

# CITY ENGINEERING COLLEGE



## Tech Samachar

*Expand your mind; change your world.....*

JUNE-2021

Volume I, Issue-03

*"Ideas are the beginning points of all fortunes"*



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Department Monthly Newsletter Issue-03

# **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

## **VISION**

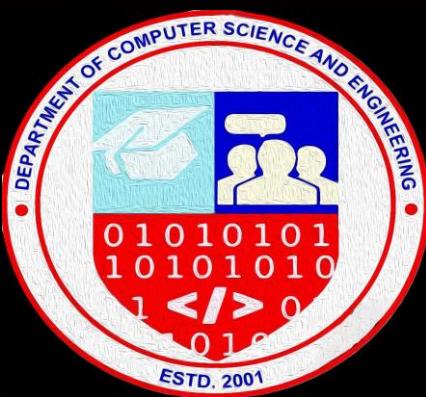
**“To contribute to Global Development by producing Knowledgeable and Quality professionals who are Innovative and Successful in advanced field of Computer Science & Engineering to adapt the changing Employment demands and social need “**

## **MISSION**

**M1: To provide Quality Education for students, to build Confidence by developing their Technical Skills to make them Competitive Computer Science Engineers.**

**M2: To facilitate Innovation & Research for students and faculty and to provide Internship opportunities**

**M3: To Collaborate with educational institutions and industries for Excellence in Teaching and Research.**



## *About the Department*

The Department of Computer Science & Engineering was started in the year 2001 is known for imparting Quality education and carrying out cutting edge research. In addition to the UG program, PG CSE program and Research facilities for Ph.D. The department offers undergraduate program and has a comprehensive curriculum on topics related to software and hardware with an emphasis on theoretical and practical learning. It has well equipped, state of the art laboratories supported by highspeed Internet and wireless networks.

The students of CSE Department deliver value to the department with a dynamic character and active culture towards learning and delivering through assigned projects guided by faculty. The faculty members are highly qualified experienced and dedicated. All faculty members are masters, some doctorates and few are pursuing their Ph.D. from various reputed universities. All are inspired in delivering top class education blending their research in the area of information technology. The infrastructure of the department provides the student and staff a conducive learning environment.

The Department regularly organizes industrial visits, conferences, workshops, technical talks, project exhibitions for the faculty and students training by using in-house resources as well as industry experts. This helps in effectively bridging the gap between academic and industry.

# Editorial Committee

## ***Faculty Members***

*Prof. Vivekavardhana Reddy, HOD CSE*

*Dr. Sowmya, Professors, CSE (Alumni)*

*Prof. Ambika P R, A.P. CSE*

*Prof. Deepika R, A.P. CSE (Alumni)*

*Prof. Archana Bhat, A.P. CSE*

*Prof. Laxmi M C, A.P. CSE*



## *Chairman's Message*

**Tech Samachar is particularly important as it encourages the students to share the knowledge they have acquired. Writing articles for the Newsletter also improves the communication skills of the budding engineers of the Computer Science and Engineering Department. It is common knowledge that representation of an idea is as important as, if not more important, than the idea itself.**

**Tech Samachar aims to inspire and nurture upcoming Engineers to bring a revolution in this ever-evolving world of Technology. The Newsletter captures the current Technological advancements.**

**To conclude I would like to congratulate the faculty and the students of the editorial team on bringing out this Issue of Tech Samachar. I am glad to see that they have lived up to the high standards and my best wishes to the students for a bright future.**

**Dr K. R. Paramahamsa**

**Chairman, AMC – CITY – BROOKLYN – CAMBRIDGE Group of Institutions**



## Principal's Message

**Congratulations to the students and faculty associated to Newsletter committee for successfully publishing this Issue of Departmental Technical Newsletter Tech Samachar. Tech Samachar is creating platform which provides an opportunity to the students and staff to express their original thoughts on Technical topics.**

**The Newsletter plays an important role in providing exposure to the students to develop written communication skills and command over the language. It is a step towards building professional and ethical attitude in them. The entire journey of creating Tech Samachar is an outcome of rigorous effort made by students and faculty. Students not only gain the knowledge about the latest technological developments and advancements through reading and writing articles but they also develop verbal and written communication skills.**

**On concluding note, I would like to thank all the stakeholders for their involvement and encouragement and wish All the Best for their bright future.**

**Dr. V. S. Ramamurthy**

**B.E(Mech), ME (Metal Casting), Ph.D. (Composites), MISQE, MISTE, FIE(India)**



## HOD's Message

***This is the Third Issue of the Computer Science and Engineering Department Newsletter. Tech Samachar is all about the technology that motivates students to do something, that leaves an eternal mark on the world of Technology. Thus, it was our job to ensure inspiring technological developments are being brought to the students of CEC, by the students of CEC itself.***

***The work was performed in an organized, almost professional manner and credits to my entire Tech Samachar team, for their admirable job.***

***I would also like to Thank every member of the Tech Samachar team, without whose contribution, this issue would not have been possible. I hope you enjoy reading this Newsletter as much as I enjoyed working towards its creation and more importantly, I hope that the articles in this magazine inspire you.***

**Mr. Vivekvardhana Reddy**

**HOD, Computer Science and Engineering**



## Editorial

*At the outset, on behalf of the entire Computer Science and Engineering Department and all the readers we extend our whole hearted gratitude to our beloved Chairman, Dr. K. R. PARAMAHAMSA, to the honorable principal Dr. V. S. RAMAMURTHY, and also to our HOD, CSE Mr. VIVEKAVARDHANA REDDY for their dynamic, inspirational, enthusiastic contribution and motivation towards our department also boosting our confidence for the publishing of third Issue of the Monthly Newsletter TECH SAMACHAR. This technical newsletter named 'TECH SAMACHAR' signifies an giving out of current technical datum. Team 'TECH SAMACHAR' will always remain grateful for the massive support and interest shown by you all.*

*Computer Science and Engineering is an ever-expanding field and the power what technology holds today is definitely beyond one's imagination rendering impressive set of ideas. This Third Issue is full of exciting new technologies and Department achievements. This Newsletter is intended to be published once in a month. Finally, quoting our special thanks to the departmental faculty members and also to all our team members without whom this Issue wouldn't have been possible. We hope all the readers will enjoy this issue as much as we enjoyed creating it.....Happy Reading!*

**AMBIKA P R  
DEEPIKA R  
A.P. CSE**

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# TCP/IP stack vulnerabilities threaten IoT devices

The latest in a long line of vulnerabilities in a key part of the networking stack threatens a major open-source operating system, printers and medical IoT devices.

A set of vulnerabilities in TCP/IP stacks used by FreeBSD and three popular real-time operating systems designed for the IoT was revealed by security vendor Forescout and JSOF Research. The nine vulnerabilities could potentially affect 100 million devices in the wild.

Nucleus NET, IPNet and NetX are the other operating systems affected by the vulnerabilities, which a joint report issued by Forescout and JSOF dubbed Name: Wreck.

In a report on the vulnerabilities, Forescout writes that TCP/IP stacks are particularly vulnerable for several reasons, including widespread use, the fact that many such stacks were created a long time ago, and the fact that they make an attractive attack surface, thanks to unauthenticated functionality and protocols that cross network perimeters.

The Domain Name System suffers from much the same issues, which are exploitable in the case of the Name: Wreck vulnerabilities.

“DNS is a complex protocol that tends to yield vulnerable implementations, and these vulnerabilities can often be leveraged by external attackers to take control of millions of devices simultaneously,” the report said.

Name: Wreck can allow for both denial-of-service attacks and remote code execution, and is likely caused by poor coding practices in the code parsing of DNS response contents, according to Eric Hanselman, a principal research analyst at 451 Research.

Essentially, a key value in the system used to compress DNS responses into smaller and easier-to-move packages is not validated by the system, and can be manipulated by a bad actor.

“The difficulty with DNS attacks is that DNS responses can contain a significant amount of information,” Hanselman said. “There are so many format options that it’s not uncommon to return a significant volume of data in a DNS response, and if you’re not tracking DNS queries and you allow OpenDNS in your environment, it’s very difficult to track the response to ensure you’ve got stateful follow-up.”

The actual danger to which an organization is exposed differs based on which of the vulnerable stacks it’s using. The FreeBSD vulnerability is likely more widespread – it affects millions of IT networks, including Netflix and Yahoo, as well as traditional networking devices like firewalls and routers, according to the report, but is likely easier to fix.

“Those are manageable systems – we should be able to update them,” said Forrester senior analyst Brian Kime. “[And] they should be prioritized for remediation, because they’re part of your network stack.”

The same cannot be said, in many cases, of the real-time operating systems affected by Name:Wreck, since the standard issues that make securing IoT devices remain in play here. The ability to patch and update firmware is still not a standard feature, and the OEMs of connected

devices – which may be quite old, and may not have been designed to be Internet-facing in the first place – might not even be operating any more.

