
CHITKARA
UNIVERSITY
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Contents

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HANDOFF IN CELLULAR SYSTEM

Srishti Gulati (BCA-1510992549)

Srishti Gulati

The basic concept of cellular phone system is that it has large number of base stations covering a small coverage area known as "cells" and in which the frequencies can be reused. As we have mobility while using a cell phone from one to another so we need the handover call from one base station to the another without any interruptions. A base station is a short-range transceiver which connects a phone, computer, or other wireless device to a central hub and allows connection to a network. As each base station is covering a small coverage area which can terminate the call due to weak signals from one to another. So, in order to continue the call with any termination. There is the process of transferring the call from previous cell's base station to new base station and this ability of transferring signals in the cellular system is known as "Handoff". As handoff operation involves identifying the new base station and allocation of voice and control signal to the channels associated with new base station. Though, handoff is going on generation to generation to have better switch over of call without any disturbance to the call and minimum handovers for fastest and clear signals. Along this there are two types of handoff as one is hard handoff and another is soft handoff. As hard handoff is the process in which when one enter into the one cell to reach the another cell for that firstly the previous single is released then signal from base station is established which is a "break before make" connection where as soft handoff works by first they switch and create a connection with another base station before the breakage of last

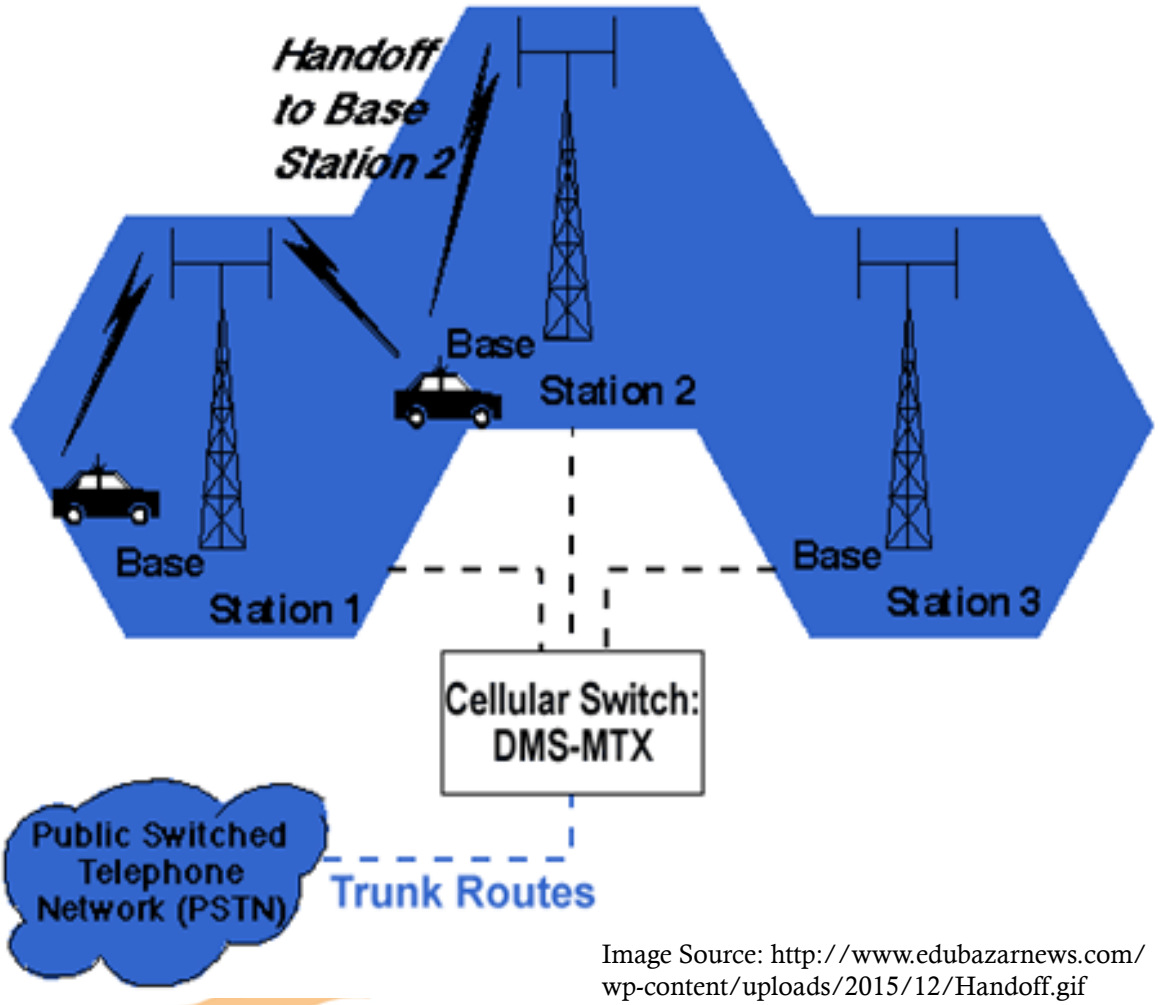


Image Source: http://www.edubazarnews.com/wp-content/uploads/2015/12/Handoff.gif

signals from base stations .In this the base stations overlap each other and referred as “make before break” handoff. As the cellular systems are particularly designed in the hexagonal shape so that each base state share the equal frequencies in that particular area and especially they don’t overlap each other. Hexagonal shape can be used to enhance security energy and special flexibility in cellular networks because a hexagon shape makes the honeycomb very strong, so less - prone to damage, but how the bees know that is a mystery. It is the most efficient use of space and gives the strength to that particular area. Therefore, the handoff between cells is unavoidable because it is very necessary to maintain the calls or data session. As there are some strategies played over these process where soft handoff is advantageous over hard handoff because the mobile does not lose its contact with the system during the handoff process. As it create a reliable and comfortable environment for the user as well as the process being executed for quick decisions.

