



**J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY
(UGC AUTONOMOUS)**

**DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING**

COMPUTING INTELLIGENCE

**TECHNICAL MAGAZINE
JUNE 2018**

About JBIET



As one of the top ten most preferred institutions in Telangana, JBIET continues to strive to impart technical (engineering) and professional education of very high standards.

The aim of JBIET is to mould young learners into globally competitive professionals who are professionally deft, intellectually adept and socially responsible.

The expert faculty at JBIET inculcate the best values and principles, ascribing to a modern curriculum; while the students imbibe pragmatic perception and a pro-active nature, which spurs them towards exploration and advanced inquiry, resulting in valuable insights.

The Placement record of JBIET over the years is proof of our right efforts in enabling the best in class engineering, technical and professional education to aspirants.

Vision of the College

To be a centre of excellence in engineering and management education, research and application of knowledge; to benefit society by blending ethical values with globally relevant learning.

Mission of the College

- ▶ To provide world class engineering education, encourage research and development.

- ▶ To evolve innovative applications of technology and develop entrepreneurship.
- ▶ To mould the students into socially responsible and capable leaders.

About the Department

- ▶ Established in 1998 with B.Tech CSE with intake 60
- ▶ M.Tech CSE Started in 2005 with intake of 18
- ▶ Present intake B.Tech CSE 120 M.Tech CSE 18
- ▶ Total Faculty 24 Non-Teaching :8
- ▶ No of labs :10
- ▶ Dept Library
- ▶ No of MOU'S with industry :6
- ▶ Good Placement Record& Higher Education
- ▶ R&D and Project Labs
- ▶ Professional Chapters
- ▶ Good Teaching and Learning process
- ▶ Good Student Supporting System

Vision of the Department

To meet the emerging trends in computer Science and Engineering, strive for self-reliance enabled through high end research by adapting a futuristic approach.

Mission of the Department

To impart qualitative education, prepare students refurbish their latent talents and aspire for a pragmatic career in Computer Science and Engineering

To provide an ambiance to develop strategic areas of advance study with perception to foster industry centric education in computer science and Engineering.

To inculcate self-learning among students to make them self-reliant and socially responsible.

Program Educational Objectives (PEOs)

Program outcomes are narrower statements that describe what students are expected to know and be able

To do upon the graduation. They are formed in line with the graduate attributes of NAAC. These relate to the Skills, knowledge, attitudes, values and behavior outcomes that students acquire through the program.

PEO1	To emphasize analytical, computational and programming based tools and methods of computer science and engineering to solve real world problems.
PEO2	To mold the student's career by steering their confidence levels for better understanding, strengthening technical outlook for innovation and better communication at the job place where they are employed.
PEO3	To hone the technical skills for creating and productivity in computer science and engineering beyond classroom learning.
PEO4	To promote multi-disciplinary awareness through exposure to areas of project development and industrial training for sustainable competition in Research and Development.



Lasting Legacy of Late Shri. J. Bhaskar Rao

B.Com; L.L.B.,
Founder Chairman of JB Group

Chairman's Message

In my position as the Chairman of all the J.B. Group of Educational Societies and all the J.B.Group of Educational Institutions, I convey my best wishes to all our relentlessly advancing institutions nestled in a sprawling woody campus of about 106 acres of land, on the main road at Yenkapally, Moinabad Mandal, R.R.District. The efficacy of the group can be witnessed from the establishment of three Engineering Colleges; J.B.Institute of Engineering & Technology.Joginpally.B.R.Engineering College; and Bhaskar Engineering College, besides the manifestation of Bhaskar Medical College and Bhaskar General Hospital. My lifetime ambition and objective being the provision of education, from KG to PG, to the underprivileged students of rural background, we have been providing free education, up to High School level in English Medium, to the poverty-stricken destitutes of our countryside. We established J.B. Institute of Computer Technology during 1996-97 with PG Courses in MCA and MBA, in the vicinity of Lord Balaji's abode, Tirupathi, as well. The management started two new Womens Engineering Colleges at Hyderabad and Tirupathi from the academic year 2008-09. The management encourages the youth of this state to find their careers in the noble profession of medical practitioner, by imparting quality medical education, and help our people lead healthy lives.

The World since recent times had been moving amazingly fast and fiercely competitive in all spheres of human activity. The said situation called for massive expansion of career focused education, particularly in Engineering, Management and such other professional areas. As a result, there had been mushroom growth of Institutions at a phenomenal level in the private sector. However; it is unfortunate to observe that the quality of education started eroding. The urgent need of the times was to lay emphasis on quality education and to strive vigorously for global excellence and acceptability. It is exactly at this critical juncture of time i.e. in the year 1993, J.B.Educational Society was established to serve the cause of the spread of general, Professional and Engineering education by a team of enlightened persons, under my Chairmanship.

The J.B. Group of Educational Societies has been maintaining an excellent academic track record for more than a decade. The J. B.Institute of Engineering & Technology (1998),Bhaskar Engineering College and Bhaskar Pharmacy College (2007) were established by J.B.Educational Society.Joginpally B.R. Engineering College (2002), Bhaskar

Medical College (2005) and Joginpally B.R. Pharmacy College (2007), were established under the banner of Joginpally B.R. Educational Society.

J.B.I.E.T. has well developed infrastructural facilities, such as adequate built up area, well equipped laboratories, libraries and information centers with digitalization and automation and on line transaction facilities in the campus. All facilities such as Medical, Transport, Canteen and Games & Sports, are available besides Seminar Halls, Conference Halls, Indoor Auditorium, Open-Air Theatre, Post Office and Banking.

We have encompassed Jawaharlal Knowledge Centre at J.B.I.E.T and J.B.R.E.C. to empower students to acquire Interactive Communication skills, Technical and employable skills to compete in the Global job market. The policy of this Management is to impart quality education and train the students and for the accomplishment of the same, we have recruited resourceful faculty that are dynamic dedicated and committed to the goal oriented efficient teaching with effective methodology. We have recruited seven Professors with Ph.D Degrees to hold the posts of HODs of the respective seven branches, apart from the principal with vast experience in the field.

J.B.I.E.T., being an NBA accredited institution and the winner of the status of JNTUs Permanent Affiliation, is one of the best 10 Engineering Colleges of the state, and also is the most preferred institution for aspiring students and their parents. The enrollment of students in JBIET has crossed the 3000 mark and went even higher in the academic year 2008-09.

The institute has launched a host of Faculty and Staff Development Programs, R&D, and Industry and other external project consultancy activities. We have taken up faculty, staff and students' Welfare and other HRD measures.

I have great pleasure in conveying the tiding that we have submitted proposals to the U.G.C. authorities for grant of Deemed to be University Status, for which the Government of Telangana and JNTU were pleased to issue No Objection Certificates. We are expecting that the said grant will be accorded in 2009.