In cases where those IoT devices are vulnerable, strong security has to start at the network layer, according to Hanselman. Monitoring the network directly for anomalous activity – which, again, can sometimes be difficult to detect in the case of a TCP/IP vulnerability – is a good start, but what's really needed is techniques like DNS query protection.

"Fortunately for most organizations, DNS monitoring has become much more prevalent, because DNS is one of the best ways to do detection for ransomware," he said. "Most organizations should have reasonable DNS query protection in place".

The active scope of these vulnerabilities is limited by several factors, including whether affected devices have direct access to the Internet – unlikely in the case of many of the medical devices described – and how patchable they are. What's more, it's worth noting that none are thought to have been exploited in the wild as of yet. However, one key target to watch could be printers.

Printers are highly accessible, given that they're more or less ubiquitous and tend not to draw a lot of security attention, according to Kime, and, once compromised, they could offer a vector through which other vulnerable devices on a network could be accessed.

"Rarely are people going to assess them for vulnerabilities, so they get exploited by threat actors," he said. "I could see bad actors using IoT vulnerabilities as persistence once they've exploited something else to get into the environment."

Name: Wreck is far from the only set of TCP/IP vulnerabilities to rear its ugly head in recent memory, of course. Forescout and JSOF, between them, have discovered several families of this type of security flaw in the past, including Ripple20,

Amnesia:33 and Number: Jack within the past calendar year alone, and experts agree that further vulnerabilities are likely to come to light for the foreseeable future. For one thing, there simply aren't that many IP stacks in existence, meaning that many are used in a huge range of applications, and that they're generally assumed to be secure.

"It's something where everyone assumes they can pull the IP stack from whatever their favourite [open-source software] distribution happens to be, and these should be well-hardened," said Hanselman. "For the most part, that's true, but networking stacks are dealing with fairly complex state management, and there can be unexpected ways to manipulate those."

**Prof. SHASHIKALA H C**

**A.P CSE**

## **5 Emerging IoT Technologies You Need to Know in 2021**

**Battery-Free Sensors**

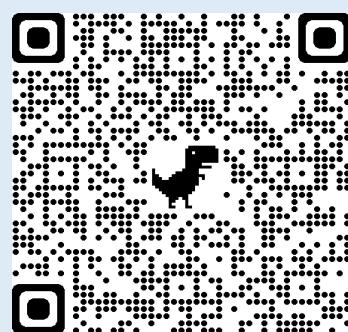
**Containers for MCU Devices**

**Mesh Sensors**

**Network Slicing for IoT Applications**

**TinyML**

**Scan the QR code below to Read more about it**

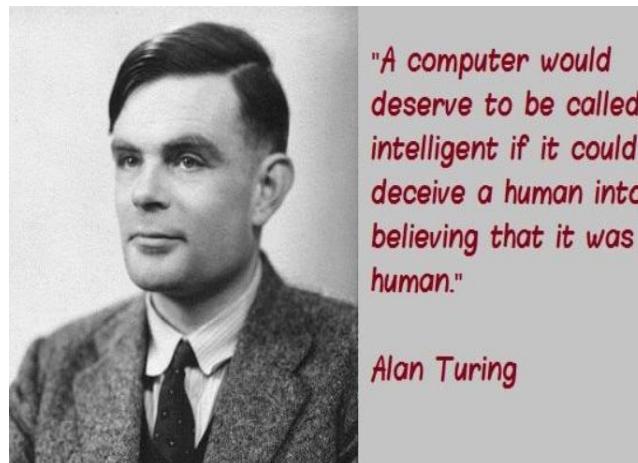


# 10 Computer Scientists Who Made History

These are scientists that made a significant contribution to the field and will be forever remembered for their work. Here are 10 Computer Scientists who made history.

## **1. Alan Turing**

Alan Turing is an English computer scientist, widely considered to be the father of computer science. The prestigious “Turing Award” was named after him - an award given to those in computer science who make a significant contribution to the industry.

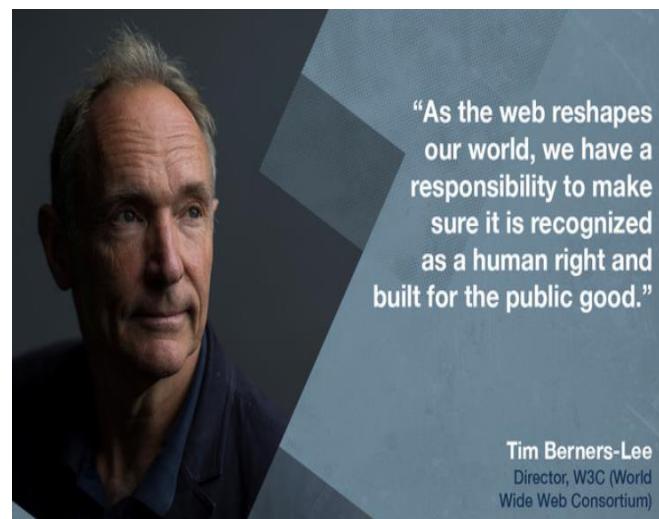


Turing worked for the British Government, playing a pivotal role in cracking intercepted coded messages and enabling the Allies to defeat the Nazis in many crucial engagements.

## **2. Tim Berners-Lee**

Tim Berners-Lee is the inventor of the World Wide Web and HTML. He was born in England and has an engineering background, through

developing computer systems in the 80s. He is indeed a true pioneer in the field of Computer Science, and without Tim’s ideas and development work, we simply wouldn’t have the internet as we know it today.



Tim is the director of the World Wide Web Consortium (W3C), where he currently oversees the development of the web.

## **3. John von Neumann**

John von Neumann is a Hungarian-American computer scientist and mathematician, known for his work in pioneering the field of game theory. He contributed over 150 papers in his lifetime, spread out over Pure and Applied Mathematics, and other specialized topics. In World War II, John von Neumann also worked on the Manhattan Project, where he solved problems in the nuclear physics domain.



If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is.

— John von Neumann —

#### 4. Woz

Steve Wozniak, or “Woz”, is the co-founder and original programmer Apple. He was the technical genius behind the company, helping to orchestrate and build Apple products and services. He invented Integer BASIC, the BASIC interpreter used for the original Apple I and Apple II platforms.



When we first started with Apple computers, it was my dream that everyone would learn to program, and that was how they'd use their computer.

— Steve Wozniak —

Unless you know BASIC, then this appears foreign to most. There's no syntax highlighting or intelligent code completion in sight.

#### 5. Dennis Ritchie

Dennis Ritchie is the co-creator of the C Programming language, the underpinning language for many software systems. It is used in many different industries and has inspired a whole series of programming languages (or C-like languages). The language is taught in computer science courses, inside Universities and educational institutions, is a foundational language for software developers. Dennis was also the co-creator of Unix, a family of operating systems that were developed in the 1970s. Unix lead the way and became very popular for its features, by having a modular design, unified

filesystem, and the Unix Shell (later developed into Bash). Unix was used by Apple in “MacOS”, which maintains the largest number of installations using Unix.

“UNIX is *simple*. It just takes a **genius** to understand its *simplicity*”

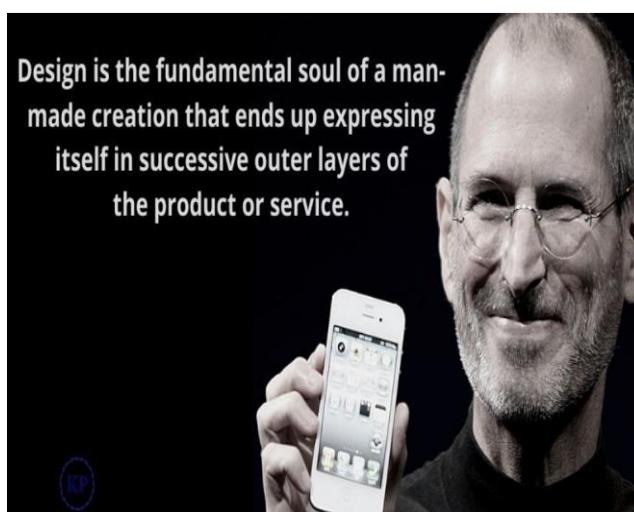
-Dennis Ritchie  
Computer Scientist and creator of C Programming Language



Dennis, along with his co-founder, was awarded the Turing Award. One of the most prestigious awards in the field of computer science. Dennis is a leader in computer science, providing an incredible language that has taken the world by storm.

#### 6. Steve Jobs

Steve Jobs cofounder of Apple Computer, Inc. (now Apple Inc.), and a charismatic pioneer of the personal computer era. Steven Paul Jobs was an American inventor, designer, and entrepreneur who was the co-founder, chief executive, and chairman of Apple Computer.