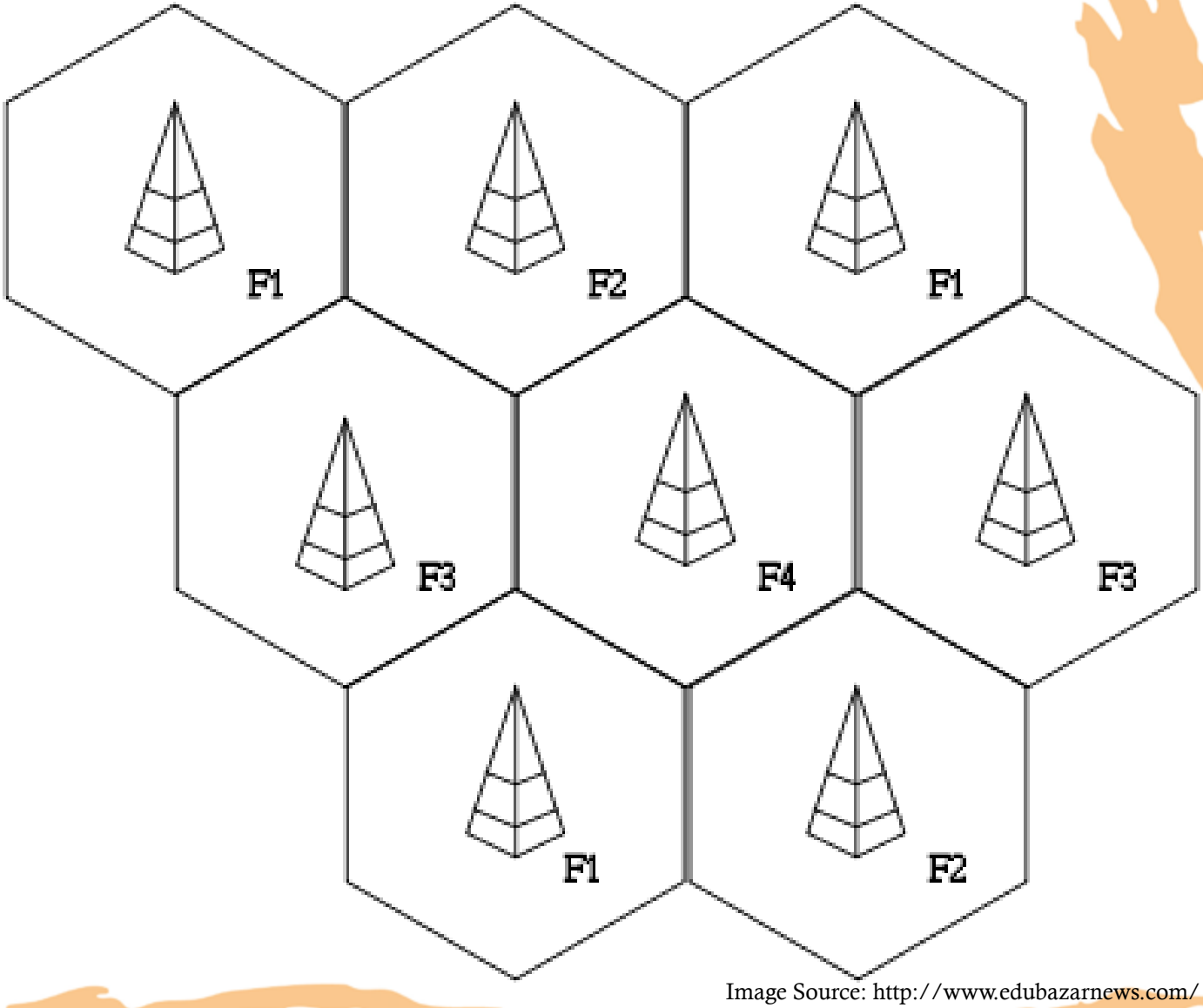


Image Source: http://www.edubazarnews.com/wp-content/uploads/2015/12/Handoff.gif

How ICT is Making Life Easier.

Dalveer Singh (BCA-1410992116)

Dalveer Singh

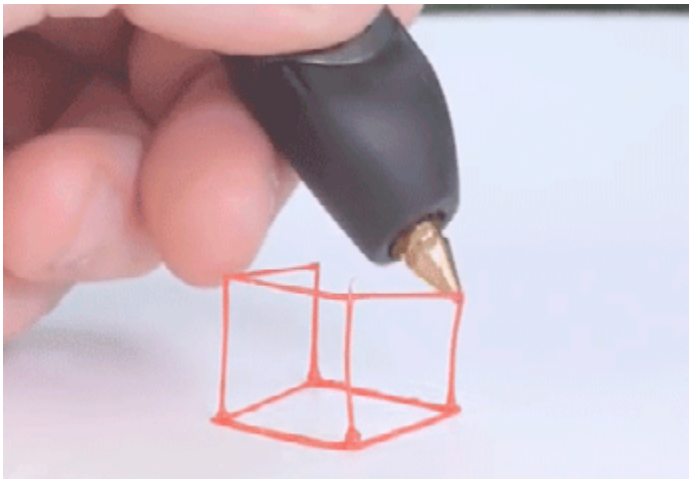
Have you ever realized, you live with 7,456,580,440 (7.4 Million) people in this world? And out of them 2,468,860,147 (2.4 Million) of them are just like you "saved by internet". They are the people who rely on internet for day-to-day tasks, they are the people who make the INTERNET, and from them comes the "ICT (Information and Communication Technology)".Basically it is combination of 3 major words in technical world: Information: Stimuli that has meaning in some context for its receiver, Communication: An act or process of using words, signs, or behaviours to exchange information, and Technology: is the collection of techniques, skills, methods and processes. ICT Collectively is an umbrella term which includes all devices that can communicate over network, such as: radio, smart television, cellular phones, computer, satellite systems, as well as the various services and applications associated with them, such as: video-conferencing and distance-learning. The concepts and applications involved in ICT are constantly evolving on an almost daily basis. It is broad enough to comprise any product that can store, retrieve, manipulate, send or receive information electronically in a digital form, e.g. car stereo, robots, etc. *So why ICT is important? Why are you even reading this ?* Firstly, it's everyone's responsibility, you can't just neglect your duty. Secondly, to deliver a sustainable future for our world, we need to fully use the digital tools till their disposal, and that's what ICT is all about. It promises to use the available resources to the maximum possible extent, and to introduce every person to the digital world. And yes, it is keeping its promise. "People who are crazy enough to think they can change the world are the ones who do". Things done by those people change the way world thinks. Few miraculous inventions are:

CICRET BRACELET:

With Google Glass hitting the market, and likely for being too expensive and awkward looking, it seems like the wrist is where the wearables war has been won. This Bracelet is a waterproof wearable, in-production since early 2015. This bracelet turns your arm into a touchscreen. It is designed to replace a smartphone. Bracelet could be used to watch films, write emails and make phone calls. And the best part is that you can resize the screen according to your need. Cicret bracelet is equipped with a pico projector and an array of proximity sensors. The projector emits an image on your forearm, and as you interact with the image, the eight long-range proximity sensors determine the gesture action, every swipe, tap, pinch or execution command. The bracelet also contains a mini-USB port and accelerometer as well as support Bluetooth and Wi-Fi. It is designed to be a stand-alone device. but it can be synced with other devices like SmartPhones.