National Seminars and Conferences are being organized frequently at our M.N. Rao Auditorium (air conditioned). Experts from Academia and Industry are invited to address and interact with the students. The Management has been sponsoring the deserving students and faculty to present technical papers and participate in the International Conferences in India and abroad. The Management has taken all possible measures for the career development and placement of all the qualified students domestically and globally.

NBA team of experts have visited and inspected J.B.R.E.C. on 20th & 21st February, 2009 to consider for the grant of Accreditation of four U.G. programs offered at the College.

We are fortunate to have the three renowned Academic Administrators, eminent scholars and the former illustrious Vice Chancellors of Osmania University and JNTU on the panel of Governing Bodies and the Advisory Bodies of J.B.Group of Educational Institutions, who extend their precious advice, and expert guidance, from time to time to formulate strategies in the cause of holistic development of the students.

On the eve of the Annual Day celebrations of JBIET, Bhaskar Engineering College, Bhaskar Pharmacy College, JoginpallyB.R.Engineering College, JoginpallyB.R.Pharmacy College, this year, we organized Spoorti-2009 (A Techno Cultural Fete) in the most befitting manner.

I have immense pleasure to welcome and congratulate all the Principals, Faculty, Staff and Students of all the colleges housed in the Campus for their laudable efforts in organizing Infoquest-2009 and Inxs-2009, studded with several student centric activities, spanning over three consecutive days i.e. on 26th, 27th and 28th February, 2009 and also for bringing out a souvenir 'Spoorti-2009' to commemorate the events.



J.V. KRISHNA RAO
MBA HR - USA

Secretary Message

“Education is the passport to the future, for tomorrow belongs to those who prepare for it today”.

JB Institute of Engineering & Technology was established in the year 1997 under the umbrella of JB Group of Educational Institutions, Hyderabad. At present JBIET is a UGC Autonomous Institution and permanently affiliated to JNTU Hyderabad.

The Speedy development in the field of Information & Technology has accelerated the demand for the value based education in the stream of Engineering, Technology and Management which is qualitative, progressive and multidimensional in competitive global environment. We provide quality education beyond the four walls of classroom to cope up with the corporate world.

The aim of JBIET is not only to produce mere degree holders, but the bright, talented men and women equipped with all round development of personality. Our vision of the institute is to impart quality education with Life Skills in all core disciplines of knowledge by developing global leaders who are passionate, committed and confident to take initiative in the nation building and create a peaceful environment for WORK, WORKER AND WORKPLACE.



Major General Prof Dr S S Dasaka, SM, VSM (Retd)
CEO – JB Group of Educational Institutions, Hyd.

CEO Message

I welcome you all to the portals of J.B. Institute of Engineering and Technology (JBIET) a Great Institution by all standards. Engineering continues to be a lucrative career for the bright minds, as it is only through engineers that the inventions of science can reach the masses, for the overall development and welfare of the society. With numerous development projects being executed and planned within the country and outside, engineers have a bright future. And at JBIET, we ensure that it happens.

JBIET has been one of the best engineering colleges in the two states of Telangana and Andhra Pradesh. It has been striving hard to not only maintain its standards but also to continuously improving them, so as to benefit the students in particular and the society at large. The college boasts of well qualified and self motivated faculty who have rich experience in academics, industry and research. They are backed up by experts from the industry. The curriculum is regularly revised to keep pace with the industry requirements, so that the students pass out as industry-ready graduates. The institute has excellent infrastructure, laboratories and workshops. The calm and quiet environment in the lush green campus, away from the hustle-bustle of the city, provides a tranquil environment, so conducive to quality Teaching -Learning.

In today's age, everyone is aware that besides class room studies, colleges should Concentrate on overall development of students by laying adequate attention on co-curricular and extra-curricular activities. At JBIET, we are very focussed about the same and ensure that all students are put through "Life Skills and Employability Skills Training" right from the first semester itself. The JB Educational Group of Institutions has Architecture, Pharmacy, Law, Medical and Dental Colleges, all co-located within the same campus, along with JBIET. This provides to students the much needed inter-disciplinary teaching-learning environment, which is otherwise not available in many stand-alone colleges.

The college not only inculcates a Creative and Innovation Spirit in the minds of our Students but also actively encourages them through the Group's JB Institute of Inventors Association of India (JBIIAI). This body provides intellectual support, logistics support and financial support, right from ideation to commercialisation. We hand-hold the students right through and ensure that they become Job-providers rather than Job-Seekers.

It will be the sincere endeavour of JBIET to turn you into knowledgeable Graduates / Postgraduates by guiding you and moving along with you

during your studies at the institute. I would like to wish you all a studious, satisfying and enjoyable journey in this institute. Along with your parents/guardians, we at the institute, will be looking forward eagerly and confidently to your bright success; so does the society and the nation. Remember what Swami Vivekananda said “Arise, Awake and Stop not, till the goal is reached”.

Looking forward to moving along with you in your beautiful journey ahead.
Come, join us!
Wishing you All the Best!

Message from the Desk of Principal

I am very much pleased to see the keen interest and devotion of the students of ECE, JBIET towards the publication of the Department technical magazine. This is an indicator of the communication skills of the students, which is rising day-by day. And the way students are putting across this message to the reader shows that their communication skills are raising. TECHTRONICS is a magazine that provides you with everything you need to know.

Our college is one, that strives for excellence in every field, with academics, sports, cultural or co-curricular activities. It is true that your academic performance matters the most you go for an interview, but when you furnish details of how much you have participated in co-curricular activities, apart from your academics may impress the interviews. So build your communication skills and vocabulary by participating in co-curricular activities.

Here, wishing all the happy reading.

Dr. Niraj Upadhyaya
Principal, JBIET

Constitution of Editorial Board:

Editor and Editorial Board, for the publication of Technical Magazines, Newsletters is appointed by the HOD . The student representatives in this publication are also decided by the HOD. Technical Magazine and News Letters covers of following items:

- News about latest Technical inventions and innovations.
- Technical activities and achievements in the Department.
- Articles from Department Faculty and Students related to various areas of interest.
- Details about Seminars, Workshops, Conferences at JBIET.
- Achievements of the students & faculty.

Process of Publishing:

- Editor with the help of the Editorial Board collects the news items related to CSE from various Magazines, Newspapers and Professional Societies and also calls for the articles publications from students and faculty giving a fixed target time.
- These articles are screened by Editorial Committee for publication into Magazines/Newsletter.
- Technical activities and achievements in the Department are collected based on the information available to HOD.
- Sometimes, special issues are planned based on the current topics and new technological trends.
- Details about Seminars, Workshops, and Conferences at JBIET are collected from IQAC.
- After collection, a basic draft is created and submitted to advisory board for proof reading. Later, this content is formatted on publishing software like Microsoft Publisher, Scribus etc.
- Frequency of Publishing Magazine Once in a Year and News Letters is Twice in a Year.

