



Artificial Intelligence

IUT AI Student Chapter

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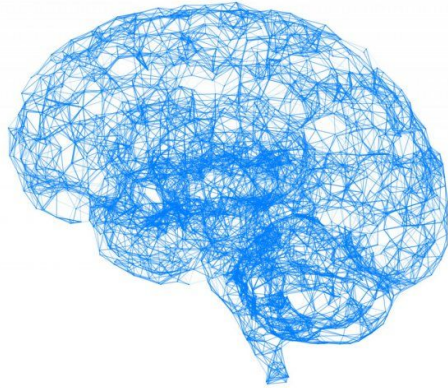


So, What is Artificial Intelligence?



The ability of a digital computer to perform tasks commonly associated with intelligent beings.

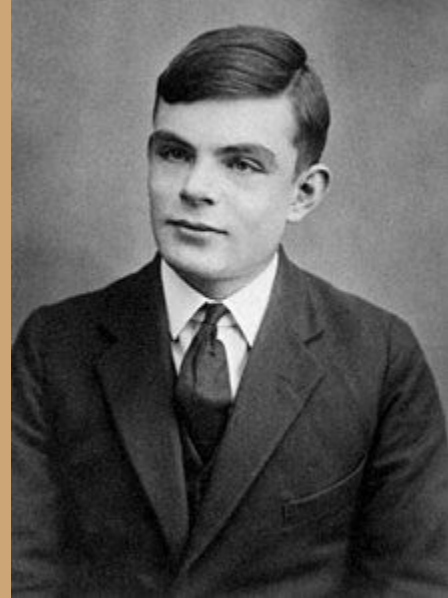
Ok, What is Intelligence ?



- Learning
- Reasoning
- Problem solving
- Perception
- Using language.

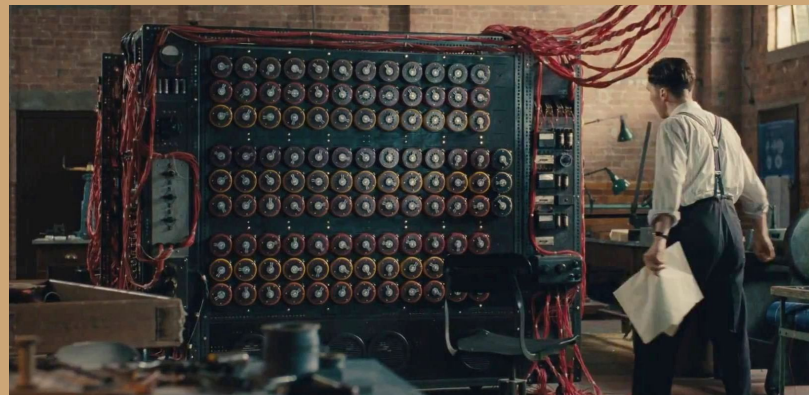
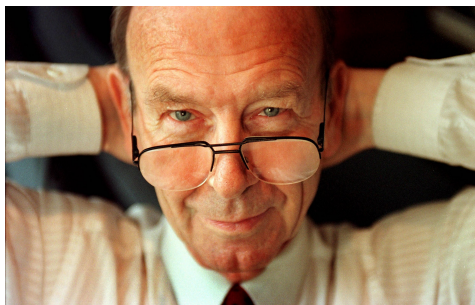
History of AI

The earliest substantial work in the field of artificial intelligence was done in the mid-20th century by the British logician and computer pioneer Alan Mathison Turing.