3D DOODLER:

You must have heard about 3d printers, they are awfully slow, bulky. And requires special hardware and professional knowledge to computer program. And you have to spend lots of money for that. What if you just grab a pen and start drawing, and you drawing become a real Jack something like shaka laka boom boom. Here 3dDoodler comes in. It's just a pen that can draw on a paper or in the air. It is the "3d printing pen you can hold in your hands. its handy", light weight, and easy to use. It works by extruding heated plastic that cools almost instantly into a solid,



stable structure, allowing for the free-hand creation of three-dimensional objects. No requirement of software or computer, not even training. you just plug it to a power socket and start drawing. What's the best part is you can create anything e.g.A toy car, or A toy plane, even your phone case. The possibilities are limited only by your imagination.

JIBO:

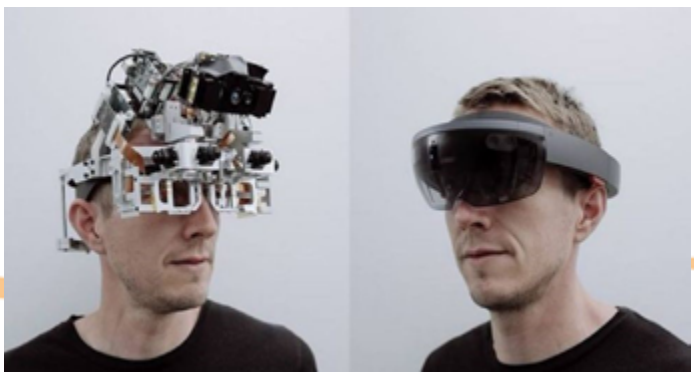
World's first family robot, jibo helps everyone throughout the day, he's the world's best camera-man, as he intelligently tracking the action around him, so now you can put down your camera and be a part of the seen. He's a hands-free helper you can talk to him and he'll talktoyouback,

he receive messages for you, read them and reply to them, as you say, he can set reminders for you, he's an entertainer and an educator through interactive applications it's finally here and he's not just an illusion nor is he just a three-axis motor system, he's not even just a connected device, he's one of the family. This little gadget is actually humanizing technology.

HOLO LENS:

Earlier things were just ordinary, what if we can go beyond the screen where your digital world is blended with your real world. Surprised? This is the world with holograms this is not some ordinary VR Handset, it more than that this is Microsoft's Hololens. You must have seen early versions of this last year, but now it's more than a prototype this is an entire computer on your head. It runs on windows 10, which means that in addition to Hololens specific apps, you can do just normal stuff too like browse the web or a skype call. So how it works? as you walk around and it scans your environment and place virtual objects or windows just on right place. So it gives a mixed experience of reality and virtualization, it is better than VR handsets as you can still see some of the things around you like walls or chairs or this table, while you're browsing the web or playing games. And it also feels slightly less dangerous. "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."-Mark Weiser, Scientific American – 1991

In conclusion, I would like to say that the tech industry is booming these days. Statistics show that between 2004 and 2016, jobs in the tech industry grew 34% faster than jobs in other high-growth sectors like business services. And given the increasing rate at which technology continues to permeate such huge industries as finance and healthcare, you can bet that this enormous growth rate isn't showing any signs of slowing down.



The Imposible Dream

Ashish Soni (MCA-1510981019)

Ashish Soni

THE IMPOSSIBLE DREAM "No dreamer is ever too small; no dream is ever too big." –Anonymous. Let's take you through an unforgettable and most inspiring of moments that took place in the history of world football in 2016. Majority of the people in the world may have never heard the name before but what unfolded in the season of 2016 in the world of football, no one would ever forget it. Leicester City Football Club, also known as the Foxes is a professional football club based in England, now known as the Champions of England as they wrote their name in the history books by winning the Barclays Premier league Title in 2015-2016, in the most inspiring tales ever in the history of the sport and the world. Let's dig a little deep in how they fought the elite clubs of England and managed to pull off the greatest sporting upset ever with their unflinching self-belief, their overwhelming determination, putting in hours of hard work, blood and sweat to become the CHAMPIONS:

The story starts in 2008–09:

It was Leicester's first ever season outside the top two levels of English football.the appointment of Nigel Pearson as the manager of the football club sparked a rebuilding of the club that would culminate in the fastest rise to the peak of the English football league system.Leicester returned to the Championship league at the first attempt, finishing as champions of League One after a 2–0 win at Southend United, with two games in hand.

2009–2010 season:

Leicester's revival under Pearson continued, as the club finished fifth and reached the Championshipplay-offs in their first season back in the second tier.Though coming from 2–0 down on aggregate, away to Cardiff City, to briefly lead 3–2, they eventually lost to a penalty shootout in the play-off semi-final.

2010-2011 season:

On 1 October 2010, after a poor start that saw Leicester bottom of the Championship with only one win out of the first 9 league games. They were unable to get promotion back to the premier league as they finished 10th.

2011-2012 season:

Leicester were viewed as one of the favorites for promotion in the 2011–12 season, but on 24 October 2011, following an inconsistent start with the Foxes winning just 5 out of their first 13 games, they finished 9th in that season.

2012-2013 season:

The Foxes could only muster a

Image Source: https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjF3-TFkbrPAhXCMI8KHUTvDTIQjRwIBw&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DWoeMr75TOyU-&psig=AFQjCNGgC

6th-place finish in the 2012–2013 season, ensuring Leicester City were in the Championship play offs. Leicester lost the playoff semifinal 3–2 on aggregate to Watford.

2013-2014 season:

In 2014, Leicester's march up the league system hit a breakthrough. Their 2–1 win over Sheffield Wednesday, combined with losses by Queens Park Rangers and Derby County, allowed Leicester City to clinch a promotion to the Premier League after a 10-year absence. Later that month, a win at Bolton saw Leicester become the champions of the 2013–14 Football League Championship – the seventh time they had been champions of England's second tier.