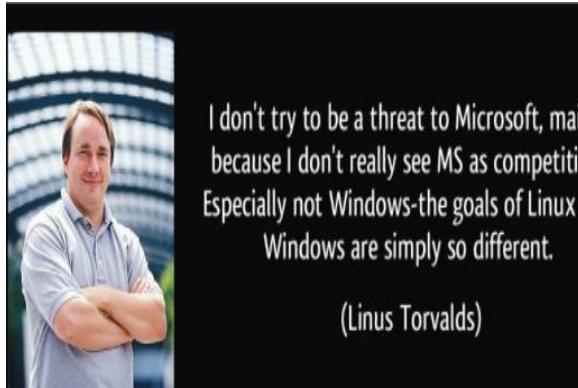


Design is the fundamental soul of a man-made creation that ends up expressing itself in successive outer layers of the product or service.

Apple's revolutionary products, which include the iPod, iPhone, and iPad, are now seen as dictating the evolution of modern technology.

## **6. Linus Torvalds**

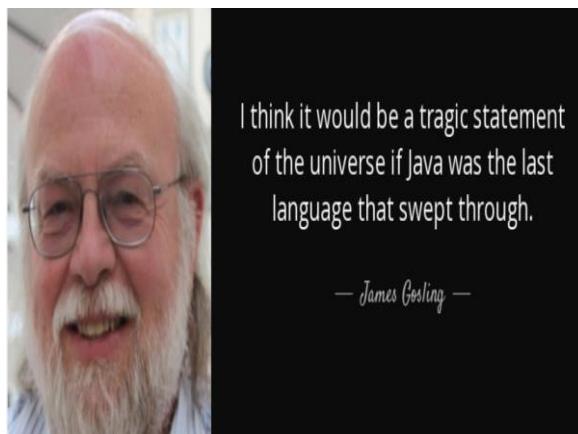
Linus Torvalds is the creator of the famous “Linux” kernel, the core of many operating systems, such as Chrome OS and Android. He is also the creator of “Git”, the version control system used heavily throughout the software development industry.



Linus is a pioneer in the industry with his engineering mindset, and relentless ability to develop software systems.

## **7. James Gosling**

James Gosling is the inventor of the Java programming language. He is a Canadian computer scientist and distinguished engineer at Amazon Web Services. His contributions to the field of computer science are phenomenal. Java is one of the most popular languages used in the software industry. It's used throughout many organizations and software systems.



Java was acquired by Oracle Corporation, to which it currently owns the rights to the programming language.

## **9. Joseph Carl Robnett Licklider**

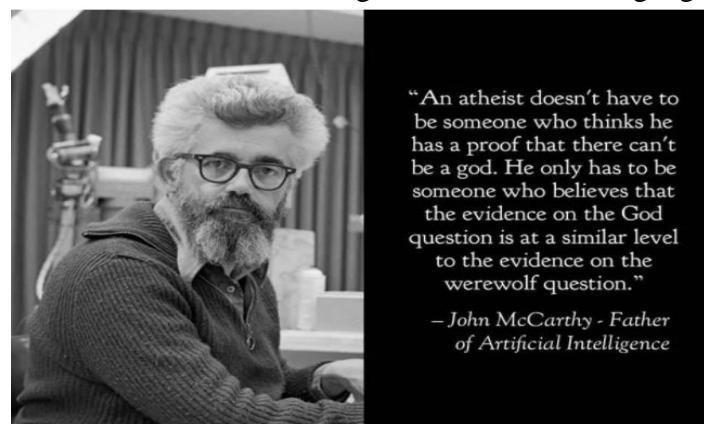
Joseph is the inventor of Cloud Computing, a computing paradigm that has taken over the world. Today's largest companies, such as Amazon, Google and Microsoft have adopted Cloud Computing and have harnessed its power to create Cloud services. These services are used by other software systems to build applications that do not pose high storage costs and the need for local data centres. This is the forefront of modern technology and the software industry.



The Dream Machine was released, showing his life's work and his vision of something called "human-computer symbiosis".

## **10. John McCarthy**

John McCarthy is the inventor of Artificial Intelligence (AI). He was a computer scientist and cognitive scientist born in the United States of America, providing a significant contribution to the computer science industry with the topic of Artificial Intelligence. Additionally, he also created the Lisp programming language family and had influence over the design of the ALGOL language.



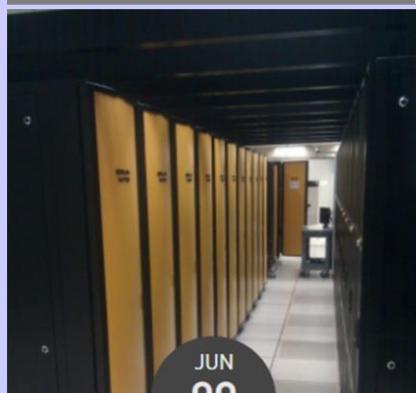
He spent most of his career at the Stanford University and received a Turing Award for his contributions to the field of AI.

**Prof. AMBIKA P R**  
**A.P CSE**

## THIS MONTH IN HISTORY

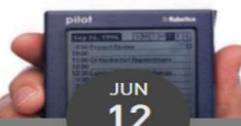
WHAT HAPPENED IN JUNE...

 JUN 02 1996 <b>Netscape Creates Navio to Compete with Microsoft</b>	 JUN 04 1991 <b>Agreement on Microprocessor Trade Between US and Japan</b>	 JUN 05 1833 <b>Lovelace Meets Babbage</b>
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 JUN 09 1986 <b>Supercomputer Center Supports Precursor to Internet</b>	 JUN 10 1977 <b>Apple II Shipped Today</b>	 JUN 11 1978 <b>TI Announces "Speak &amp; Spell"</b>
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The connected organizer that keeps you in touch with your PC.

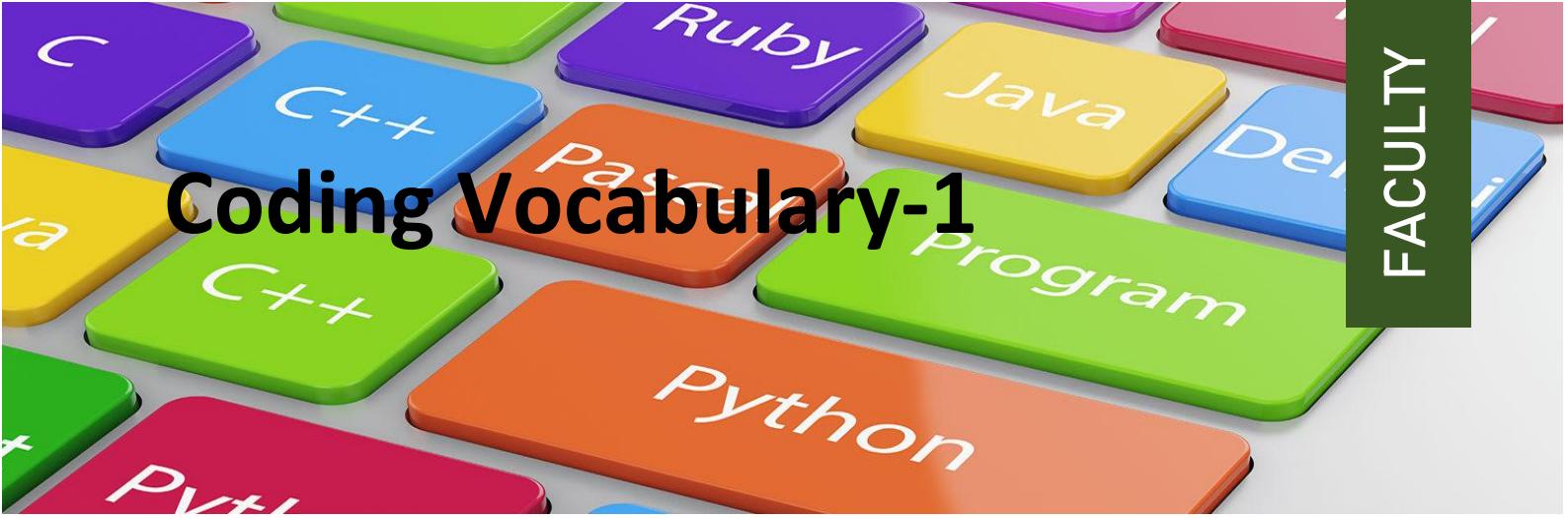
For more information, call 1-800-881-7256.



JUN  
12  
1997  
**3Com and US Robotics Merge**



JUN  
25  
1981  
**Microsoft Incorporated**



# Coding Vocabulary-1

## A

### Abstraction

A simplified representation of something more complex.

### Algorithm

An algorithm is a set of instructions that are followed to solve a problem. It's a computer's thought process.

