



In Depth – Artificial Intelligence

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At the two day **G-20 summit** in Osaka in Japan, the Prime Minister of India underscored the significance of **Digital Economy & Artificial Intelligence**. He emphasised the government's reliance on the **5 'I's** that stand for **Inclusiveness, Indigenization, Innovation, Investment** in infrastructure & **International cooperation** in developing these two areas. The concept of Artificial Intelligence is based on the idea of building machines capable of thinking, acting, and learning like humans.

Artificial Intelligence (AI)

- It describes the **action of machines accomplishing tasks** that have **historically required human intelligence**.
- It includes technologies like machine learning, pattern recognition, big data, neural networks, self algorithms etc.

- The origin of the concept can be traced back to the greek mythology, although it is only during modern history when stored program electronic computers were developed.
 - Example:** Million of algorithms and codes are there around the humans to understand their commands and perform human-like tasks. **Facebook's list of suggested friends** for its users, a pop-up page, telling about an upcoming sale of the favourite brand of shoes and clothes, that comes on screen while browsing the internet, are the work of artificial intelligence.
- **A Complex Technology:** AI involves complex things such as feeding a particular data into the machine and making it react as per the different situations. It is basically about creating self-learning patterns where the machine can give answers to the never answered questions like a human would ever do.

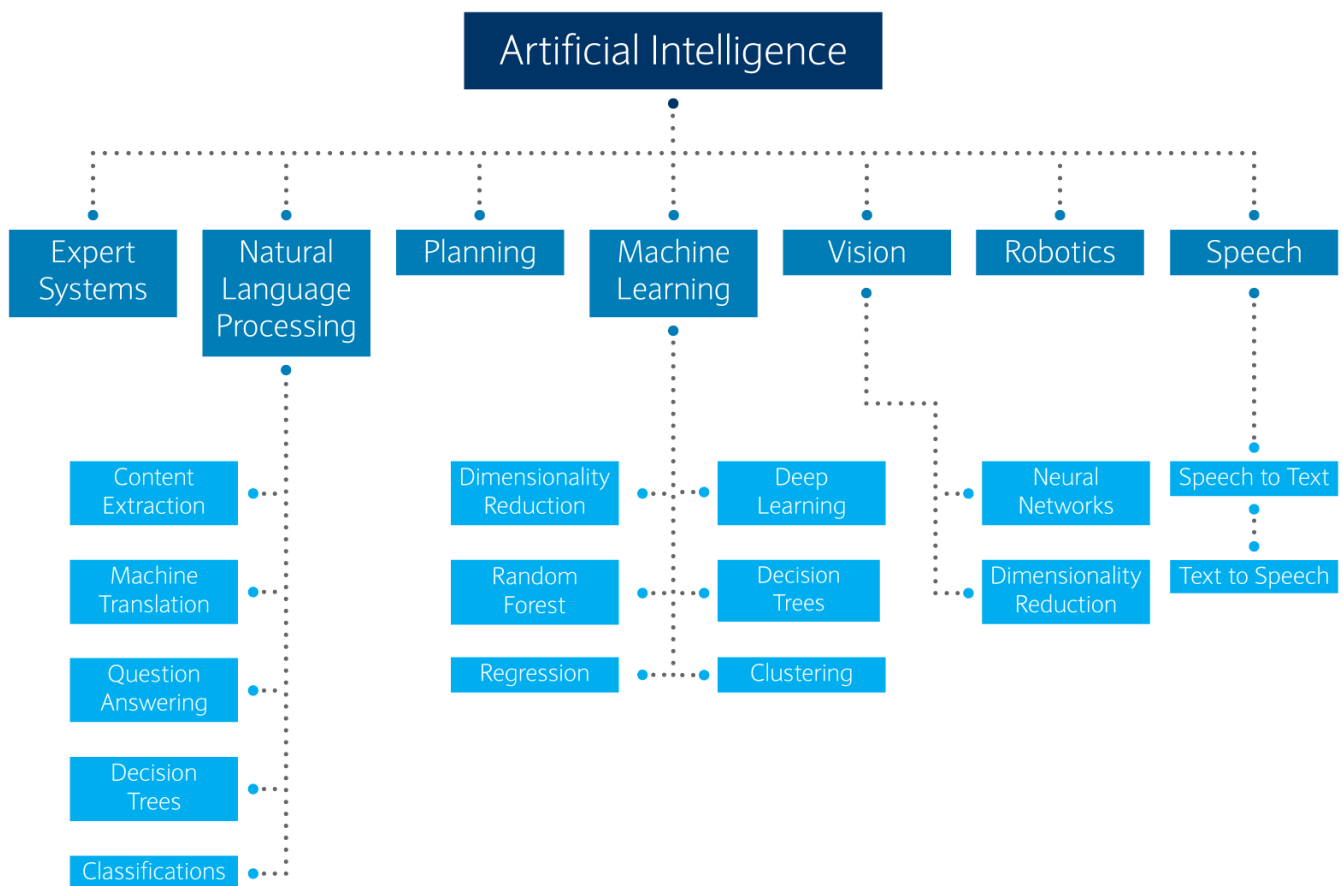
AI is a Different Technology

- AI is **different from hardware driven robotic automation**. Instead of automating manual tasks, AI performs frequent high volume computerised tasks reliably.
- AI is often **misunderstood for machine learning**. AI is a broader concept with a bunch of technologies that include machine learning and other technologies like natural language processing, inference algorithms, neuron networks etc.