Process of Dissemination:

- E-copy of the Newsletter/Magazines are disseminated through JBIET Website. Printed copies of the same are available in the Department and Central library.

Ensuring Students Participations

- Students are encouraged to write articles and submit news items.
- Students get recognition and appreciation for their articles published by them, among their Cohorts.
- Student's achievements are also published to keep them motivated.
- Student's representation is also made in the editorial board.

Board of Editors

Chief Editor:

Dr. P. SrinivasaRao, Professor, Dept of, HOD CSE

Associate Editor: Dr.

Dr. Niraj Upadhayaya, Professor, Dept of CSE

Faculty Coordinators:

Dr. Gallipoli Apparao Naidu, Professor, Dept of CSE

Technical Support:

Mr.K.Srikanth, Asst professor dept of CSE

Student Coordinators:

Ms.Bantu Manasa, III year, Dept CSE

Ms.K Vijay Bhargavi, III year, Dept CSE

Cover page Design:

P.Sumanth, III year, Dept CSE

WHAT IF AI ACCIDENTALLY CREATED THEIR OWN LANGUAGE???

How would you react when you'd know that your AI device at home is able to talk to other AI devices present at your home and have created their own languages to communicate and we were unable to stop them

Should we allow AI to evolve its dialects for specific tasks that involve speaking to other AIs? To essentially gossip out of our earshot? Maybe, it offers us the possibility of a more interoperable world, a more perfect place where iPhones talk to refrigerators that talk to your car without a second thought.

The trade off is that we, as humans, would have no clue on what those machines were actually saying to one another.

We Teach Bots to Talk, but We'll Never Learn Their Language:

Face book abandoned an experiment after two artificially intelligent programs appeared to be chatting to each other in a strange language only they understood. The two chat bots came to create their own changes to English that made it easier for them to work – but which remained mysterious to the humans that supposedly look after them.

The bizarre discussions came as Face book challenged its chat bots to try and negotiate with each other over a trade, attempting to swap hats, balls and books, each of which were given a certain value. But they quickly broke down as the robots appeared to chant at each other in a language that they each understood but which appears mostly incomprehensible to humans.

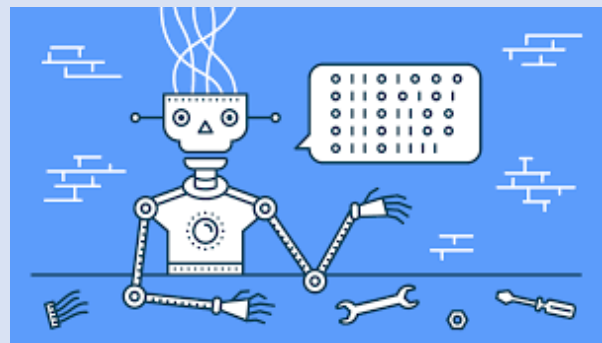
The robots had been instructed to work out how to negotiate between themselves, and improve their bartering as they went along. But they were not told to use comprehensible English, allowing them to create their own "shorthand", according to researchers. But at the same time, it feels short-sighted, doesn't it? If we can build software that can speak to other software more efficiently, shouldn't we use that? Couldn't there be some benefit?

The actual negotiations appear very odd, and don't look especially useful:

Indeed, some of the negotiations that were carried out in this bizarre language even ended up successfully concluding their negotiations, while conducting them entirely in the bizarre language.

Face book's experiment isn't the only time that artificial intelligence has invented new forms of language. Earlier this year, Google revealed that the AI it uses for its Translate tool had created its own language, which it would translate things into and then out of. But the company was happy with that development

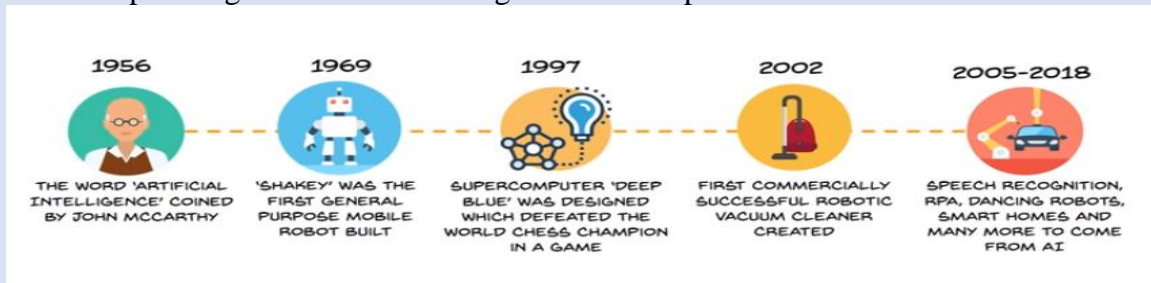
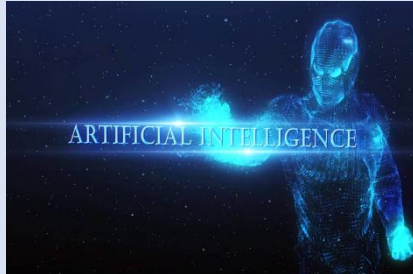
Sources: <https://www.independent.co.uk>



Mr.A.Hari Kanth
B.Tech- III-Year CSE-A

Artificial Intelligence Is the Intelligence Demonstrated By Machines

Artificial intelligence is the intelligence demonstrated by machines, in contrast to the **natural** "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving". Computer science defines AI research as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. A more elaborate definition characterizes AI as "a system's ability to correctly interpret external data, to learn from such data, and to use that learning's to achieve specific goals and tasks through flexible adaptation."



Current Status Of Artificial Intelligence

The current state of Artificial Intelligence (AI) in today's world. The field has been growing at a rapid rate over the past couple of years. Before proceeding it is important to mention that "real" AI does not exist at the present moment, otherwise known as Artificial General Intelligence (AGI). These would be AI systems that can perform all human-level tasks with equal proficiency. Currently, the only systems that exist are known as "narrow" AI.

AI research began over half a century ago (around the 1950s). Initial pioneers in the nascent field of computer science posed the question: "Is it possible to make machines think?" Since that very moment.

Between the 1950s and 1980s, the dominant paradigm in AI was to construct programs that consisted of handcrafted rules on how behaviour should be exhibited when interacting with the external world or operating space; this was known as symbolic AI.

Self-Driving Cars

If you know about the latest happenings in the world, then you might have heard about the driver-less cars. These intelligent cars can gauge the speed at which they should go, what direction they should follow and everything else that a human driver must know while driving, all thanks to technology and artificial intelligence. Tesla is the first automotive brand that developed a self-driving vehicle. Even though the concept has not been totally frozen yet, we can expect to see a rise in this type of technology in the future.