### Argument

An argument is a way to provide more information to a function. The function can then use that information as it runs, like a variable.

## B

### Back End

The server side of the internet that the user can't see. The back end stores, retrieves, and modifies data, it's essentially the brains of a website.

### Binary

A system of two possible states—zero and one. Computers operate in binary, meaning they store data and perform calculations using only zeros and ones.

### Bit

A contraction of "Binary Digit". A bit is the single unit of information in a computer, typically represented as a 0 or 1.

## C

### Call (a function)

A snippet of code that makes a function begin.

### computer science

Using the power of computers to solve problems.

### C++

A powerful programming language. It's used to build fast programs. C++ is common in computerized electronic devices.

## D

### Data

Any information that can be stored or used in a computer program. Names, addresses, and phone numbers are data.

### Debugging

Finding and fixing problems in an algorithm or program.

### Declaration

A single word or symbol used to describe a function or variable. It defines the type of variable or function so the compiler or interpreter knows what to do with it.

## E

### Else Statements

An alternative inside an If statement. It's essentially tells the computer, "Do one thing if something is true, or else do another thing if it's not true."

### Event

An action that causes something to happen.

## F

### **F.A.I.L.**

An acronym for First Attempt In Learning. Failure is a regular part of the learning process.

### **Fiber optic cable**

A connection that uses light to transmit information.

### **for loop**

A loop with a predetermined beginning, end, and increment (step interval).

## G

### **Garbage collection**

It is a type of memory management. It automatically cleans up unused objects and pointers in memory, allowing the resources to be used again.

### **Git**

A version control system that tracks changes to code. Git is open-source, meaning you can access it for free.

## H

### **HAML**

HAML (HTML Abstraction Markup Language) is a templating system that cleans and simplifies your HTML. It's designed to avoid writing inline code in a web document.

### **Hardcode**

Permanent code. Code that a programmer can't change easily or at all.

### **High-level Language**

A programming language a person can read and understand. Python is a high-level language. Machine code (for example, 00000001) is not.

## I

### **IDE (Integrated Development Environment)**

A program that developers use to write code. IDEs usually know a language's keywords and can provide help. They can also run programs.

## If Statement

A conditional statement. It executes a certain block of code if some condition is true.

### **input**

A way to give information to a computer.

### **for loop**

A loop with a predetermined beginning, end, and increment (step interval).

## J

### **Java**

Java is a powerful multi-platform programming language. It's used for many professional and commercial applications, including every Android application and even the Android operating system itself!

### **JavaScript**

A popular coding language for websites and web apps. JavaScript runs on the client side. That means it runs in the browser instead of the computer where the website "lives".

### **JFS**

Stands for "Journaled File System." JFS is a 64-bit file system created by IBM.

## K

### **Kbps**

Stands for "Kilobits Per Second." 1 Kbps is equal to 1,000 bits per second. Kbps is primarily used to measure data transfer rates.

### **Keep-Alive**

Keep-Alive is an HTTP header that allows a web server to use a single connection for multiple requests from a web browser.

### **Kernel**

A kernel is the foundational layer of an operating system (OS). It functions at a basic level, communicating with hardware and managing resources, such as RAM and the CPU.

## L

### **Lag**

Lag is a slow response from a computer. It can be used to describe any computer that is responding slower than expected.

### **LAN**

Stands for "Local Area Network" and is pronounced "lan." A LAN is a network of connected devices that exist within a specific location. LANs may be found in homes, offices, educational institution, or other areas.

## M

### **Machine Language**

Long combinations of zeroes and ones that power a computer. All programs have to get turned into machine language in order to run.

### **Main Function**

The first function called after a C or C++ program starts.

## N

### **Name Server**

A name server translates domain names into IP addresses. This makes it possible for a user to access a website by typing in the domain name instead of the website's actual IP address.

### **NaN**

Stands for "Not a Number." NaN is a term used in mathematics and computer science to describe a non-numeric value.

## O

### **online**

Connected to the Internet. Someone can be online with a computer, a mobile phone, or another electronic device.

### **output**

A way to get information out of a computer.

## P

### **Parameter**

An extra piece of information passed to a function to customize it for a specific need.

## Q

### **QBE**

Stands for "Query By Example." QBE is a feature included with various database applications that provides a user-friendly method of running database queries.

## R

### **R**

A programming language used in data science.

## S

### **Scratch**

Scratch coding is an MIT-developed graphical programming language, where kids can learn drag-and-drop programming basics to create interactive stories and comics.

## T

### **Terminal**

Mac's text-based user interface. In the terminal, users can open files and folders, move things around, and do many other things.

## U

### **U**

U is the standard unit of measurement for rack-mounted equipment. Racks can be used to house servers, hard drives, switches, routers, and other computer hardware.

### **UAT**

Stands for "User Acceptance Testing." UAT is a process designed to help ensure products will meet user expectations when they are released.

## V

### Vaporware

Vaporware is hardware or software that has been announced, but has missed its release date by a significant amount of time. It includes both products that are eventually released and products that are never released at all.

## W

### W3C

Stands for "World Wide Web Consortium." The W3C is an international community that includes a full-time staff, industry experts, and several member organizations. These groups work together to develop standards for the World Wide Web.

## X

### XCode

An IDE from Apple for developers who want to build software for Apple devices.

## Y

### Yahoo

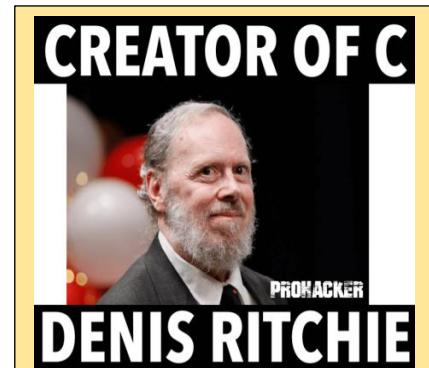
Yet Another Hierarchical Officious/Obstreperous/Odiferous/Organized Oracle. Probably the biggest hierarchical index of the World-Wide Web. Originally at Stanford University, Yahoo moved to its own site in April 1995.

## Z

### Zebibyte

A zebibyte is a unit of data storage that equals  $2^{70}$  bytes, or 1,180,591,620,717,411,303,424 bytes.

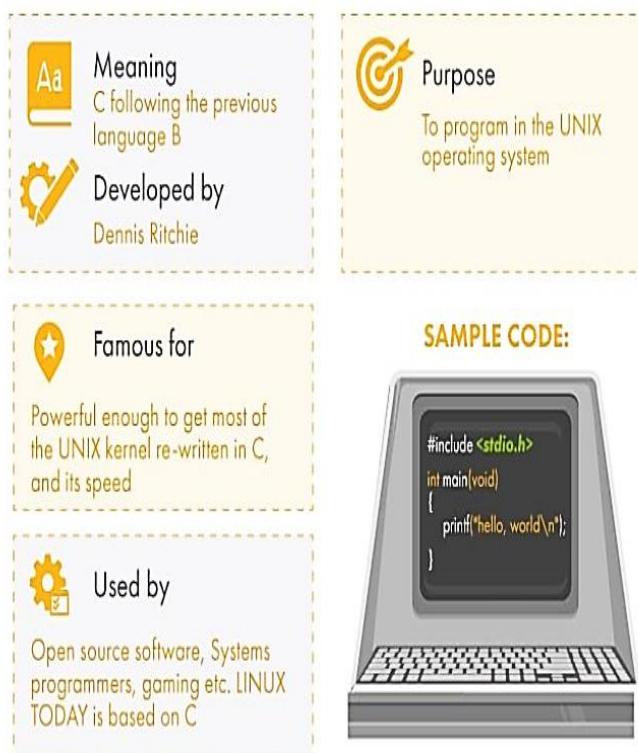
## Great Personality....



### C – Dennis Ritchie

Dennis MacAlistair Ritchie, An American computer scientist, created the C programming language between 1967 and 1973 at AT&T Bell labs. C is still very popular and used extensively in System programming. It's older than Java but still maintains its stronghold. By the way, Dennis Ritchie has also created world famous UNIX operating system, with his long-time colleague Ken Thompson. If you compare his popularity with Bill Gates or Steve Jobs, he is nowhere but if you compare Dennis' contribution to the software world, he has no matching. Every Programmer must know about Dennis Ritchie and his contribution to the programming world.