2014-2015 season (Return to Premier League):

During the 2014–15 season, a dismal run of form saw the team slip to the bottom of the league table with only 19 points from 29 games. By 3 April 2015 they were 7 points adrift from safety. This could have brought a sudden end to Leicester's seven-year rise, but seven wins from their final nine league games meant that the Foxes finished the season in 14th place with 41 points. Their upturn in results was described as one of the Premier League's greatest ever escapes from relegation. They also became only the third team in Premier League history to survive after being bottom at Christmas and no team with fewer than 20 points from 29 games had previously stayed up.

2015-2016 season(Premier League champions):

Leicester City appointed Claudio Ranieri as their new manager for the new 2015–16 Premier League season. Under Ranieri, Leicester won the Premier League on 2 May 2016, after Tottenham Hotspur failed to secure a win against Chelsea after only drawing the match 2–2.This completed the fastest seven-year rise to the title As a person/Student, we all should remember that we all have to start from scratch, work our way up to create a life that we aspire to live , to make our dreams a reality we have to work hard, show dedication to our work, never lose heart because no matter who you are, you will commit mistakes but you need to learn from them , you will have to go through failures but don't lose hope, you will go through your share of problems and heartbreaks but no matter what, never be ungrateful towards life, life is a blessing but it can be too damn short, so go do the things that you want to do, achieve your goals. Most of all never lose faith and never stop believing, good things will happen, it will always be worth it in the end. As for Leicester the scale of the surprise attracted global attention for the club and the city of Leicester. It had been a hell of a ride. The team fought against all odds, when people were expecting them to buckle under the pressure and thinking that they were punching above their weight, they held their nerves, fought as a team, and got on with their work, had hope and self-belief to make their own destiny and in the end, were the CHAMPIONS of the league deservedly. So, pursue your dreams, no matter what and always remember: Hope is a good thing, maybe the best of things, and no good thing ever dies.

~Stephen King

Image Source: https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjRptq0krrPAhUCgI8KHUlcDtYQjRwIBw&url=http%3A%2F%2Fwww.abc.net.au%2Fnews%2F2016-05-08%2Fleicester-city-celebrate-championship-success-with-everton-win%2F7393772&

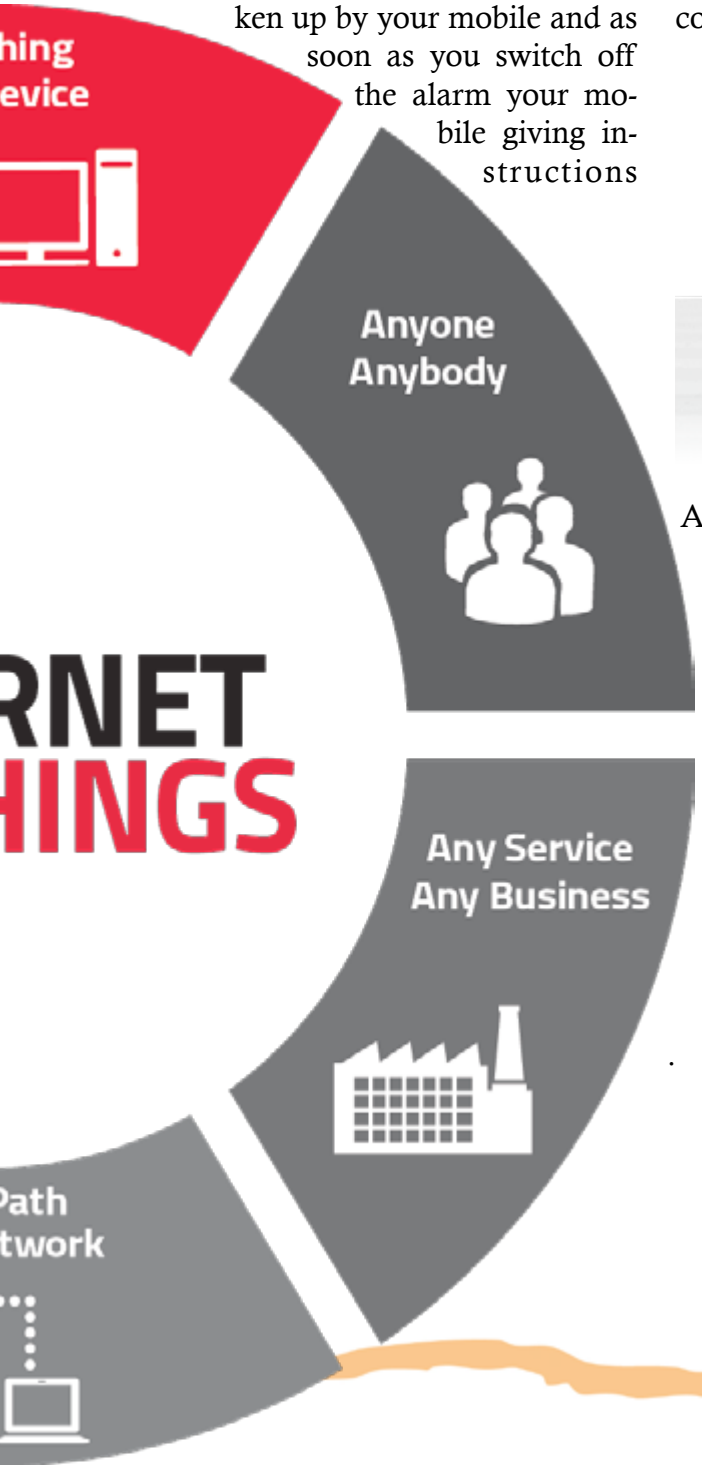
INTERNET OF THINGS

Kanika Jain (BCA-1410992127)

The "Internet of things" (Iot) is becoming an increasingly growing topic of conversation everywhere. It's a concept that not only has the potential to impact how we live but also how we work. But what exactly is the "Internet of things" and what impact is it going to have on you, if any? There are a lot of complexities around the "Internet of things" but I want to stick to the basics. Internet of things is a proposed development of the Internet in which everyday objects have network connectivity, allowing them to send and receive data i.e. it is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. In a layman language we can say that this is the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other). This includes everything from cellphones, coffee makers, washing machines, headphones, lamps, wearable devices and almost anything else you can think of. The IOT is nothing but a giant network of connected "things" (which also includes people). The relationship will be people-people, people-things and things-things. But now the big question is