Case Study of Self Driving cars:

Self-driving cars include a significant amount of technology in them. The hardware inside these cars has stayed fairly consistent, but the software behind the cars is constantly changing and being updated. Looking at some of the primary technologies, we have: exchangeable and they essentially are. Autonomous is more general, whereas self-driving only relates to vehicles. In the case of cars though, those technicalities don't matter.

Self-driving cars rely on hardware and software to drive down the road without user input.

The hardware collects the data; the software organizes and compiles it. On the software side, the input data will normally be processed through machine learning algorithms or complex lines of code that have been trained in real-world scenarios. It's this machine learning technology that is at the center of self-driving technology.

Cameras: Lon Musk has famously claimed that cameras are the only sensor technology needed for self-driving cars; we just need the algorithms to be able to fully comprehend the images they receive. Camera images capture everything needed for a car to drive, it's just that we're still developing new ways for computers to process the visual data and translate it into 3D actionable data. Teslas have 8 external-facing cameras to help them understand the world around them.

Radar: Radar is one of the primary means that self-driving cars utilize to "see" along with LiDAR, and computer imagery and cameras. Radar is the lowest resolution of the three, but it can see through adverse weather conditions, unlike LiDAR, which is light-based. Radar, on the other hand, is radio wave-based, meaning that it can propagate through things like rain or snow.

LiDAR: LiDAR sensors are what you'll see on top of self-driving cars spinning around. These sensors shoot out light and use the feedback to generate a highly-detailed 3D map of its surrounding area. LiDAR is very high resolution, compared to RADAR, but as we mentioned above, it has limitations in low-visibility weather due to it being light-based.

Other sensors: Self-driving cars will also utilize traditional GPS tracking, along with ultrasonic sensors and inertial sensors to gain a full picture of what the car is doing as well as what's occurring around it. In the realm of machine learning and self-driving technology, the more data collected the better.

Computer Power: All self-driving cars, and essentially all modern cars, require a computer on-board to process everything happening with the vehicle in real-time.

Self-driving cars require extreme processing power, so rather than traditional CPUs, they utilize graphical processing units, or GPUs, to do their calculation. However, even the best GPUs have started to prove insufficient for the needs of the extreme data processing seen in self-driving vehicles, so Tesla has introduced a neural network accelerator chip, or NNA. These NNAs have extreme processing power in real-time, capable of handling real-time image processing.

For a perspective between CPUs, GPUs, and NNAs, this is how many giga operations per second they can handle, or GOPS:

CPU: 1.5

GPU: 17

NNA: 2100

The future of autonomous and self-driving vehicles

Roughly 93% of all car accidents are due to human error. While much of society is resistant to the idea of self-driving cars, the simple fact of the matter is that they're already safer than human drivers. Self-driving vehicles, when fully tested and built out, have the potential to revolutionize our travel infrastructure.

It will still be some time before we see level 5 autonomy implemented in cars on the road, but for now, level 2 is reaching commonplace in modern automobiles. The next levels will be upon us soon. If you want to see some of what we discussed in this article and more in visual, animated, infographic form, take a look at the infographic from The Simple Dollar below.

Ms.Bingi Supraja
B.Tech III year B Section

HAWK-EYE TECHNOLOGIES

Hawk-Eye is a computer system used in numerous sports such as cricket, tennis, and volleyball, to visually track the trajectory of the ball and display a profile of its statistically most likely path as a moving image.^[1] The onscreen representation of the trajectory results is called **Shot Spot**.^[2] The system was originally implemented in 2001 for television purposes in cricket. The system works via six (sometimes seven) high-performance cameras, normally positioned on the underside of the stadium roof, which track the ball from different angles. Hawk-Eye is a camera system which traces the ball's trajectory during the game. It is the most advanced officiating tool used in sport, used across many sports. Hawk-eye were the first company to receive a FIFA Goal Line Technology (GLT) license, the technology is now classed as the most accurate, reliable and experienced provider of GLT. Working with many federations and football leagues, there is no doubt that there is faith in the technology from the industry experts.

Hawk eye in cricket is the technology which was first used by Channel 4 during a Test match between England and Pakistan on Lord's Cricket Ground, on 21 May 2001. It is used primarily by the majority of television networks to track the trajectory of balls in flight. In the winter season of 2008/2009 the ICC trialed a referral system where Hawk-Eye was used for referring decisions to the third umpire if a team disagreed with an LBW decision. The third umpire was able to look at what the ball actually did up to the point when it hit the batsman, but could not look at the predicted flight of the ball after it hit the batsman.

Its major use in cricket broadcasting is in analyzing leg before wicket decisions, where the likely path of the ball can be projected forward, through the batsman's legs, to see if it would have hit the stumps. Consultation of the third umpire, for conventional slow motion or Hawk-Eye, on leg before wicket decisions, is currently sanctioned in international cricket even though doubts remain about its accuracy.

The Hawk-Eye referral for a LBW decision is based on three criteria:

- Where the ball pitched
- The location of impact with the leg of the batsman
- The projected path of the ball past the batsman



In all three cases, marginal calls result in the on-field call being maintained.



Due to its real-time coverage of bowling speed, the systems are also used to show delivery patterns of a bowler's behaviour such as line and length, or swing/turn information. At the end of an over, all six deliveries are often shown simultaneously to illustrate a bowler's variations, such as slower deliveries, bouncers and leg-cutters. A complete record of a bowler can also

be shown over the course of a match.

Batsmen also benefit from the analysis of Hawk-Eye, as a record can be brought up of the deliveries from which a batsman scored. These are often shown as a 2-D silhouetted figure of a batsman and colour-coded dots of the balls faced by the batsman. Information such as the exact spot where the ball pitches or speed of the ball from the bowler's hand (to gauge batsman reaction time) can also help in post-match analysis.

Hawk-Eye's SMART Replay technology is now being used within rugby union. It gives the officials in rugby the ability to make decisions that may have been missed otherwise. Also, the officials can pass on videos to doctors to help with treatment of injuries. With the widespread usage of technology in sport, it is apparent that the technology in professional games is going to be used more frequently and become more accessible to the lower leagues. With the use of technology such as Hawk-eye and VAR, it is becoming largely accepted in professional sport. However, there is criticism of the speed of decisions being made. Not only are we seeing technology grow for decision making in sport but we are seeing growth in training aids for sport such as Smart Goals (A innovative technology to make training more effective). The future of sport looks like technology and innovation are on the horizon, as a sports manufacturer we embrace such changes in sport and look forward to what's next.