## 1969 - C

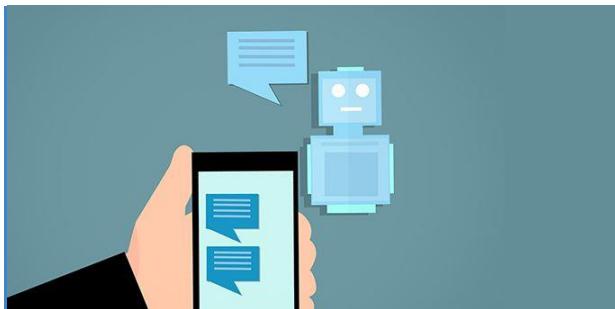


**Prof. DEEPIKA R**

**A.P CSE**

# Robotic Automation Reshaping the Future of Mobile Apps

Some new technologies helped the evolution of mobile apps towards automation. It all started with the advanced data analytics engines and APIs incorporated by enterprise app developers to address user needs more precisely and contextually.



Mobile apps are increasingly getting smarter in respect of responding to user needs and in terms of helping usability in different contexts in enterprise and public environments. Think about all the time and effort a user needed to put a few years ago for getting simple things done through an app. In complete contrast, most of the day-to-day needful activities are done with little or no effort. Moreover, there are too many tasks that just can be automated now and can be completed without little or no human involvement. So, automation through a mobile app is now a bigger reality than ever before.

Some new technologies helped the evolution of mobile apps towards automation. It all started with the advanced data analytics engines and APIs incorporated by enterprise app developers to address user needs more precisely and contextually. Now, intelligent Chatbots and artificial intelligence (AI) based algorithms are helping mobile apps to advance the positive effects of automation for app user experience and usability.

## Where the app-based automation stands now?

Since app-based automation has emerged as a driving force enterprise mobile app strategy, we need to take a closer look at the juncture where app-based automation stands now.

Chatbots have become tremendously popular across all major instant messaging apps, including Facebook Messenger, Telegram, WhatsApp, Slack, iMessage, and several others. These messaging platforms are being used by a great many enterprises to stay in touch with their customers through automated Chatbot. The intelligent Chatbot integrated with these messaging apps are transforming the way businesses can address customer queries in an automated manner.

As per the research conducted by Grand View Research, the Chatbot market on a global scale is expected to grow to a figure of \$1.23 billion by the time we reach 2025. Given the present state of the Chatbot market, this amounts to a 24.3% year on year growth in the adoption of the Chatbot. So, in the coming years, we can expect a vast number of companies are opting for Chatbot solutions.

Artificial Intelligence (AI) and Machine Learning are two technologies that are playing a significant role in popularizing chatbots and making the conversational bots more effective and efficient for business communication. AI is already being used by global giants like Amazon and Facebook to help to identify user intent, and recommending them to reduce and solutions accordingly. Instagram is also now using AI to showcase content as per the user intent and preferences.

## Mobile App Automation: Growing Trends

While mobile app automation has emerged as a massive opportunity for the enterprises, we can only understand the expanse and influence of automation as a force by giving attention to some recent trends. Let's have a brief look at some of the key trends in mobile app automation.

Several traditional job roles that were responsible for handling repetitive tasks across enterprises will become extinct and give way for automation tools to take over.

- Automation through mobile apps will primarily be utilized through the Internet of Things apps and the connected ecosystem of gadgets, sensors, and applications.
- The latest data-driven analytics, AI-powered algorithms, and Machine Learning models will play the most crucial role in creating and leveraging mobile app automation across enterprises.
- Customer service based upon intelligent Chatbot communication will be common across most industries and businesses, depending on prompt customer service.
- Smart real-time analytics and remote monitoring will further help improving customer service communication through intelligent chatbots.
- Smart mobile app automation tools will ensure a level playing field in favor of small enterprises and startups.

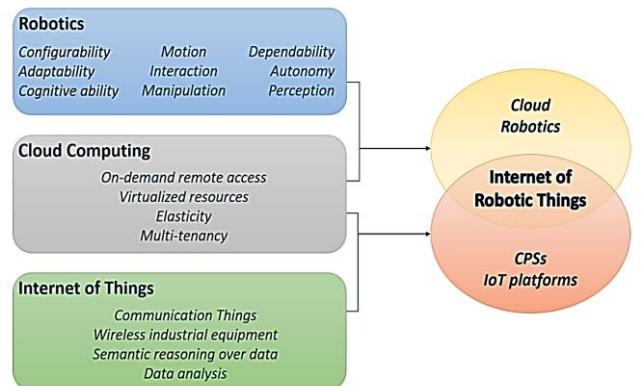
## Fulfilling the Skill Gap

While automation has been a driving force of change for too many enterprises, the lack of skilled manpower and the skill gap have been the key concerns for most companies who are still clueless about adopting automation to their business advantage. Since small businesses are often run with old IT hardware and as their manpower often stays at the receiving end in terms of being updated with the latest know-how and skills, fulfilling this gap will be a significant roadblock to the widespread adoption of automation. The out of the box solutions and ready to use services such as enterprise-grade Software as a Service (SaaS) and Platform as a Service (PaaS) solutions will be more popular for adopting automation and the latest tools.

The small enterprises and startups that cannot embrace automation because of the skill gap and inadequate IT fund will find these out of the box solutions more useful and effective. In the future adoption of automation tools, these ready to use and affordable solutions will play a significant role.

## Going Beyond the Rule-based Algorithms

Most of the industries, when it comes to automation, mainly refer to the rule-based algorithms for achieving predictable results in given situations. Well, while such rule-based algorithms are still the basic building blocks of most automation systems, including the mobile app automation tools, in the time to come, we can expect a gradual shift from such algorithms to more intuitive analytics mechanisms and solutions. The advanced AI-driven systems, Machine Learning models, and technologies like Natural Language Processing (NLP) are increasingly paving the way for this shift.

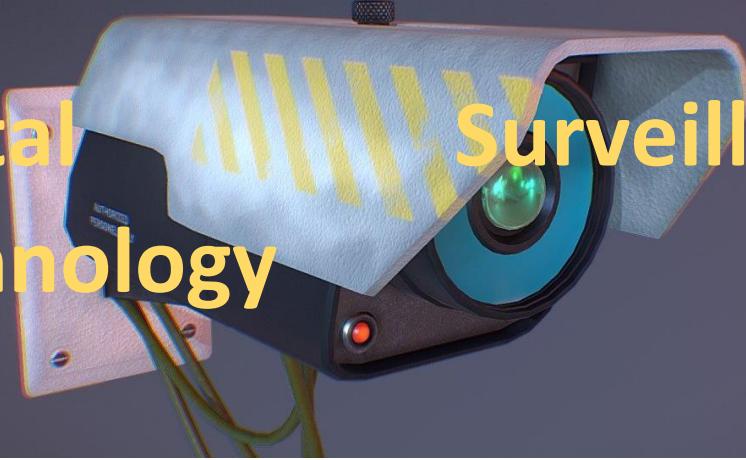


To the concluding note, Robotic automation through mobile apps is increasingly paving the way for smart enterprises. But still, the mobile app automation is in the nascent stage, and it is continuously evolving. In the years to come, we can expect to see more pronounced effects of mobile app automation across industries.



**Saima Sheik**  
4<sup>th</sup> semester, CSE

# Digital Technology Surveillance



The Chinese government has enlisted the help of the country's two internet giants — Alibaba (BABA) and Tencent (TCEHY) — to host the health code systems on their popular smartphone apps.

Alibaba's mobile payment app Alipay and Tencent's messaging app WeChat are both ubiquitous in China, each used by hundreds of millions of people. Placing the health codes on these platforms means easy access for many.

To obtain a health code, citizens have to fill in their personal information including their name, national identity number or passport number, and phone number on a sign-up page.

They're then asked to report their travel history and whether they have come into contact with any confirmed or suspected Covid-19 patients in the past 14 days. They also need to tick the boxes for any symptoms they might have: fever, fatigue, dry cough, stuffy nose, running nose, throat ache or diarrhea.

After the information is verified by authorities, each user will be assigned a QR code in red, amber or green.



Users with a red code have to go into government quarantine or self-quarantine for 14-days, users with an amber code will be quarantined for seven days, while users with a green code can move around the city freely, according to a statement issued by Hangzhou authorities.

The health codes can also serve as a tracker for people's moves in public areas, as residents have their QR codes scanned as they enter public places. Once a confirmed case is diagnosed, authorities are able to quickly backtrack where the patient has been and identify people who have been in contact with that individual.

## Thermal imaging identifies cases in public

Thermal screening is a process of detecting radiation. The amount of radiation emitted by an object increases with temperature; therefore, thermography allows one to see variations in temperature. If someone has a fever; thermal screening will allow to detect them and they can further be tested for coronavirus.