Kanika Jain

Why would we want to have so many connected devices talking to each other? Well, let's just take an example, suppose you have a meeting and you are extremely late but you know your car is connected to your calendar and already know the best route and if you will still be late it can notify the other party about your late arrival. Wouldn't that be cool! So, when we talk about internet of things we are not only talking about your car connectivity, we are talking about everything that can be connected. Well, suppose you being woken up by your mobile and as soon as you switch off the alarm your mobile giving instructions to your coffee machine or sandwich maker to start brewing coffee or start making your sandwich. By this we can clearly imagine the "big picture". The IOT will provide a wide range of activities that in the past we only imagined about. It will provide us with smarter healthcare, smarter houses, smarter urban mangagement, smarter EVERYTHING. With IOT with us, we are not only talking about making our lives more comfortable, it is also a promising investment in business fields. There are many interesting statistics about Iot like by 2020, the number of connected devices will increase from 15 billion to 50 billion as estimated by CISCO. A research firm IDC estimates that global spending on Iot devices and services will rise from $656 billion in 2014 to $1.7 trillion in 2020. That growth is expected to be fueled by growth in devices, connectivity solutions, and IT services.



All home appliances can be controlled using smartphone

Google's self driven car

Project LOON
Internet Services from the SPACE

Alisha Mehta (MCA-1510981015)

Alisha Mehta

"The art challenges the technology, and the technology inspires the art" ~John Lasseter

The world is inhabited by 7.125 billion people and only 30% of the total population that is 2.1 billion people are able to access the internet. Providing internet services at all the places is not feasible at time or due to the geographical location or due to the cost of installation of towers as the users it may cater to might be less while the service provider may have to spend more just for the installation of all the hardware needs. So, how should we solve this problem and help the other 5 billion people to access the internet irrespective of the various factors.

The first thing to do was to replace the towers with something that was mobile as that would help in providing internet services even in places where towers can't be installed. So, in 2011 Google X (now known as X) started working on Project Loon. It was named so because Google found the idea of providing internet to 5 billion people to be crazy.

Let us understand the whole project in a step-wise manner. Firstly, the balloon for the project is designed using a very specific technique. In the initial stages of the project, the balloons were able to survive in the stratosphere for 2 days only and now the balloons are able to survive for 100+ days. These balloons are made out of polyethylene that is 0.076 mm thick. These balloons are filled with heli-

Image Source: 1https://upload.wikimedia.org/wikipedia/commons/2/2c/Google_Loon_.jpg

um, standing 15 m wide and 12 m tall when fully inflated. These balloons are made in such a way that they can withstand high pressure and low temperatures. They carry an air pump system that pumps in or releases air to control its elevation. A small box has each balloon's electronic equipment which hangs underneath. This box also contains circuit boards -the brain of system, radio antennas and wireless telecommunication device called Rocket M2 to communicate with other balloons and with antennas on the ground, and batteries to store solar power.

Image Source: https://d152j5tfobgaot.cloudfront.net/wp-content/uploads/2016/05/google-project-loon.jpg

The balloon is powered by solar panels. Sufficient power is thereby generated to keep the system running while also charging the battery for use at night. A parachute is attached to the top of the balloon allowing to control the landing when the balloon is ready to finish its journey.

These balloons are launched using custom-built AutoLaunchers which protect the balloon from winds while it is being filled. Every AutoLauncher is capable of launching one balloon every 30 minutes. These balloons are able to reach 20 kilometres above earth's surface and from here the transceivers in the system send and receive signals from the ground, across the various balloons and then send it back to the user's LTE phone. The stratosphere is stratified so the winds travel in different layers and the availability of balloon can be controlled by the algorithms as they can be made to move up or down the layer of wind. Each balloon has a coverage area of 5000 kilometres.

These balloons are tracked using GPS and the recovery team recovers them from the ground as the balloons are brought down in sparsely populated areas so as to avoid any damage. The testing of these balloons is underway and they have been successfully tested in various parts of the world. The first test was successfully conducted in Leeston, New Zealand and there are so many other success stories for this project. X hopes to deploy thousands of these balloons for internet services all around the world, in order to provide internet access to remote areas thus making it possible for all the people to be a part of the era of internet and the evolution of wireless internet services.

Technological Revolution in the World of SPORTS

Ashish Soni (MCA-1510981019)

Ashish Soni

"Information is the oil of the 21st century, and analytics is the combustion engine." ~ Peter Sondergaard

