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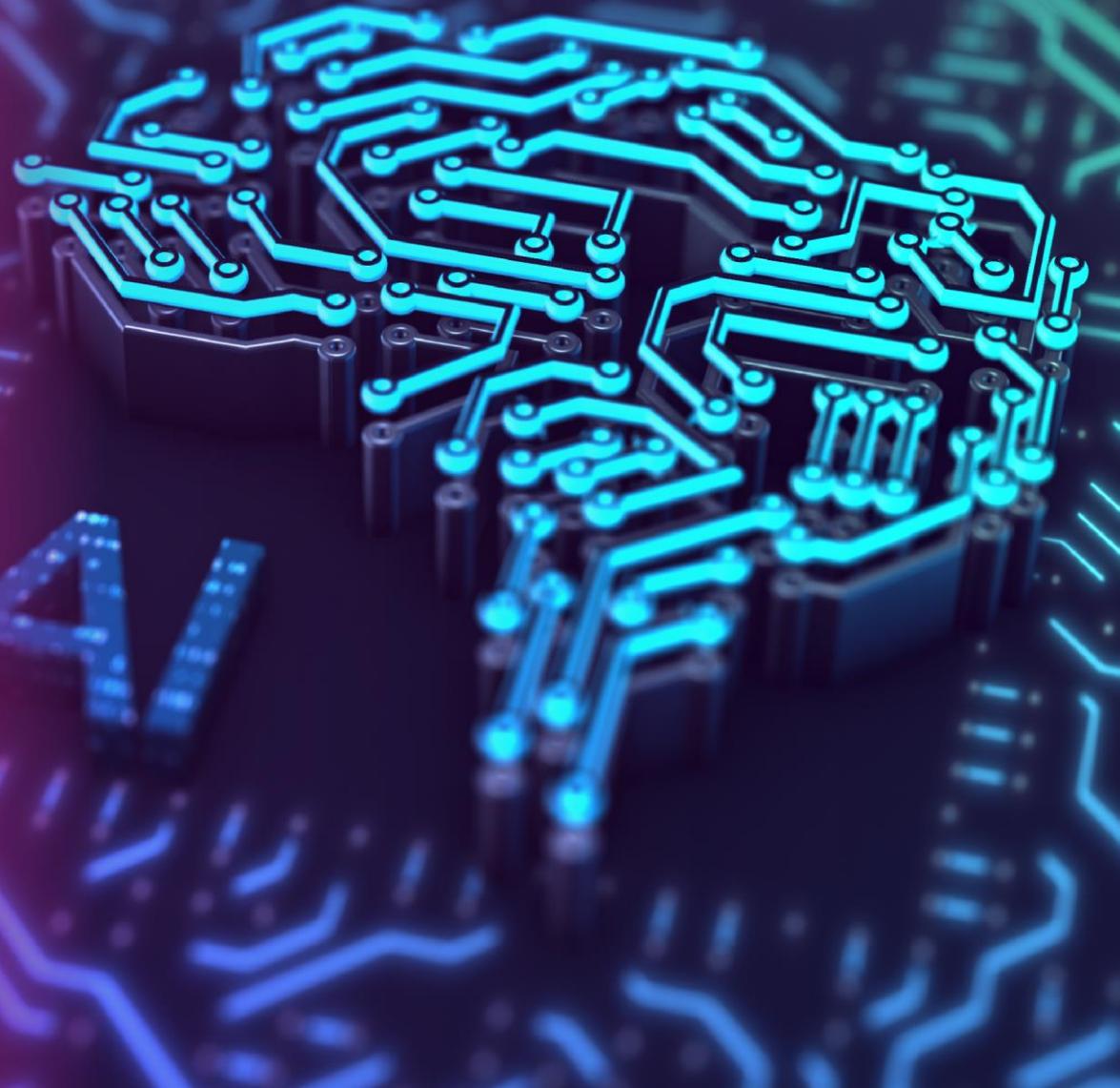
# Artificial Intelligence I (Technology Aspect)

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# Module Outline

1. Importance of machine learning
2. How neural network works
3. Applications of artificial intelligence: Speech enhancement and learning analytics
4. Challenges associated with artificial intelligence



# Part 1: Importance of Machine Learning



# Artificial Intelligence

- Artificial intelligence is the **science and engineering** of making intelligent machines, especially intelligent computer programs.
- Intelligence: Perceive, analyse, react
- Ideal goal is to have systems
  - **Think** rationally
  - **Act** rationally