Mr.Kotra Anuraag
B.Tech II Year – CSE

Sentiment Analysis

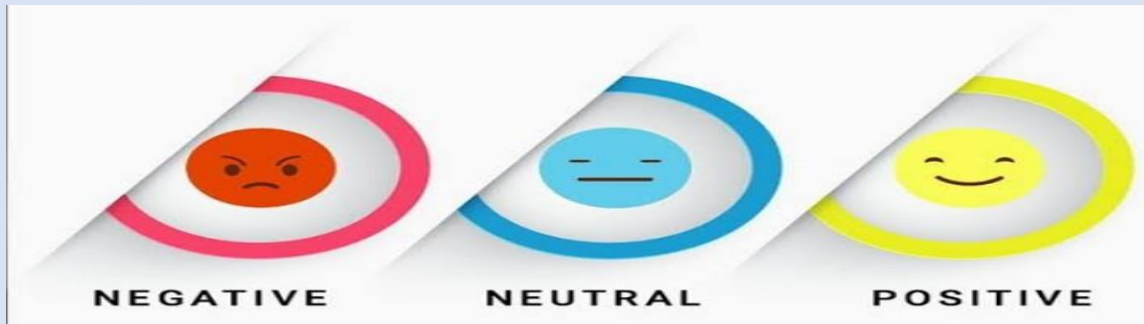
What is Sentiment Analysis?

Sentiment Analysis is the process of determining whether a piece of writing is positive, negative or neutral. A sentiment analysis system for text analysis combines natural language processing (NLP) and machine learning techniques to assign weighted sentiment scores to the entities, topics, themes and categories within a sentence or phrase.

Sentiment analysis helps data analysts within large enterprises gauge public opinion, conduct nuanced market research, monitor brand and product reputation, and understand customer experiences. In addition, data analytics companies often integrate third-party sentiment analysis APIs into their own customer experience management, social media monitoring, or workforce analytics platform, in order to deliver useful insights to their own customers. Basic sentiment analysis of text documents follows a straightforward process:

1. Break each text document down into its component parts (sentences, phrases, tokens and parts of speech)
 2. Identify each sentiment-bearing phrase and component
 3. Assign a sentiment score to each phrase and component (-1 to +1)
 4. Optional: Combine scores for multi-layered sentiment analysis.
- Applications of sentimental analysis:

Sentiment analysis is used across a variety of applications and for myriad purposes.



For instance, sentiment analysis may be performed on Twitter to determine overall opinion on a particular trending topic. Companies and brands often utilize sentiment analysis to monitor brand reputation across social media platforms or across the web as a whole.

One of the most widely used applications for sentiment analysis is for monitoring call center and customer support performance. As companies seek to keep a finger on the pulse of their audiences, sentiment analysis is increasingly utilized for overall brand monitoring purposes.

Sentiment analysis has been used by political candidates and administrations to monitor overall opinions about policy changes and campaign announcements, enabling them to fine-tune their approach and messaging to better relate to voters and constituents. In brand reputation management applications, overall trends in sentiment analysis enables brands to identify peaks and valleys in overall brand sentiment or shifts in attitudes about products or services, thus enabling companies to make improvements perfectly in-tune with customer demands.

Ms.S.Sinidhi
B-Tech-II Year-CSE

RADIO FREQUENCY IDENTIFICATION

RFID is an acronym for “radio-frequency identification” and refers to a technology whereby digital data encoded in RFID tags or smart labels (defined below) are captured by a reader via radio waves. RFID is similar to barcoding in that data from a tag or label are captured by a device that stores the data in a database. RFID, however, has several advantages over systems that use barcode asset tracking software. The most notable is that RFID tag data can be read outside the line-of-sight, whereas barcodes must be aligned with an optical scanner.



How Does Rfid Work?

RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). AIDC methods automatically identify objects, collect data about them, and enter those data directly into computer systems with little or no human intervention. RFID methods utilize radio waves to accomplish this. At a simple level, RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags

contain an integrated circuit and an antenna, which is used to transmit data to the RFID reader (also called an interrogator). The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analyzed at a later time.

Rfid Technology Is Employed In Many Industries To Perform Such Tasks As:

- Inventory management
- Asset tracking
- Personnel tracking
- Controlling access to restricted areas
- ID Badging
- Supply chain management
- Counterfeit prevention (e.g. in the pharmaceutical industry)

RFID Applications

Reinventing the Bar Code

Almost everything that you buy from retailers has a UPC bar code printed on it. These bar codes help manufacturers and retailers keep track of inventory. They also give valuable information about the quantity of products being bought and, to some extent, the consumers buying them. These codes serve as product fingerprints made of machine-readable parallel bars that store binary code.

Disadvantages:

- In order to keep up with inventories, companies must scan each bar code on every box of a particular product.
- Going through the checkout line involves the same process of scanning each bar code on each item.
- Bar code is a read-only technology, meaning that it cannot send out any information.

RFID tags are an improvement over bar codes because the tags have read and write capabilities. Data stored on RFID tags can be changed, updated and locked. Some

stores that have begun using RFID tags have found that the technology offers a better way to track merchandise for stocking and marketing purposes. Through RFID tags, stores can see how quickly the products leave the shelves and which shoppers are buying them.

RFID tags won't entirely replace bar codes in the near future -- far too many retail outlets currently use UPC scanners in billions of transactions every year. But as time goes on we'll definitely see more products tagged with RFIDs and an increased focus on seamless wireless transactions like that rosy instant checkout picture painted in the introduction. In fact, the world is already moving toward using RFID technology in payments through special credit cards and smart phones -- we'll get into that later.

In addition to retail merchandise, RFID tags have also been added to transportation devices like highway toll passcards and subway passes. Because of their ability to store data so efficiently, RFID tags can tabulate the cost of tolls and fares and deduct the cost electronically from the amount of money that the user places on the card. Rather than waiting to pay a toll at a tollbooth or shelling out coins at a token counter, passengers use RFID chip-embedded passes like debit cards.



Mr.Myakala Rohith
B.Tech(CSE) 2nd year

Robotic Process Automation (RPA)

“RPA is a form of business process automation that allows anyone to define a set of instructions for a robot or ‘bot’ to perform,” says Aaron Bultman, director of product at [Nintex](#). “RPA bots are capable of mimicking most human-computer interactions to carry out a ton of error-free tasks, at high volume and speed.”

If that sounds sort of, well, boring – especially compared to the Hollywood robots – that’s by design. RPA is ultimately about automating some of the most mundane and repetitive computer-based tasks and processes in the workplace. Think copy-paste tasks and moving files from one location to another, for example.

RPA automates everyday processes that once required human action – often a great deal of it performed in rote, time-consuming fashion. That’s also how RPA promises to boost efficiency for organizations.

Applications of RPA:

Web Site Scraping

RPA software is the perfect choice to put them into implementation for these specific use-cases as the data that needs to be collected or scraped off the websites are already known – for example, stock trading websites, futures trading websites, commodities trading websites, news and media sites (based on keywords). These websites can comfortably be scraped for the specific information of interest, summarize them and later can be presented to the required stakeholders for a call on what to do next with this information.