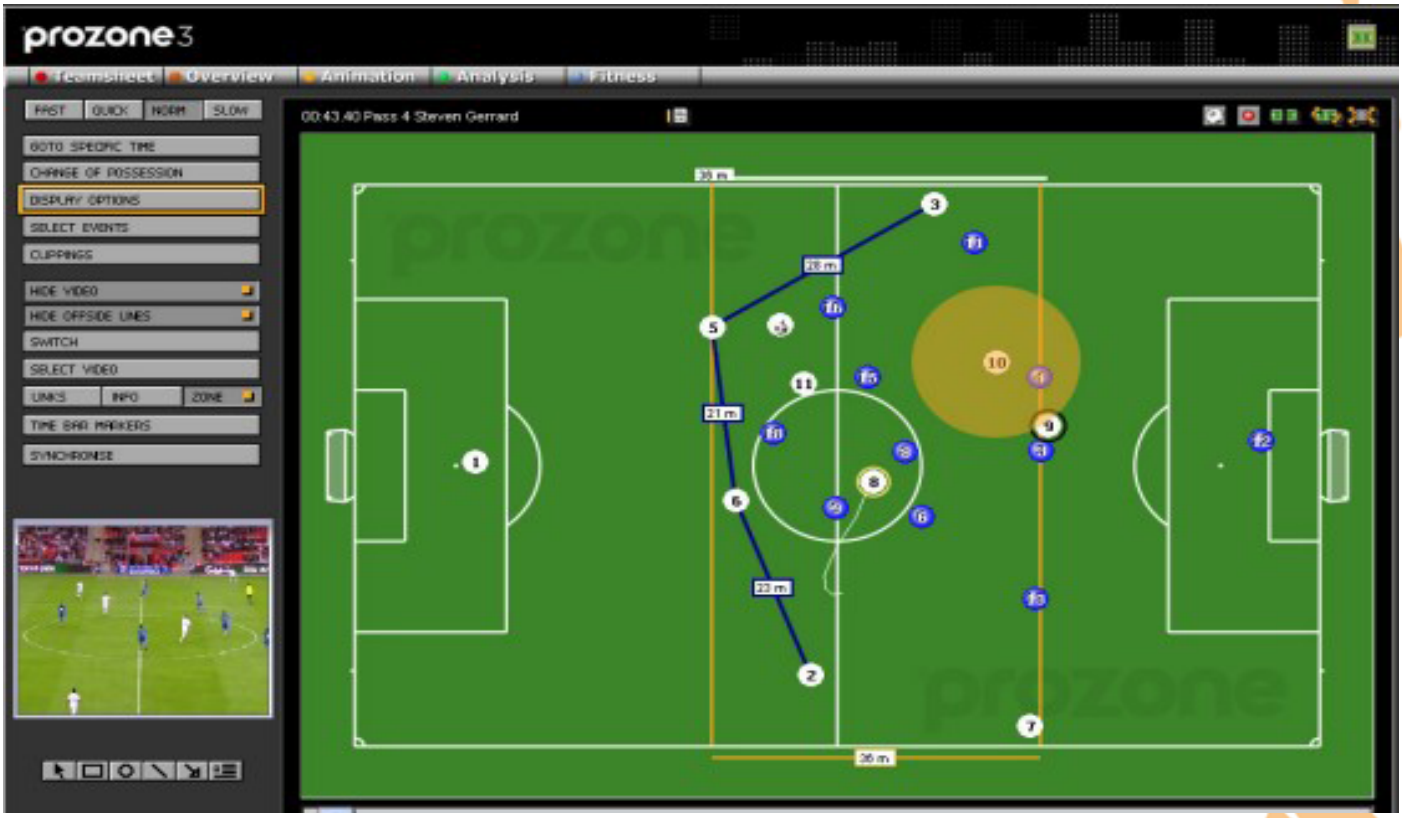
The word "Sport" comes from the Old French desport meaning "leisure", with the oldest definition in English being "anything humans find amusing or entertaining".

Sports are an integral part of today's world, in business terms it being a billion dollar industry, generates huge amount of capital all over the world, on personal terms being part of a sport, offers people different lessons of life including- sportsmanship, a never say die-attitude, having positive outlook on life -no matter what, trying and giving your best and above all nothing is impossible. Nowadays, technology plays an important role in modern sports. Sports science is a widespread discipline that is being applied in various sports. The Data generated and collected in various aspects of sports is being analyzed and utilized to gain an edge in improving performance in every aspect of a particular sport, to create a better spectacle.Let's discuss some of the major achievements and improvements that have been made in sports courtesy of the new technologies involved:

(1)Germany's 2014 Foot all World Cup Win:

The team partnered with German software giant SAP AG to create a custom match analysis tool that collects and analyzes massive amounts of player performance data. The tool, called Match Insights, analyzes video data from on-field cameras capable of capturing thousands of data points per second, including player position and speed.

(2) Tennis(IBM Slam Tracker): This technology aggregates and publishes a variety of statis-



tics- from a competitor's point-by-point probability of winning the match to his/her opponent's.

(3)Prozone: The system by sports analytics provider prozone tracks 10 data points per second for every player, or 1.4 million data points per game. The system is also used to monitor 12,000 soccer matches around the world, which are all analyzed using automated algorithms as well as manual coding. Arsenal Football club based in London, England has invested millions in this technology.

These and many other technologies are being currently being used in the field of sports to better analyze the strengths and weaknesses of a sportsperson and the scope of further improvement in that individual and in the sport itself. I hope our nation 'INDIA' uses its financial power, so tools mentioned above like Match Insights etc are introduced for the betterment of our group of players and for the advancement of our nation in every sport.

Way of Tech-ing

Gundeep Singh (BCA-1410992121)

Moving towards the future has led to the expansion in the exploration of Tech Era i.e. vastly changing, reversing the dependency of human life on technology& automation. Many of such interventions have already taken place and some are on their way to be accessed shortly.

Image Source: https://blog.meccongress.com/

Edge Computing is pushing the frontier of computing applications, data, and services away from centralized nodes to the logical extremes of a network. This approach requires leveraging resources that may not be continuously connected to a network. Edge Computing covers a wide range of technologies including wireless sensor networks, mobile data acquisition, cooperative distributed peer-to-peer ad hoc networking and processing also classifiable as Grid/Mesh Computing, dew computing, cloudlet, distributed data storage and retrieval, augmented reality, and more. Mobile-Edge Computing (MEC) offers application developers and content providers cloud computing capabilities and an IT service environment at the edge of the mobile network. This environment is characterized by ultra-low latency and high bandwidth as well as real-time access to radio network information that can be leveraged by applications. This has led to interconnectivity of devices to each other and they can perform the tasks independently and send reports simultaneously with relying on a network in order to get the assigned task Edge computing does not replace cloud computing, however. In reality, an analytic model or rules might be created in a cloud then pushed out to edge devices. Some edge devices are also incapable of doing analysis. Edge computing is also closely related to "**fog computing**," which also entails data processing from the edge to the cloud. Fog networking, is an architecture that uses one or a collaborative multitude of near-user edge devices to carry out a substantial amount of storage (rather than stored primarily in cloud data centers), communication (rather than routed over the internet backbone), and control, configuration, measurement and management (rather than controlled primarily by network gateways such as those in the LTE core network).The term fog computing