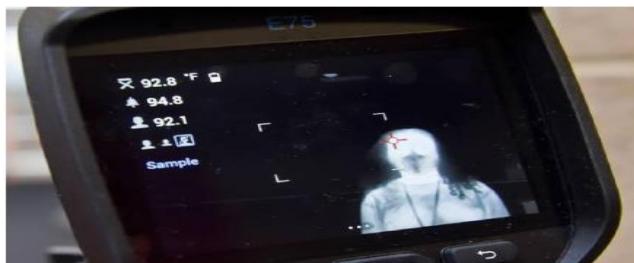
On international flights, boarding of passengers for the next flight should begin only after thermal scanning and immigration clearance is completed of disembarking passengers, aviation body DGCA said. In case any passenger is suspected to be

infected, the disinfection process must be carried out on that plane. At airports, protective gears like surgical masks and gloves are being provided to crew members and passengers. Cities in India that are screening passengers are New Delhi, Kolkata, Mumbai, Chennai, Bengaluru, Hyderabad and Kochi apart from 14 other airports which were added later.

### Facial recognition technology

Facial recognition systems involve the identification of people from a database of images, including still photographs and video. Deep learning – a subset of artificial intelligence – speeds up a system's face-scanning capabilities, as it learns more about the data it is processing. Such systems require vast amounts of information to become faster and more accurate.

Due to the COVID-19 coronavirus, masked face recognition poses a challenge at public places, while removing face mask will increase the risk of novel virus infection. State-of-the-art deep learning algorithms inspire our work. First, we trained a CNN model to generate an embedding of features of an image. Then we focus on a dataset which helps in building classifier for masked faces. This dataset consists of three images of a person, two masked face images, and one without a face mask. In the end, the Support Vector Machine (SVM) is used for classification.



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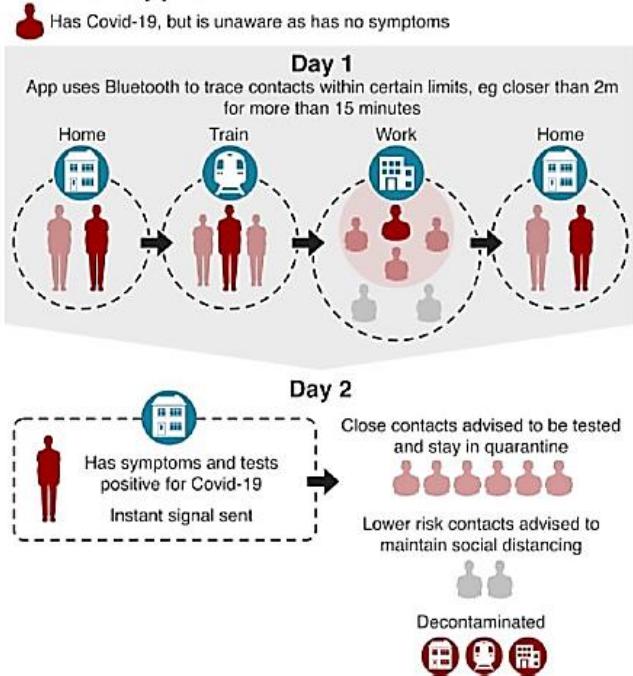
masked faces. This dataset consists of three images of a person, two masked face images, and one without a face mask. In the end, the Support Vector Machine (SVM) is used for classification.

### Bluetooth based automated contact tracing for anyone within 2 meters

Many countries are deploying Covid-19 contact tracing apps that use Bluetooth Low Energy (LE) to detect proximity within 2m for 15 minutes. However, Bluetooth LE is an unproven technology for this application, raising concerns about the efficacy of these apps. Indeed, measurements indicate that the Bluetooth LE received signal strength can be strongly affected by factors including (i) the model of handset used, (ii) the relative orientation of handsets, (iii) absorption by human bodies, bags etc. and (iv) radio wave reflection from walls, floors, furniture.

The impact on received signal strength is comparable with that caused by moving 2m, and so has the potential to seriously affect the reliability of proximity detection. These effects are due the physics of radio propagation and suggest that the development of accurate methods for proximity detection based on Bluetooth LE received signal strength is likely to be challenging.

### How the app would track coronavirus contacts



We call for action in three areas. Firstly, measurements are needed that allow the added value of deployed apps within the overall contact tracing system to be evaluated, e.g., data on how many of the people notified by the app would not have been found by manual contact tracing and what fraction of people notified by an app actually test positive for Covid-19. Secondly, the 2m/15minute proximity limit is only a rough guideline. The real requirement is to use handset sensing to evaluate infection risk and this requires a campaign to collect measurements of both handset sensor data and infection outcomes. Thirdly, a concerted effort is needed to collect controlled Bluetooth LE measurements in a wide range of real-world environments, the data reported here being only a first step in that direction.



**Poojashree. K**  
*4th semester. CSE.*

## JAVA – JAMES GOSLING

Java is one of the most popular and successful programming languages. Dr. James Arthur Gosling has invented Java and best known as the father of the Java programming language. Java was developed and supported earlier by Sun Microsystem and now by Oracle, after their acquisition of Sun Microsystem on January 2010. Java is created with mission WORA, “Write Once Run Anywhere” and platform independence of Java is one of the pillars of its success in the enterprise world. Till date, it is one of the most popular application programming language.

# CREATOR OF JAVA



**JAMES GOSLING**

## 1995 - JAVA

<b>Aa</b>	Meaning Named after JAVA coffee
<b>Developed by</b> James Gosling	<b>Purpose</b> Created for interactive TV
<b>SAMPLE CODE:</b>	
 <pre>private Button keysArray[];</pre> <pre>private Panel keyPad;</pre> <pre>private TextField lcdField;</pre> <pre>private double result;</pre> <pre>private boolean first;</pre> <pre>private boolean foundKey;</pre> <pre>static boolean clearText;</pre> <pre>private int prevOperator;</pre>	
<b>Famous for</b>	High performance and multithreading for concurrency dynamics
<b>Used by</b>	Large companies (Banks, ecommerce, Google, etc.)

# Do you think uncontrolled Super AI can become a threat to humanity?

Whenever we think of Artificial Intelligence, the first thing that strikes our mind is Robots. A few decades ago, ‘Robots’ fascinated us the most with movies showcasing Robots / Super humans performing insanely tough jobs effortlessly and living on par with humans.

Now Robots like Sophia are a reality and we find AI everywhere. Right from robotic vacuum cleaners, virtual assistants like SIRI, robots that perform surgeries in healthcare, robots that write codes, and of course the self-driving cars and trucks - most of these are a reality and the world of Artificial Intelligence is rapidly evolving. Starting with IBM’s chess-playing computer ‘Deep Blue’ which won a chess match against World Champion, to ‘Google’s AlphaGo’, we have seen fascinating discoveries in this AI revolution.



Sophia: The First Humanoid | Image Source: Twitter

In simple terms, Artificial Intelligence is all about training machines to mimic human behavior, specifically, the human brain and its thinking abilities. Similar to the human brain, AI systems develop the ability to rationalize and perform actions that have the best chance of achieving a specific goal.

Artificial Intelligence focuses on performing 3 cognitive skills just like a human –

- Learning
- Reasoning and
- Self-correction

**The evolution of Artificial Intelligence is considered the fourth Industrial Revolution ~ UBS**

Experts say, just like how the first 3 industrial revolutions changed the course of the world, the fourth revolution, powered by Artificial Intelligence, IOT and Cloud will surely change the course of humanity and our planet Earth.

Let’s have a quick look at the three broad categories of Artificial Intelligence and how we are rapidly evolving in these areas!

1. Artificial Narrow Intelligence
2. Artificial General Intelligence.
3. Artificial Super Intelligence

## Artificial Narrow Intelligence

Artificial Narrow Intelligence systems are designed and trained to complete one specific task and are often termed as Weak AI / Narrow AI. The chatbots that answer questions based on user input, voice assistants like Siri, Alexa, and Cortana, facial recognition systems, AI systems that search the internet, are examples of Weak AI. They are intelligent at performing the specific tasks that they are programmed to do so.

Narrow AI doesn’t mimic human intelligence, rather it just simulates human behaviour based on

a set of parameters and input data. Weak AI still requires some amount of human intervention in terms of defining parameters for learning algorithms, feeding relevant training data, and ensuring the accuracy of prediction. You can think of it as an infant who listens to instruction from adults and performs the functions as directed.

### Artificial General Intelligence

Artificial General Intelligence is when the AI systems/machines would perform on par with another human. This also means the ability of the machine to interpret and understand human tone and emotions and act accordingly. This is also called Strong AI and we are still scratching the surface of Strong AI. As Machine Learning capabilities continue to evolve, AI will progress and we will reach there soon.