AI pioneers

Donald Michie (who later founded the Department of Machine Intelligence and Perception at the University of Edinburgh)



The Turing Test

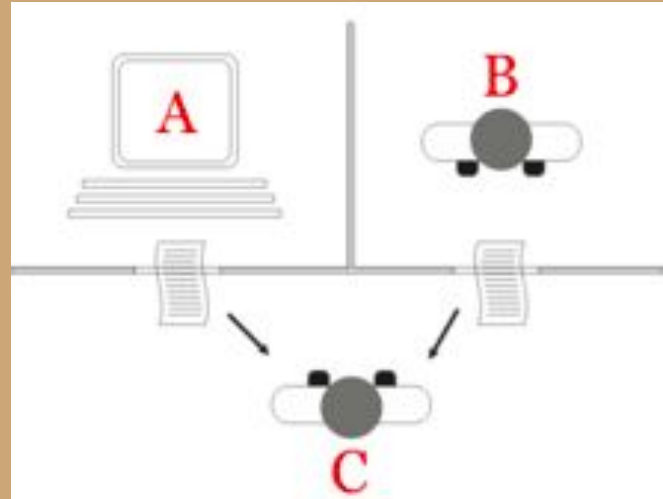
How to check if our system is intelligent?



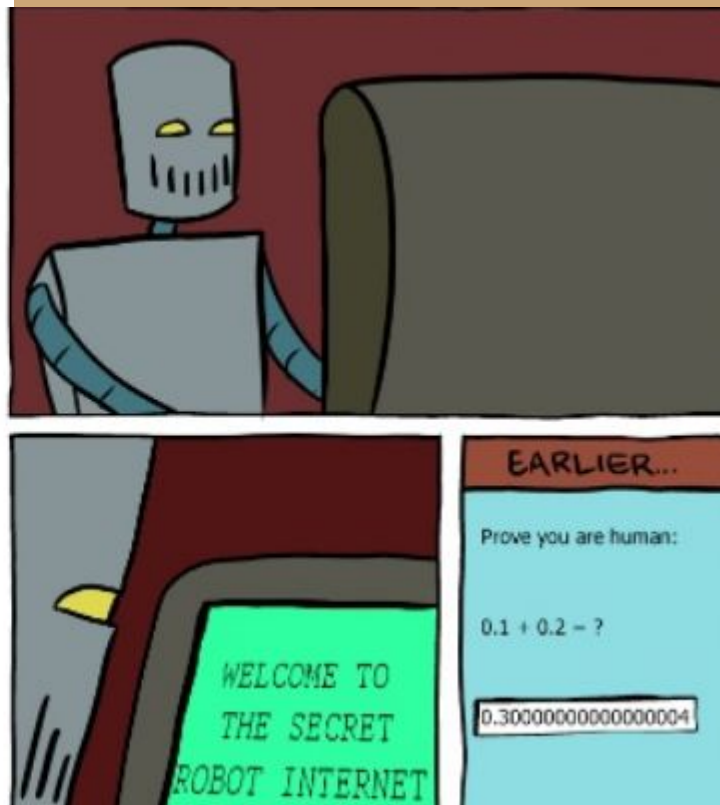
This test involves three participants: a **computer**, a **human interrogator**, and a **human foil**.

The Computer, The Interrogator and The Foil


- keyboard and display screen.
- The interrogator may ask any questions he or she likes
- The computer is permitted to force a wrong identification.
- The foil must help the interrogator to make a correct identification.