Image Source: http://15809-presscdn-0-93.pagely.netdna-cdn.com/

Gundeep Singh

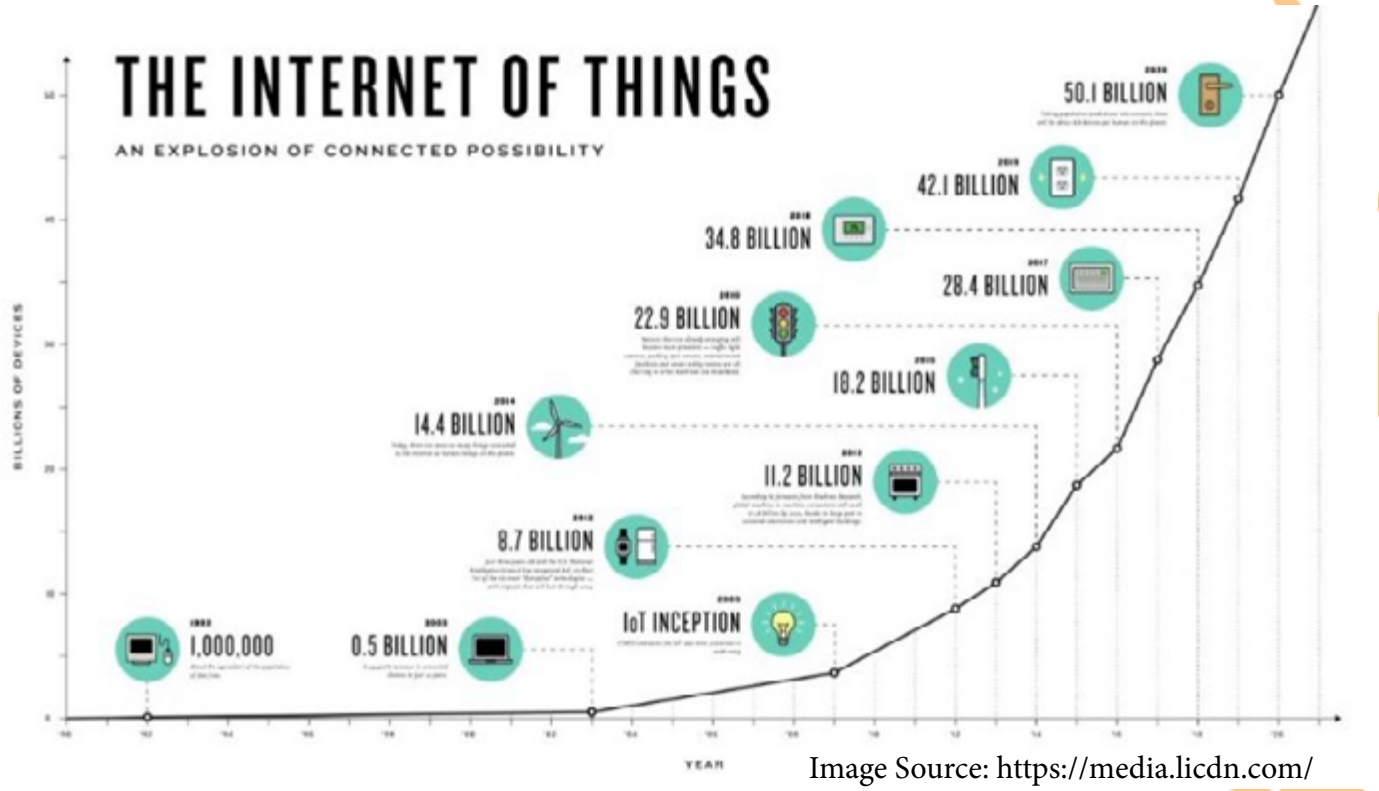


Image Source: https://media.licdn.com/

is often associated with "Cisco Fog Computing" is a registered name; open to the community at large, "fog" is meant to convey the idea that the advantages of cloud computing should be brought closer to the data source. Fog computing can be perceived both in large cloud systems and big data structures. This distributed approach is growing in popularity because of the "**Internet of Things**" (IoT) .It is simply inefficient to transmit all the data a bundle of sensors creates to the cloud for processing and analysis; doing so requires a great deal of bandwidth and all the back-and-forth communication between the sensors and the cloud can negatively impact performance. Although latency may simply be annoying when the sensors are part of a gaming application, delays in data transmission can be life-threatening if the sensors are part of a vehicle-to-vehicle communication system or large-scale distributed control system for rail travel.One of the reasons why IoT has gained momentum in the recent past is the rise of cloud services. Though the concept of M2M existed for over a decade, organizations never tapped into the rich insights derived from the datasets generated by sensors and devices. Existing infrastructure was just not ready to deal with the massive scale demanded by the connected devices architecture. That's where cloud becomes an invaluable resource for enterprises.

The Device Mesh The device mesh moves beyond the traditional desktop computer and mobile devices to encompass the full range of endpoints with which humans might interact. As the device mesh evolves. We will see significant development in wearables and augmented reality, especially in virtual reality.

Ambient User Experience All of our digital interactions can become synchronized into a continuous and ambient digital experience that preserves our experience across traditional boundaries of devices, time and space. The experience blends physical, virtual and electronic environments, and uses real-time contextual information as the ambient environment changes or as the user moves from one place to another.

Power from the Air Internet devices powered by Wi-Fi and other telecommunications signals will make small computers and sensors more pervasive. So, concluding with the fact that even the machines are communicating with each other connected through. The human race is still diverging from each other. Technology is supposed to make life a lot easier. While it is true that technology contributed a lot of good to a better quality of life it also did not come without a price. On the whole, it will make the people isolate and decrease social skills to be dependent on computers.

WOMEN IN DEFENCE FORCE

Komal Singh (BCA-1410992131)

'Women power' one of the most explosive and decisive strength of any country. This women power holds the potential to bring even the mighty Himalaya to their feet. We belong to a country where we worship women as goddess. Today's women are touching heights of moon and also depth of sea and there is hardly any place in the universe where you can't find imprints of women."Women are meant to sit in the house" these words are like myth about women. They are now are holding the country from its defence to diplomacy .Not only me but every Indian who watches our brave female soldiers should feel proud. The women are now becoming integral part of nation's defence and there are several ways for women to be part of it. Introduction of women in officer cadre in 1992 was an important landmark in the history of Indian Defence Forces. More than 1200 lady cadets have already been commissioned into the various Arms and services of the Indian Army/Navy/Air Force. Now let's look at some ways for young females to be a part of Indian Defence Forces.