Evolution

- In the year **1956**, American computer scientist John McCarthy organised the **Dartmouth Conference**, at which the term 'Artificial Intelligence' was first adopted. From then on, the world discovered the ideas of the ability of machines to look at social problems using knowledge data and competition.
- There used to be several dedicated projects on the same and the government was funding the research.
- Every aspect of science and especially when one starts looking at empowering machines to behave and act like human beings, the **questions of ethics** arise. About **70's** and late 80's there was a time when the **governments stopped funding research into AI**.
- AI experienced a **resurgence** following **concurrent advances in computer power** and large amounts of data and theoretical understanding in the **21st century**.
- AI techniques now have become an essential part of the technology industry helping to solve many challenging problems in computer-science. From Apple Siri to self driving cars, AI is progressing rapidly.

AI Methods



India and AI

- According to a Canada based company's report, Global AI Report 2019, **India stood at the ninth position in terms of the number of the AI specialists working in the field.** The US, China and the UK topped the list.
 - The top ranked countries in this report have many academic institutes with programs on AI. They have therefore a much greater number of people skilled to do research in the field.
 - India, on the contrary, lacks the opportunities in formal education in data science but is slowly trying to encourage the adoption of AI in educational institutes.
- Starting this year, **the CBSE has AI as an elective subject** for its ninth grade classes.
- **IIT Hyderabad** has launched a full fledged **Bachelor of Technology (B Tech) program in AI** becoming the first Indian educational institution to do so. It is also most likely the third educational institute in the world after Carnegie Mellon University and the Massachusetts Institute of Technology to have a full fledged B Tech program on AI.
- **IIIT Hyderabad** is another educational institute that introduced popular **executive programs on AI** and machine learning and blockchain and distributed ledger technologies.
- Defence forces of India are now venturing into the products and technologies which will aid defence measures using the AI and technologies.
- In India, corporates have started collaborating with academia on AI. IBM's Blue project is an example.

- There are many startups in the country which are doing great work in image analytics, data analytics, predictive intelligence etc.
- It is estimated that **AI will add 957 billion dollars to India's GDP by the year 2035** boosting India's annual growth by 1.3% points.

Benefits

- **In Policing:** India still has a conventional policing. AI based products open a new window of opportunity to do **predictive policing** in India. With the help of AI, one can **predict the pattern of crime**, analyze lot of CCTV footage which are available across the country to identify suspects.
Government is digitizing all the records, especially the crime records putting it into one single place called **CCTNS** where all the data including the image, biometrics, or the criminal history of a convict or suspect is available.
- **In Agriculture:** It has many uses, for example, it can help sense one how much water the crop needs.
- **For solving complex issues** like efficient utilization of available resources.
- **Analyzing the Data:** The AI technology helps in analyzing data and thus can improve the efficiency of the systems like power management in cars, mobile devices, weather predictions, video and image analysis.

Negative Impacts of AI

Steps taken by the Government

- In 2018-19 budget, the **government mandated NITI Aayog** to establish the **National Program on AI** with a view to guiding research and development in new and emerging technologies.
NITI Aayog then adopted a **three pronged approach** undertaking exploratory proof of concept AI projects in various areas, crafting a national strategy for building a vibrant AI ecosystem in India and collaborating with various experts and stakeholders.
- On 20th March, 2019, NITI Aayog circulated the **cabinet note** to establish a cloud computing platform called **AIRAWAT** (Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform).
 - The note circulated by NITI Aayog proposes that the government should pump in Rs. 7,500 crore rupees over 3 years as well as set up a high-level task force that will oversee the roll out and implementation of AI.
 - The move to create cloud computing platform is part of the government's goal of making India a pioneer amongst emerging economies with regards to AI and transform sectors like education, health, agriculture, urbanization and mobility.
- In Budget 2018, the government announced funds to support the country's AI, machine learning, robotics and IoT sector.
- As part of the initiative, NITI Aayog in the year 2018, published a **draft National Strategy for AI**, planning its scope for research, adoption and commercialization.
It envisioned AI use case clearly in the sectors like **healthcare**, agriculture, education, smart cities and infrastructure, smart mobility and transportation.
- The Commerce and Industry Ministry has also set up task forces to explore the use of AI and Big Data technologies in the country.
- In the **Budget 2019-20**, the government has announced setting up of a **National Sports Education Board** under Khelo India to prepare youth for new age skills, Artificial Intelligence, IoT, Big Data, 3D Printing, Virtual Reality etc.

AI in China

- China has been consistently building an ecosystem to fuel its ambition to become a world leader in AI by the year 2050.
- A report on China AI development released in the year 2018 said that from the year 2013 to the first quarter of the year 2018, the investment and financing in AI technology in China accounts for 60% in the world valued at 27 billion dollars in the year 2017.