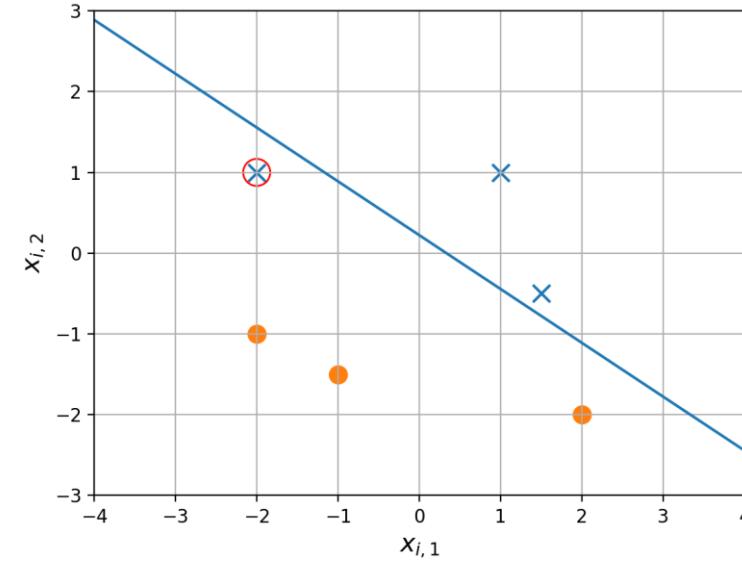
# Background: Machine Learning

- Machine learning is a method of **data analysis** that **automates analytical model building**.
- **Types of machine learning:**
  - Supervised learning *label with access*
  - Unsupervised learning *no label*
  - Semi-supervised learning *small labeled more unlabeled*
- In 1990s, work on machine learning gradually shifted from **knowledge-driven** to **data-driven approaches**.
- Technological companies began to tap into machine learning and started developing algorithms for their applications.



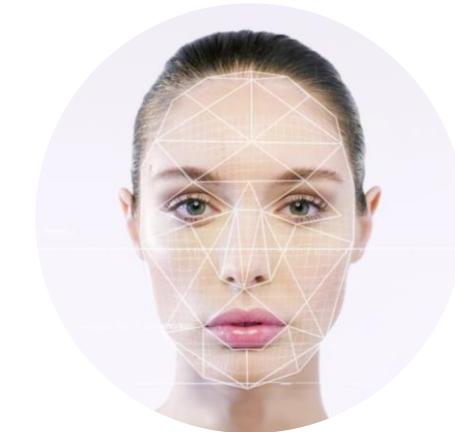
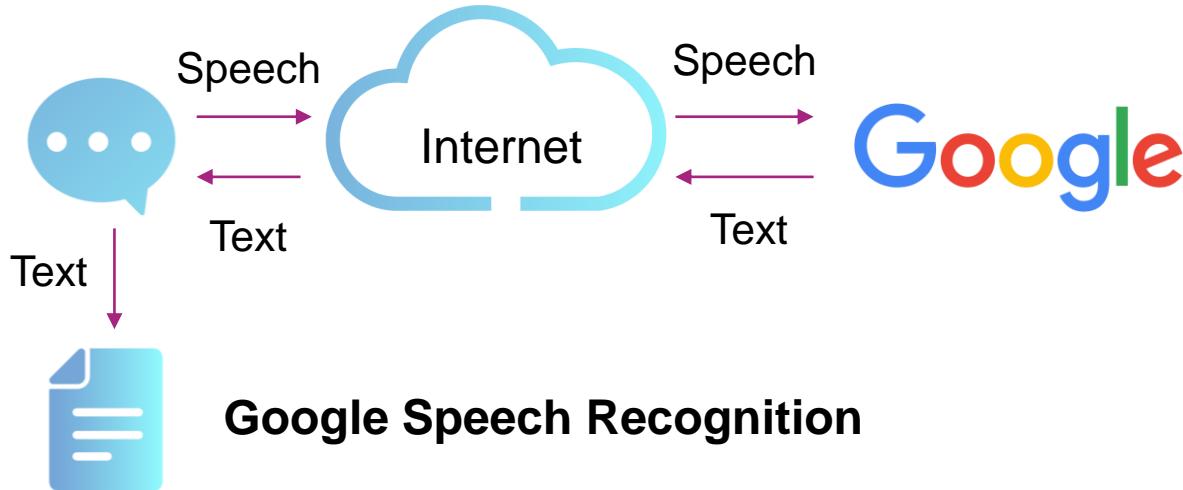
# Why is Machine Learning Important?

- Machine learning is responsible for some of the **most significant advancements** in technology.
- Algorithms are trained via **statistical methods** to make classifications or predictions.
- These insights help to **drive decision making** within applications and businesses.



# Driving Forces of Machine Learning

- **Cheaper** memory allows storage of massive amounts of data.
- Advanced graphics processing units (e.g., NVIDIA) are developed, offering **faster processing power**.
- Technology companies **fuelled** the expansion of machine learning into various sectors.



Facebook DeepFace Recognition

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John Thornhill  
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# Machine Learning is EVERYWHERE



- Credit card fraud detection
- Anti-money laundering



- Price and distribution network optimisation



- Health status monitoring and tracking



- Predicting ICU transfers



- Flight prediction
- Weather condition prediction



- Cryptocurrency prediction

# Will Machine Learning Ever Die Down?

- Machine learning is rapidly **evolving**.
- New machine learning methods will be developed to empower **advanced analytics**.
- Adoption of machine learning in businesses will **increase significantly**.
- Leading technology companies are **automating** machine learning for greater impact.



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