INDIAN ARMY

UPSC ENTRY

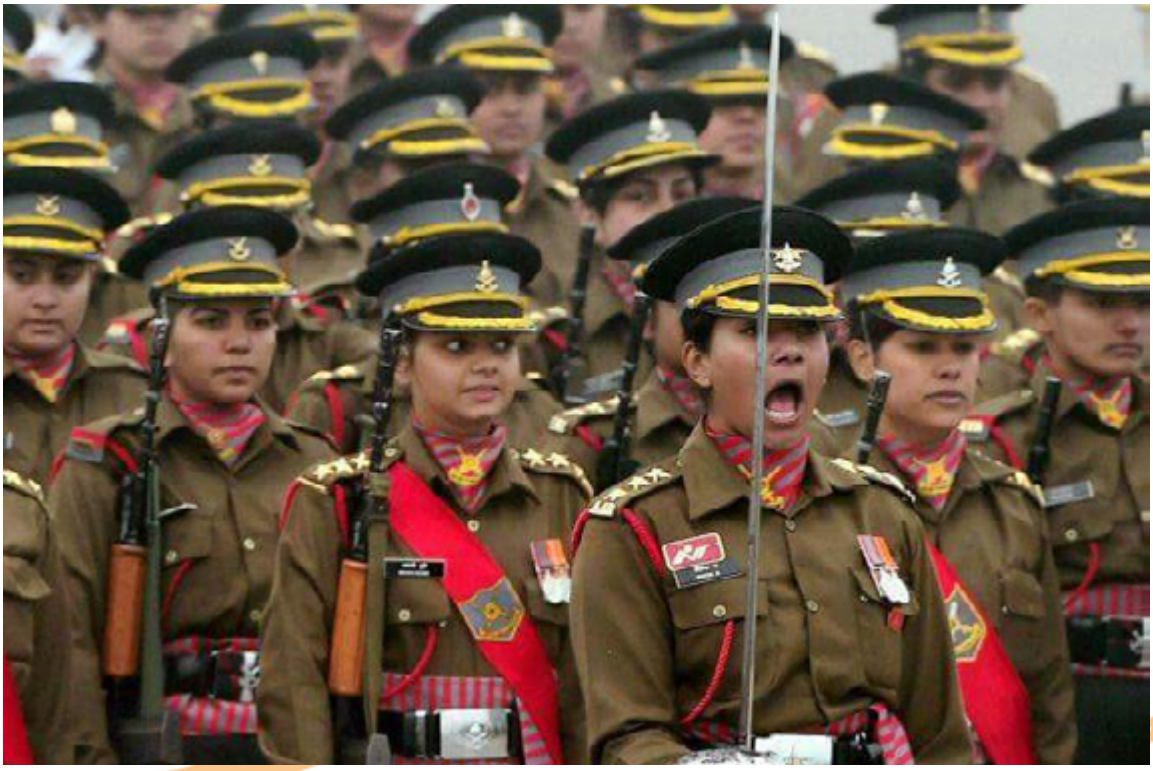
Women candidate of age 19-25 years can apply for this entry. They have to clear an exam held by UPSC which is held twice in a year. Successful candidates of written exam are called for the SSB interview. To apply for entry, a Graduate/Post Graduation in any discipline from a recognized university is required.

NCC Special Entry

This entry is only for NCC women cadets who have 2 years service in NCC senior division army and have minimum B grade in C certificate exam. Women cadets of age 19-25 year can apply for it. Vacancies per course are notified by additional directorate general recruiting. Final year student with 50% aggregate are eligible for this entry.

SSC-Technical Entry

Women engineering students of age 20-27 year are eligible for this entry.



Komal Singh

They can apply for it while in final year or after completing their degree. Graduates in any discipline of engineering is eligible to apply for it.

JAG Entry

This entry is especially for the law graduates. The age is required for this entry is 21 – 27 years which is notified along with the vacancies by additional directorate general recruiting in the month of April or October. Candidate must be having minimum 55% aggregate and the candidate should be registered with Bar Council of India or state.

INDIAN AIR FORCE

AFCAT Entry

Female candidate who want to fly high in the sky or dream to be an Air Warrior of IAF then they have to clear an exam named AFCAT. AFCAT stands for Air Force Common Admission Test. It is held twice in a year. It is a written exam and those who qualify in this exam are called for SSB interview .You can opt for the following branches by AFCAT exam.

Flying branch	•Age 19-23 years. •Opportunity to fly transport aircrafts or helicopters. •Graduates/B.Tech degree from recognized university with 60% marks. •Passed Maths and Physics at 10+2 level.

Technical Branch	•Age 18-28 years.
» **Aeronautical Engineer (Mechanical)**	» Minimum 4 year degree course from recognized uni versity. » Aggregate of minimum 60% marks. » Aeronautical society of India in regular courses.
» **Aeronautical Engineer (Electrical)**	» Minimum 4 year degree course from recognized uni versity. » Aggregate of minimum 60% marks. » Aeronautical society of India in regular courses. » Graduate membership exam of the Institute of Elec tronics and Telecommunication Engineer in Regular course.

Non-AFCAT ENTRY

Meteorology Branch

In this entry candidates are short-listed and called for SSB interview at Air Force Selection Board's. Age group in this entry is 20-25 years and 27 year for PhD candidates. To eligible for this entry candidates must be having a Post graduate degree in any science stream/Maths/ Statistics/Geography/CS/EVS/Physics/ Geo-Physics etc. With minimum 50% aggregate and have scores 55% marks both in Maths and Physics at Graduation level.

INDIAN NAVY

Executive Branch

SCC-Air Traffic Controller

- •Age 19.5-25 years.
- Graduate from any science stream physics/maths/Electronics or M.Sc with physics /maths/ Electronics.

SSC-Observer

- Age 19-23 years
- Graduation degree in any discipline with minimum 55% marks with Maths and physics at 10+2 level.

SC-Law

- This entry is only for the female law candidate.
- Age 22-27 years.
- Candidate should carry a graduate degree in Law with minimum 55% marks.

SSC-Logistics

- Age 19.5-25 years.
- •Women candidate who hold B.E/B. Tech in Computer, IT, Architecture, Civil,Electrical, Mechanical engineering.
- PG diploma in material management eligible for this entry.

Engineering Branch

UES SSC(Naval Architecture)	• Women engineering should have B.E/ B.Tech degree in naval architecture/Mechanical/civil/Aeronautical /Metallurgical/ Aerospace engineering with 60% marks. • Age 19-25 years.
SSC Naval Architecture	• Age 21-25 years. • Women engineering should have B.E/ B.Tech degree in naval architecture/Mechanical/civil/Aeronautical /Metallurgical/ Aerospace engineering with 60% marks.
Education Branch	• Age 21-25 years. • B.E/B.Tech in computer science, IT, Electrical, Electronics, Mechanical OR M.Sc in Physics/Maths/Computer Application with 50% marks.

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