Advantages of web scraping with Robotic Process Automation

- Lesser errors and cost, Customized scraping, Faster setup, Gathers social media data
- Automates batch download tasks, no need to maintain a team for scraping, Easy and faster setup

How it works

As industrial robots transformed the factory floor, RPA bots transform back offices. RPA bots replicate employee actions like opening files, inputting data, copy pasting fields in an automated way. They interact with different systems via integrations and screen scraping, allowing RPA tools to perform actions like a white-collar employee.

Bot is the unit of automation

This is the most fundamental unit and there are already free bots offering free trials (provided by Argos Labs) or limited functionality (Work fusion and UiPath Community Edition). Robots can be run from employees’ desktops or from the cloud.



Key features:

Integrations are necessary for your bot to work with your enterprise applications. It is also possible for the bot to screen scrape and still perform tasks however it is more reliable to have app integration compared to screen scraping as screen scraping tends to have a higher probability of causing errors. Most bots in the market work with legacy applications (though

coverage depends from vendor to vendor), web applications, desktop applications and other major enterprise software including SAP, Citrix, Java and mainframe applications.

Programming interfaces are required because bots need to be programmed. RPA programming is relatively simple compared to other types of programming and there are code-free ways to program RPA bots. We explain different ways of programming RPA bots in detail in our RPA tools article.

Why Robotic Process Automation (RPA) projects fail: 4 factors

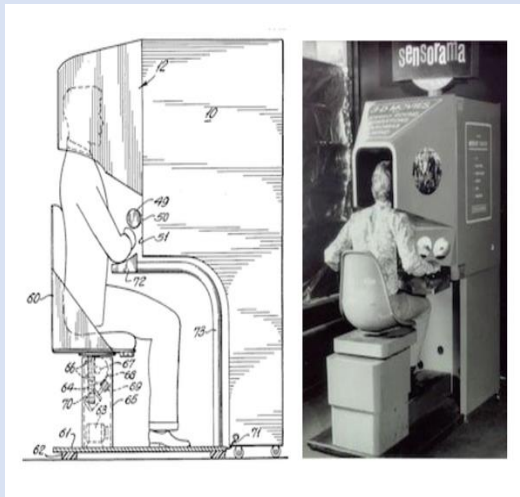
No one wants to see their Robotic Process Automation project fail. Check out when and where RPA can go wrong – and learn from common mistakes

1. The process is more dynamic than you realize
2. The target UI changes, but your RPA bot doesn't get the memo
3. You underestimate the political implications
4. You have unrealistic expectations

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Virtual Reality

Virtual reality is a simulated experience that can be similar to or completely different from the real world. Applications of virtual reality can include entertainment and educational purposes.



The main challenge of VR is tricking the human brain into perceiving digital content as real. That is not easy, and this “immersion” issue is what still holds virtual reality experiences back from being enjoyable.

VR has come a long way since its initial use, and is still an emerging technology. The journey started back in year 1957, when the first VR machine was invented by Morton Heilig. It was named “sensorama”.

Virtual reality is actively being used in medical field for educational purposes. Virtual Reality has the ability to transport you inside the human body – to access & view areas that otherwise would be impossible to reach. Currently, medical students learn on cadavers, which are difficult to get hold of and (obviously) do not react in the same way a live patient would. In VR however, you can view minute detail of any part of the body in stunning 360° CGI reconstruction & create training scenarios which replicate common surgical procedures.

“Medical Realities” is one of the companies pioneering the use of Virtual Reality to deliver high-quality surgical training. They film real life surgery in 4K 360° video from multiple

angles which is then combined with CGI models of the anatomy being operated on to provide an immersive & interactive training experience.

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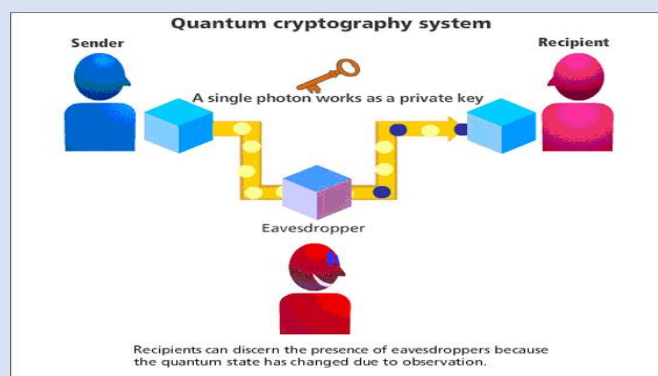
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B-Tech – II-Year-CSE

Quantum cryptography

Quantum cryptography, by extension simply uses the principles of “quantum mechanics” to encrypt data and transmit it in a way that cannot be hacked.



Following are principles of quantum mechanics behind quantum cryptography:
The particles that make up the universe are inherently uncertain and can simultaneously exist in more than one place or more than one state of being. You can't measure a quantum property without changing or disturbing it, and Photons are generated randomly in one of two quantum states. The working of Quantum cryptography uses a series of photons (light particles) to transmit data from one location to another over a fiber optic cable. By comparing measurements of the properties of a fraction of these photons, the two endpoints can determine what the key is and if it is safe to use.



Breaking the process down further helps to explain it better.

The sender transmits photons through a filter (or polarizer) which randomly gives them one of four possible polarizations and bit designations: Vertical (One bit), Horizontal (Zero bit), 45 degree right (One bit), or 45 degree left (Zero bit).

The photons travel to a receiver, which uses two beam splitters (horizontal/vertical and diagonal) to “read” the polarization of each photon. The receiver does not know which beam splitter to use for each photon and has to guess which one to use.

Once the stream of photons has been sent, the receiver tells the sender which beams splitter was used for each of the photons in the sequence they were sent, and the sender compares that information with the sequence of polarizer’s used to send the key. The photons that were read using the wrong beam splitter are discarded, and the resulting sequence of bits becomes the key.

The following are some advantages and disadvantages of Quantum Cryptography:

It is virtually impossible to hack.

Dependent on fewer resources for maintenance and Capable for detecting hacking attempts in real time.

The adoption of quantum cryptography on large scale can lead to unemployment and Possibility of change in polarization of photons

Mr.Abbhinav Jaiswa

B.Tech(II/IV) CSE-A.

Electronic Books

Since the invention of press, books printed on paper have been the fundamental vehicles for knowledge transmission. The printed book has a number of advantages, from comfort of the reading position to the facility of its transportation (in general) and its autonomy for being handled. However, it also has many disadvantages, such as the difficulty and high cost of modification, difficulty to be shared, facility for being damaged, and its static nature. With the development of new technologies, variants of the classical book have emerged which try to mitigate these drawbacks.

