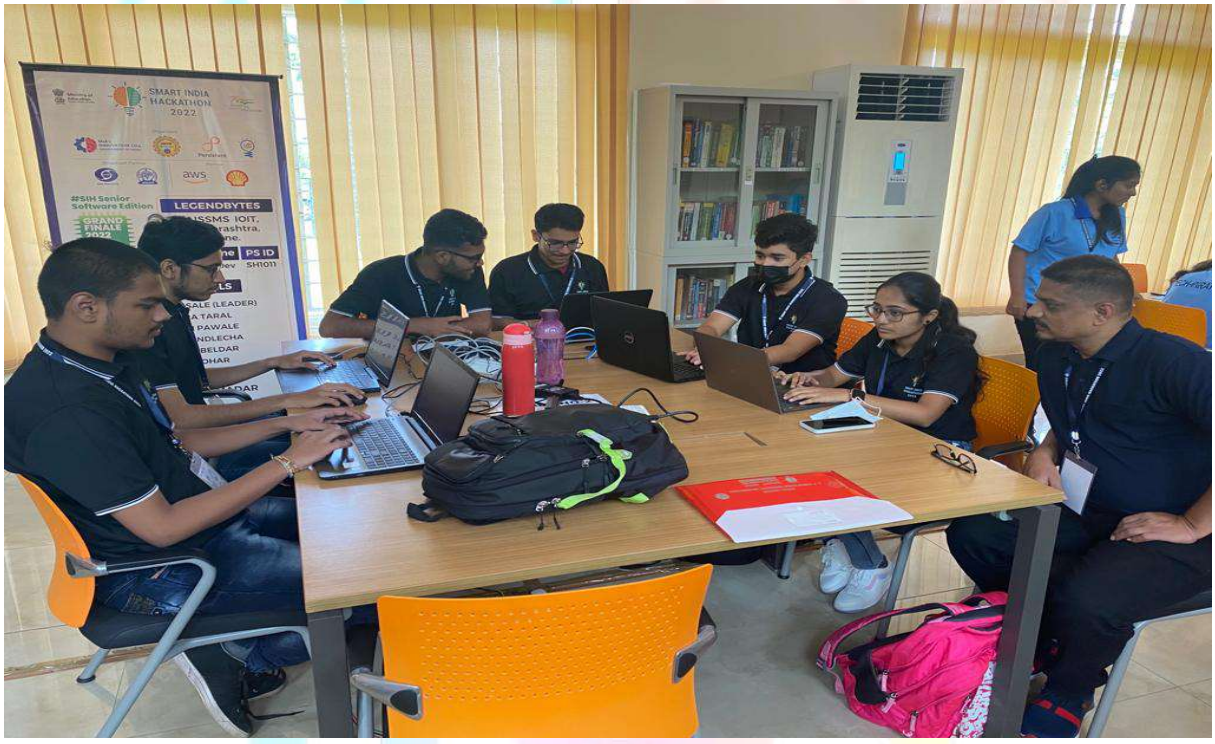
MoE's INNOVATION CELL (GOVERNMENT OF INDIA)

AICTE

SMART INDIA HACKATHON 2022

C. V. Raman Global University
ODISHA BHUBANESWAR INDIA

PARTNERS: Persistent aws



- SIH Team

- **Prayag Bhosale**

Failure will never overtake me if my definition to succeed is strong enough

.... DR. A. P. J. KALAM

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