### Artificial Super Intelligence

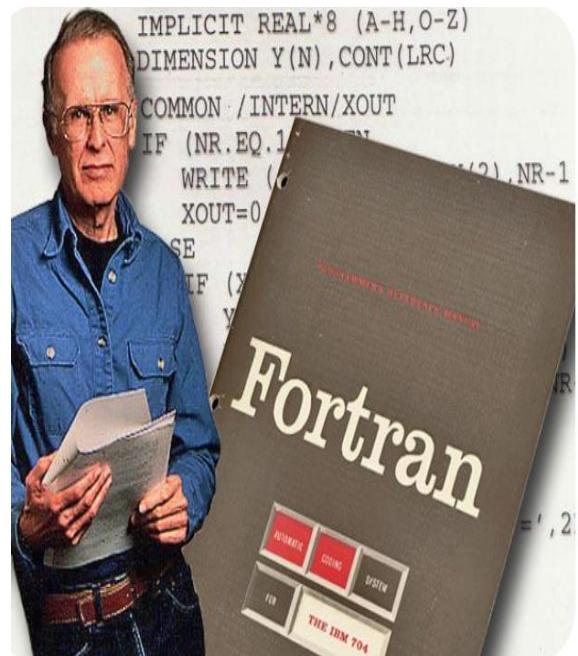
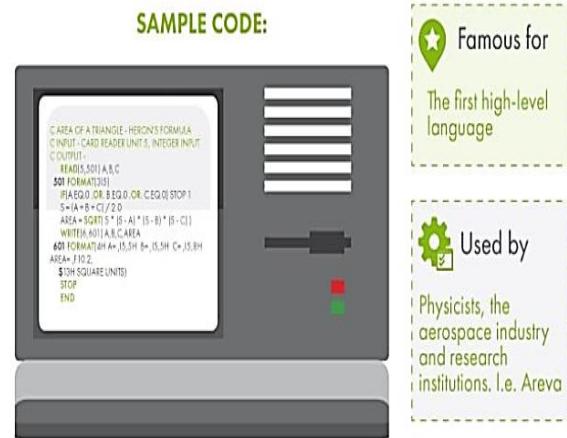
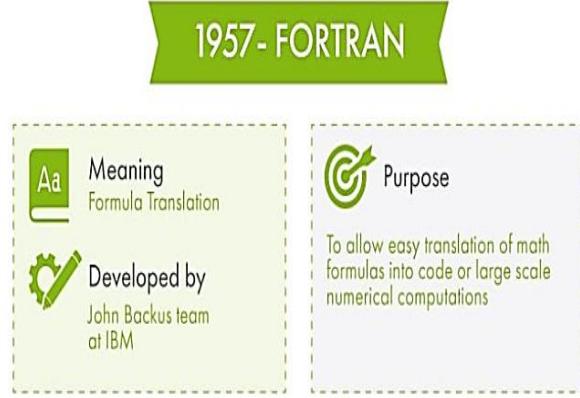
Artificial Super Intelligence/Super AI is when an Artificial Intelligent machine would become self-aware and surpass human's intelligence and ability. Although there is so much exciting research happening around this area, there are warnings from scientists as well.

Oxford University Professor and New York Times best-selling author of the book “Superintelligence: Paths, Dangers, Strategies”, Nick Bostrom says,

*“The biggest threat is the longer-term problem, introducing something radical that's super intelligent and failing to align it with human values and intentions. This is a big technical problem. We would succeed at solving the capability problem before we succeed at solving the safety and alignment problem.”*



**Pallavi M C**  
8th sem, 'B' sec, CSE



# Internet of Behaviour

The quantity of Internet of Things (IoT) gadgets has multiplied in recent years. These things are wherever with us today, from wearable innovations that track your wellness every minute of every day to far off admittance to electrical gadgets in your home.

The shift to cell phones has changed how we associate with our general surroundings. The assortment of utilization information and information by these IoT gadgets gives significant data about clients' conduct, interests, and inclinations. Subsequently, the idea of Internet Behaviour (IoB) was conceived.

## What is IoB?

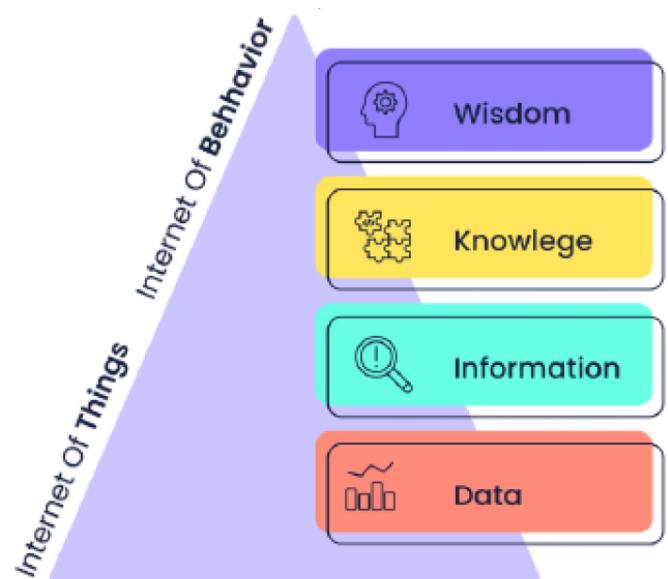
Many referred to 2012 as the initial date of IoB when brain science teacher Gothe Nyman depicted the chance of acquiring itemized information on clients' utilization and conduct as they collaborate with the Internet of Things (IoT). In any case, the possibility of analysing information got from buyers for business intentions isn't new.

As we have explored shopper conduct and propensities previously, we currently have a computerized biological system of insightful cycles that track, gather, and endeavour to decipher the immense measures of information we produce through our on the web and Internet exercises.

The IoB idea looks to deliver how to comprehend information appropriately and apply that understanding to make and advance new items – from a human psychology perspective.

*"The Internet of Behaviour collects the digital dust of people's lives from a variety of sources and public or private organizations can use this information to influence behaviour"*

GARTNER



## Example of IoB

We should consider the web platform when a client communicates with it from a PC and some other time from his cell phone. The information will vary in how the client cooperates with the asset, in particular which catches he clicks, how he moves around the page. All that we have recorded is all the information

that can be gathered utilizing investigation, and this is the thing that makes up the Big Data idea. Indeed, suppose we gathered the information through IoT, yet what next? And afterward, IoB becomes possibly the most important factor.

IoB is a cycle where client information is examined as far as social brain science. Given the investigation, new ways to deal with user experience improvement (UX), search experience advancement (Sxo), and finished results, and organizations' administrations and how to advance them are framed.

## Benefits of IoB



Analyse customer buying habits across platform.

Study previously unobtainable data about how customers interact with devices and platforms



Gain deeper insight into where a customer is in buying journey.



Provide real-time point-of-sale notifications and target ads



Quickly resolve issues to close sales and keep customers happy.

The IoB is of worth to organizations and other non-benefit associations, for example, medical care or government associations that uphold the rule of law. How about we investigate how this idea is applied nowadays:

- During the pandemic, utilizing computer vision associations started to utilize IoB to perceive if an individual was wearing a cover. Likewise, sometimes, warm imagers were utilized to recognize individual with the expanded internal heat level.
- Utilizing a cell phone permits you to follow an individual's topographical Position, so the framework comprehends whether you have visited a store or a beauty parlour, just as the length of your visit. This is how Uber utilizes IoT information to investigate its crowd's inclinations and discover new ways to deal with clients. Today, Big brands know nearly everything about buyers, from Interests in the rationale that clients use when making buys.
- In China, with the assistance of computerized reasoning and, specifically, face acknowledgment, it got conceivable to present a social FICO assessment framework in the country. Remember that the presentation of AI into the existence of the Chinese is expected to guarantee the security and systematization of information and the following of devotion to the current system.
- In 2018, the facial acknowledgment framework was effectively incorporated into the improvement of Directorix Barista for caf  s. Therefore, the item decides the gender, age, and temperament. It examines the outcomes and offers the customer a suitable beverage. A similar framework can be utilized in stores for customized publicizing



**Abhay Patgar**  
2<sup>nd</sup> sem, CSE

# Is Data Science a good Career.?

I would definitely say it a BIG YES. A good and highly paid career. During my internship in recruitment, I was asked to find candidates with Data Science background who had 2-3 years' experience. When I went through the JD the company was ready to pay the candidates 15-20 lpa. This amazed me and made me go deep in this topic.

I will be explaining how Data Science is a good choice for you career now and in long run also. Before Explaining why to choose data science let me make you clear what is data science.

Data Science: where information comes from, how data fits together to tell meaningful stories, and what those patterns signify for business outcomes. On a day-to-day basis, this means creating econometric and statistical models for projections, clustering, classification, simulations, and other purposes, predicting user behaviour through rigorous data analysis and pattern/trend identification, and conveying insights through data summarization and visualization

When considering the switch to a new career or starting a new career, people often want to know if it's worth it to put in the extra time and effort studying, honing new skills, and preparing for interviews. Fortunately, the answer for many is a resounding yes!

Glassdoor labelled "data science" as the third most desired career in America, with a median data scientist salary of \$108,000. The Bureau of Labor Statistics (BLS) lists the median salary for all US workers at \$49,800, meaning data science salaries are over double the national average.