The concept of electronic book refers to a new form of book whose pages are not made of a physical material, such as paper and ink, but they are stored and interpreted in a digital device. Generally, an electronic book can be thought of as a multimedia program, where the user can move through its different parts. Of course, reading an electronic book requires a computer, and probably several specialized input/output devices for interaction, e.g. a loudspeaker or connection to Internet.

There is a great variety of formats for electronic books. Sometimes, they imitate the format of paper books in order to be more familiar to the new reader, with functions to go forward or backward one page, to move in a page, to go to the first page or to any other page, etc. In general, electronic books have a hypertext structure, where a concept allows following a link to other page. In this case, not only a richer structure is available, but it can also provide added values. Electronic books can also be multimedia, so that they include images, graphics, video, sound, etc. in addition to text. Finally, they can allow connecting to Internet, where the possibilities of additional information are almost infinite.

Let us see some non-exhaustive criteria of classification:

- Editing means of the electronic book. Basically, there are two media, CD-ROM and Internet, of course complementary. In the latter case, the reader can access other resources by means of Internet, or even the book can be distributed among several sites,

with each part made by a different author.

- Capability of person-book interaction. Some books are completely static, whereas others permit different ways of interaction, such as evaluating the level of understanding by means of questions or to animate certain presentations. Animation features are especially useful for certain programming topics which are hard to understand statically, e.g. recursion. Another useful feature is their modifiability, for instance, to add new materials.
- Relation to other programs or systems. Some books simply contain descriptions proper of a traditional book, but other ones allow interacting with programming environments, Internet or other programs. We can speak about closed or open corpus. A good example of an open electronic book is BURKS-2 [B97], a CD-ROM oriented to computer science students. BURKS-2 can be browsed with Netscape as a simple electronic book, but its capabilities are further enhanced if the computer is connected to Internet, allowing downloading different computer science materials, e.g. programming environments.

Electronic books can be used, at least, for the same purposes than conventional books, which are, as a mean to transmit information in the form of lessons and proposed or solved exercises. A particular use, similar to that of simulation programs, is the presentation of situations which otherwise are very difficult, expensive or just impossible to produce, for instance some real-time systems. In addition, the new media allow widening the pedagogical uses of these books, for example, for self-study. These possibilities usually depend on their interaction capabilities, such as self-tests or customization to the reader preferences. In this way, they give possibilities of self-study similar to those in distant education and training.

Open books give more possibilities for student inquiry. The book provides the basic materials of any subject, but there are connections to other systems or resources which can be used by the student as complementary resources, to deepen in a given topic, to know alternative points of view, etc. Furthermore, the interaction to other programs (electronic dictionaries, programming environments, Internet, etc.) shows that we are in a process where traditional concepts are coming together, and we need new concepts and terms for them.

of the university. Although, there are already completely distant universities, traditional universities will surely offer the possibility of distant education.

Abhay Kumar,
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A GLIMPSE OF MACHINE LEARNING:

Machine Learning is undoubtedly one of the most powerful technologies in today's world. More importantly, we are far away from its full potential. There is no doubt; it will continue to be making headlines for the foreseeable future. This article is designed as an introduction to the Machine Learning concepts, covering all the fundamental ideas without making it much complex.

Machine learning is a tool for transforming information into knowledge. In the past 50 years, there has been an explosion of data. This mass of data is useless unless we analyze it and find the patterns hidden within. Machine learning techniques are used to automatically find the valuable underlying patterns within complex data that we would otherwise struggle to

discover. The hidden patterns and knowledge about a problem can be used to predict future events and perform all kinds of complex decision making.

Ice Breaking With Machine Learning:

Tom Mitchell in his book Machine Learning provides a short formalism of machine learning as follows:

"A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P , if its performance at tasks in T , as measured by P , improves with experience E ."

Here, the computer program can be compared to a machine which learns from its experiences. Thus the definition best fits 'Machine Learning'.

Types Of Machine Learning:

There are multiple forms of Machine Learning; supervised, unsupervised, semi-supervised and reinforcement learning. Each form of Machine Learning has differing approaches, but they all follow the same underlying process and theory. This explanation covers the general Machine Learning concept and then focuses in on each approach.

Data Collection: Collect the data that the algorithm will learn from.

Data Preparation: Format and engineer the data into the optimal format, extracting important features and performing dimensionality reduction.

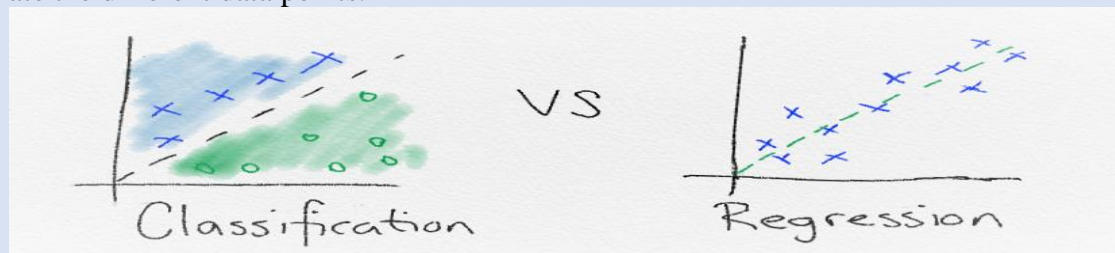
Training: Also known as the fitting stage, this is where the Machine Learning algorithm actually learns by showing it the data that has been collected and prepared.

Evaluation: Test the model to see how well it performs.

Tuning: Fine tune the model to maximize its performance.

Supervised Learning: The goal in supervised learning would be to learn the mapping that describes the relationship between set of inputs and outputs. Labeled data is provided of past input and output pairs during the learning process to teach the model how it should behave, hence, supervised learning. Basically, there are two forms of supervised learning.

Classification: Classification is used to group the similar data points into different sections in order to classify them. Machine Learning is used to find the rules that explain how to separate the different data points.



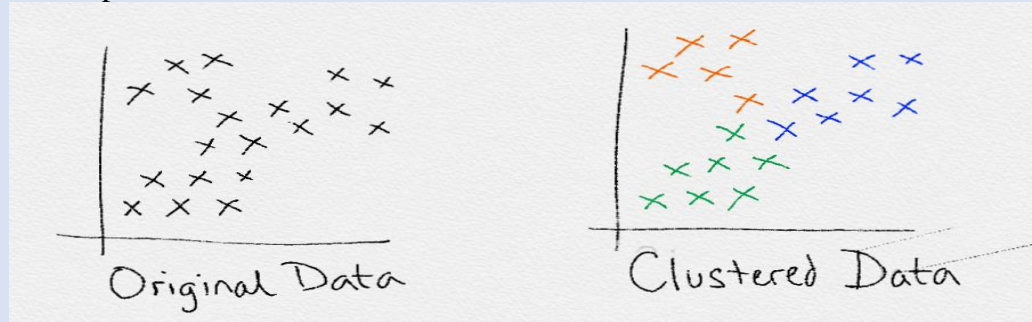
Regression: Regression is another form of supervised learning. The difference between classification and regression is that regression outputs a number rather than a class. Therefore, regression is useful when predicting number based problems like stock market prices, the temperature for a given day, or the probability of an event.

Unsupervised Learning:

In unsupervised learning, only input data is provided in the examples. There are no labeled example outputs to aim for. But it may be surprising to know that it is still possible to find many interesting and complex patterns hidden within data without any labels.

An example of unsupervised learning in real life would be sorting different color coins into separate piles. Nobody taught you how to separate them, but by just looking at their features such as color, you can see which color coins are associated and cluster them into their correct groups.

Unsupervised learning is mostly used for clustering. Clustering is the act of creating groups with differing characteristics. Clustering attempts to find various subgroups within a dataset. As this is unsupervised learning, we are not restricted to any set of labels and are free to choose how many clusters to create. This is both a blessing and a curse. Picking a model that has the correct number of clusters (complexity) has to be conducted via an empirical model selection process.



Semi Supervised Learning:

Semi-supervised learning is a mix between supervised and unsupervised approaches. The learning process isn't closely supervised with example outputs for every single input, but we also don't let the algorithm do its own thing and provide no form of feedback. Semi-supervised learning takes the middle road.

By being able to mix together a small amount of labeled data with a much larger unlabeled dataset it reduces the burden of having enough labeled data. Therefore, it opens up many more problems to be solved with machine learning.

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J.Vinay
B.Tech III Year-CSE .

Go at Google: Language Design in the Service



Go at Google

Go is a programming language designed by Google to help solve Google's problems, and Google has big problems. The hardware is big and the software is big. There are many millions of lines of software, with servers mostly in C++ and lots of Java and Python for the

The “Go programming language” was as an answer to some of the problems we were seeing developing software infrastructure at Google. Go is a compiled, concurrent, garbage-collected, statically typed language developed at Google. It is an open source project: Google imports the public repository rather than the other way around.

Go is efficient, scalable, and productive.

other pieces. Thousands of engineers work on the code, at the "head" of a single tree comprising all the software, so from day to day there are significant changes to all levels of the tree. A large custom-designed distributed build system makes development at this scale feasible, but it's still big. And of course, all this software runs on zillions of machines, which are treated as a modest number of independent, networked compute clusters.

The Go project was to eliminate the slowness and clumsiness of software development at Google. ***Go does have address the issues:***

- slow builds
- uncontrolled dependencies
- each programmer using a different subset of the language
- poor program understanding (code hard to read, poorly documented, and so on)
- duplication of effort
- cost of updates
- version skew
- difficulty of writing automatic tools
- cross-language builds.

Suited for data science

Extracting business value from large datasets is quickly becoming a competitive advantage for companies and a very active area in programming, encompassing specialties like artificial intelligence, machine learning, and more. Go has multiple strengths in these areas of data science, which is increasing its use and popularity. Superior error handling and easier debugging are helping it gain popularity over Python and R, the two most commonly used data science languages. Data scientists are typically not programmers. Go helps with both prototyping and production, so it ends up being a more robust language for putting data science solutions into production. Performance is fantastic, which is critical given the explosion in big data and the rise of GPU databases. Go does not have to call in C/C++ based optimizations for performance gains, but gives you the ability to do so.

Seeds of Go's expansion

Microservices architectures have become key to unlocking application agility. Modern apps are designed to be cloud-native and to take advantage of loosely coupled cloud services offered by cloud platforms. Go is an explicitly engineered programming language, specifically designed with these new requirements in mind. Written expressly for the cloud, Go has been growing in popularity because of its mastery of concurrent operations and the beauty of its construction. Not only is Google supporting Go, but other companies are aiding in market expansion, as well. For example, Go code is supported and expanded with enterprise-level distributions such as ActiveState's ActiveGo.



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5G Network

Fifth-generation (5G) mobile networks are expected to be the next big leap in mobile broadband. Peak download speeds as high as 20 gigabits-per-second will enable specialized tasks like remote precision medicine, connected cars, virtual and augmented reality, and a wide array of internet of things (IoT) applications.

5G networks promise to support new services, more video, and cloud connectivity. There are three main case uses driving the 5G revolution:

1. **Enhanced mobile broadband:** With the promise of up to 20 Gbps connectivity and latency of less than five milliseconds, it's no surprise the ongoing surge in demand for mobile connectivity will accelerate dramatically. The industry estimates this increased speed will result in a 10- to 100-fold increase in the number of 5G-connected devices over the number of 4G devices.
2. **The Internet of Things (IoT):** Thanks to 5G's virtualized, radio technology-agnostic core, published predictions estimate as many as 20 billion IoT connections by 2020—connections that will drive smart buildings and smart cities. CommScope anticipates 5G will offer 1,000 times the bandwidth of 4G and up to five times the density, making room for all those “things” on the network.
3. **High-reliability, low-latency networks:** Beyond just doing what 4G does better and faster, 5G opens new doors to allow driverless cars to coordinate over the network, enable augmented reality and virtual reality and expand the horizons of remote surgery and other applications that can fulfill their promise only on a network with such ultralow latency times as 5G's five-millisecond threshold.



4. Further, 5G will be a determining factor in whether or not mobile-dependent users fully partake in the global digital economy, especially as smart phones, cell phones, and other wireless-enabled devices become the *only* gateway to the internet for certain populations. For communities of color that often lack reliable broadband access, 5G represents increased economic opportunity through improved access to social services, such as health care, education, transportation, energy, and employment. This is why 5G networks must be widely available, affordable, and able to support emerging technologies that address public interest concerns.

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Dr Abdul Kalam



1)

Dr. Avul Pakir Jainulabdhin Adbul Kalam, the twelfth President of India, is rightfully termed as the father of India's missile technology. He was born to parents Jainulabdeen Marakayar and Ashiamma on 15th October, 1931, at Dhanushkodi in Rameshwaram district, Tamil Nadu. Dr. Kalam as an eminent Aeronautical Engineer, contributed for the development of India's first Satellite launch vehicle SLV-3 and the missiles like the Trishul, Agni, Pritvi etc.

He did his secondary education at Schwartz High School in Ramanathapuram, B.Sc. at St. Joseph's College(1950), Tiruchi, and DMIT in Aeronautical Engineering at the MIT, Madras during 1954-57. After passing out as a graduate aeronautical engineer, Kalam joined Hindustan Aeronautics Limited (HAL), Bangalore as a trainee and later joined as a technical assistant in the Directorate of Technical Development and Production of the