According to a recent survey, COVID-19 has not slowed data science opportunities either: 70% of analytics and data science organizations have suffered no impacts or have actually grown in size during the pandemic.

The demand for data science links back to more companies ramping up big data, Internet of Things (IoT), and cybersecurity efforts and small-to-medium-sized enterprises also expanding their data analytics capabilities.

In terms of finding a job:

The supply of data science postings grew by 31% over the past few years, while data science job searches only rose by 14% over the same period. This high demand has led to a shortage of over a lot of data science professionals. But if we manage to find one that will be a life changing point of any individuals.

Most common searched query on Data Scientist: Do data Scientist need to work longer time than other? Most full-time jobs require 35 hours or more of work in a week, but many freelance positions allow you to set your own hours and schedule. If you go over team expectations beforehand, it is definitely possible to maintain work-life balance as a data scientist.



**Udanka Aarunjin**  
6th sem, CSE

# Graduating? What next?

'What next?' is a famous and non-favourite question that we often ask ourselves. For every task undertaken, every stage of life that we cross, this question somehow never stops popping up! Now that you are almost reaching another huge milestone, have you questioned yourself - What next? If not, why not?

Most of you are either preparing to face the booming IT world or giving a crack at opportunities to study further. Any direction that you choose to proceed, requires you to stay prepared to what faces you.

Apart from preparing your resume, learning how to face interviews, recalling, and revising your technical skills, there are some additional skills that all of us miss out on, but are definitely tested for.

Most of the technical/hard skills are learnt on the job or taught through regular training, but a combination of soft skills and hard skills helps unlock more career-related opportunities. Through this write-up, I wish to share with you Three important skills that you should attempt to learn, master, and put to use in your every endeavour. I have also provided a list of learning points that you can search for and spend some time every day, improving upon.

## 1. Communication & Collaboration!

At college, your conversations are limited to your friends and professors, but at a workplace, you meet a lot of people daily. Whether it is physical or virtual, you should be able to effortlessly communicate with others. Regardless of how good your scores are, if you are unable to communicate, your knowledge will be of little use to you.

Apart from the technical skill knowledge, organizations are looking for individuals who can get along easily with others and fit into company cultures. You should easily be able to work with a group of individuals across organizations towards achieving a common goal.

Communication is a must in all areas – some examples include – landing the job you want, talking to your co-workers, advocating for yourself, building relationships, and much more. If and when you want a cup of coffee, we should be clear in our communication, lest we be served tea.

Learning points –

- What is active listening? Why is it important for effective communication?
- How do I become an effective communicator and how do I build my networking skills?
- What is an elevator pitch and how do I master it?

## 2. Time management!

Time management may seem simple by name, but just like money and energy, time is an important resource and must be managed effectively. A college is one of the best places to learn about time management. You are now already good at juggling various tasks, but organizations demand a different set of time management skills.

You must be able to manage a number of projects with restrictive deadlines along with working on your personal goals, without burning yourself out, all at the same time. And, also the Family - the whole reason that we do what we do.

Now, this type of working needs some practice. Trust me, it gets better through learning and experience, and most importantly **Practice**.

Learning points –

- How do I stop the habit of procrastination?
- What is the difference between Pressure and Stress?
- Should I have Pressure, or should I have Stress?
- How do I cope with Pressure or Stress?
- What is workload management and how do I master it?

### 3. Planning!

While you are in college, you might only be exposed to planning of smaller tasks! But trust me, those are, in my view, nothing compared to what you'll see in the real world. All of us are well on our way towards reaching greater heights, and poor planning pulls us back a step each time we go wrong!

At workplace, you must always be prepared for more. Competition nowadays demands proper and accurate planning, and the discipline to execute what has been planned. When you have graduated, you must plan your next steps, well in advance. When you start your job, you must plan for the next promotion from Day 1. When you get promoted, you must then be start preparing for the next role. Have you counted the number of times I have used the word PLAN here? That's how much I emphasize on it!

Learning points –

- Reach out to one of your professors and start by learning on how they plan their lectures. Request your professor to mentor you about effective planning and execution.
- Learn and create a 1, 3, and 5-year plan for your future. Document the steps involved and improvise as you gain clarity.

**As Mahatma Gandhi said – The FUTURE depends on what we do in the PRESENT!**

Your future is in your hands! Go ahead and answer your What's next question Today and start mastering the much-needed skills on the path that I have shared with you!



**Madhuri Dwarakanath**

Technical Content Developer - Advisor at  
Dell Technologies Inc.

Alumna of City Engineering College,  
Bangalore

BE – 2010 to 2014  
M. Tech – 2014 to 2016



# COMPUTER

is an abbreviation for

Common Operating Machine Particularly Used for  
Trade, Education and Research

## FACTS TO KNOW!!!!

# ACHIEVEMENTS



National Level E-Quiz competitions on "Programming Languages"

Congratulations!!!  
CONGRATULATIONS!!!

 **Dr. T. Thimmaiah Institute of Technology**  
Orgaum Post, Kolar Gold Fields – Karnataka - 563120  
Affiliated to VTU, Belagavi | Approved by AICTE, New Delhi | ISO 21001-2018 Certified

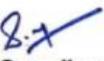
 **Department of Computer Science and Engineering**

 *Certificate of Appreciation*

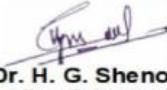
 *This is to Certify that*

**Ms. Mrudula S Prasad**  
*from*  
**City engineering college**

*has actively Participated in National Level E-Quiz on  
"Programming Languages" Organized by Department of Computer Science and  
Engineering, Dr. T. Thimmaiah Institute of Technology, KGF in association with  
Computer Society of India & Institution of Innovation cell from 8<sup>th</sup> to 10<sup>th</sup> May 2021*

  
**Dr. S. Sreedhar Kumar**  
Convenor  
Professor & Head,CSE

  
**Prof. Ruckmani Divakaran**  
Dean Academics

  
**Dr. H. G. Shenoy**  
Vice Principal

  
**Dr. Syed Ariff**  
Principal



**Mrudula S Prasad**  
4<sup>th</sup> Semester, CSE

# Computer Science Vocab-1



E K I D R A C D N U O S D X J I W J Y A R F R X  
R D P T B K G K S I D H N C I A P V V L A E P Q  
I D S S E C U X W V Z O O C W U V M D I S S F B  
X O W E A R B V E F C A S R P G B A N W D M I C  
N W A S R L A Q H I D A I L S W Z P O N E I R G  
E N T T Z V K F T O J D O D I E U R Z R S L E E  
P L E B I T E O L M R A P U E T B B Q E K E W P  
O O N D P R M R Z O D C B X A M I F K K T Y I J  
Y A R R F E A F W D P E E R X O I D U C O K R H  
K S E A I M W S V E W K E X S X S T W A P Y E A  
B D H O L N S D N M Q T G L I N U X L H A P D R  
A K T B E A R U J P N R E V I R D W E U G Z U D  
N V E Y P M E S Z I D V I R U S H S E U M E N W  
D D P E L B S B R C R A S H S T P I O U A O D A  
W C X K E C A P S R E B Y C X Y C F S Y I J L R  
I E S A B A T A D R M E N U W S R W N T G O N E  
D P S C R O L L N V O D A A M E O E U F S A V E  
T T N E M U C O D M C M R L E D H L Z W M N E I  
H O A X C P O R T W Z E W W N C O Y J P R A W F  
B E T Y B A G I G K W M A I A S O P U U E J Q W  
X B T U S E R N A M E R W C E P Q O K L B O Q Z  
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P S O R V E T T E U Q I T E N I F L F H O T R P  
W E F L A R E H P I R E P Z E R P P V N T H P U

ZIP FILE    WINDOWS    BROWSER    WEB    VIRUS    USERNAME    USB    UPLOAD    HORSE    TROJAN  
TERAFLOP    SPYWARE    SOUND CARD SERVER    SCROLL    SAVE    RESOLUTION    REBOOT    PRINT PORT  
PERIPHERAL    PCI    PASSWORD    OPEN    NETIQUETTE    MULTIMEDIA    MODEM    MENU LINUX  
KEYBOARD    JPEG    JAVA    INPUT    HARDWARE    HACKER    GIGABYTE    FREEWARE FONT    FIREWIRE  
FAQ    ETHERNET    EMOTICON    DRIVER    DOWNLOADS DOCUMENT    DISK DESKTOP DATABASE  
CYBERSPACE    CRASH    CPU    COPY    CHIP    CACHE    BUG    BIOS    BANDWIDTH    ASCII

## ANSWER TO TECHNICAL CROSSWORD-2

1. Bookmark, 2. Flash Drive, 3. Website, 4. Spreadsheet ,5. Database, 6. Mouse,
7. Firewall, 8. Spam, 9. Scanner, 10 Output Device, 11 Input Device ,12 Hacking