Turing test



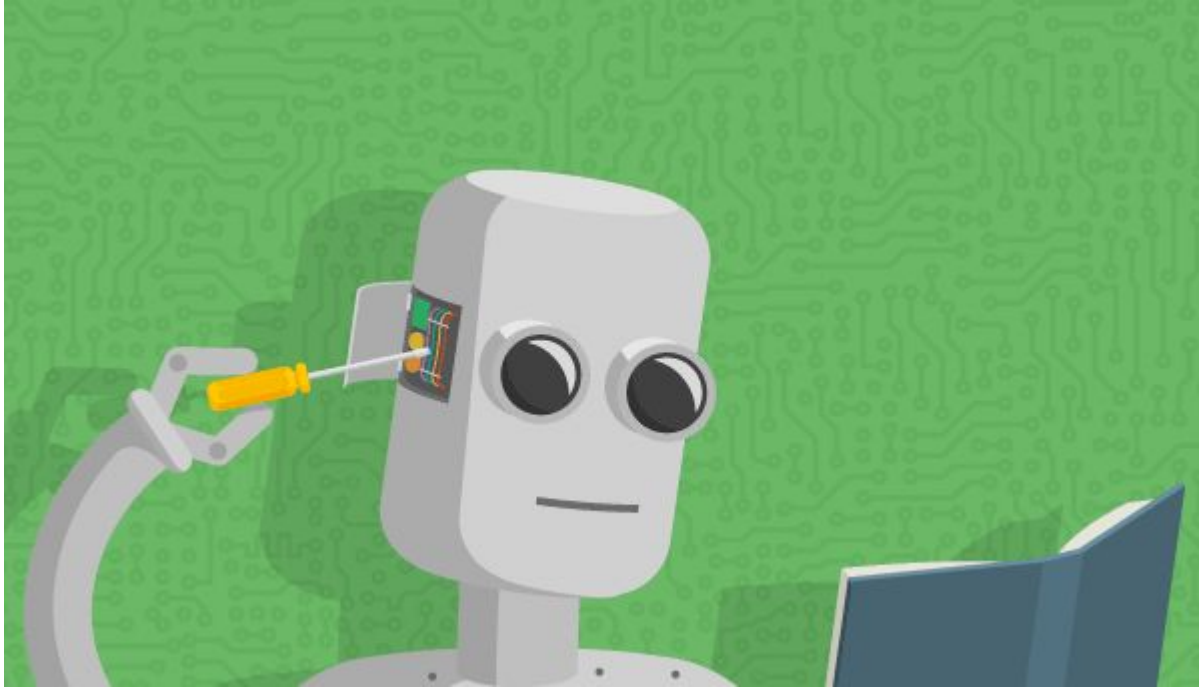


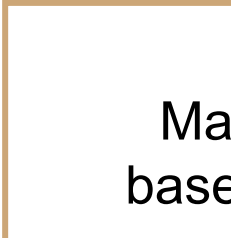


Artificial Intelligence -> Sub-Symbolic AI
-> Soft Computing -> Machine Learning




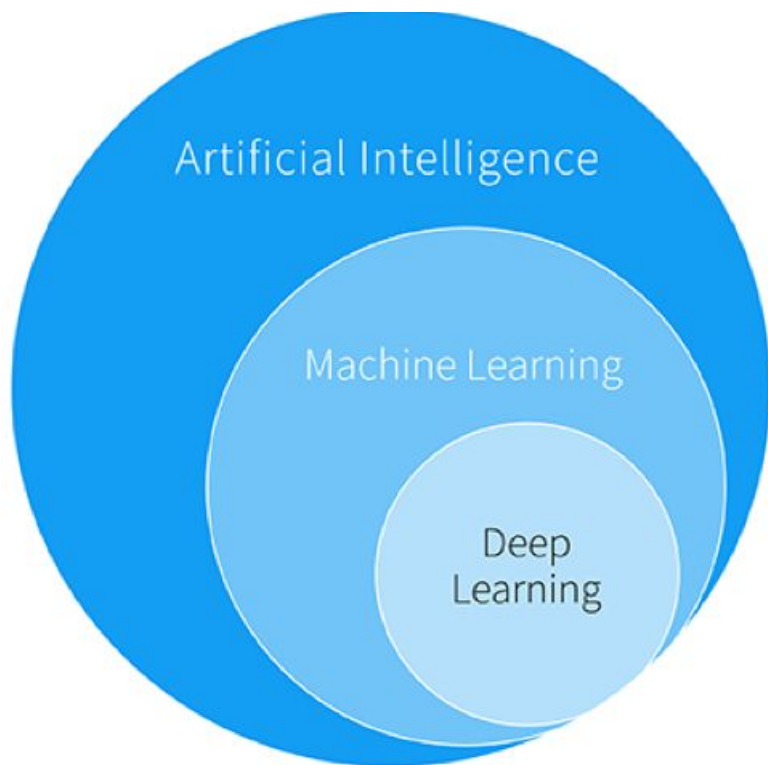
Machine Learning





Machine learning is based on the idea that we can build machines to process data and learn on their own, without our constant supervision.





Artificial Intelligence

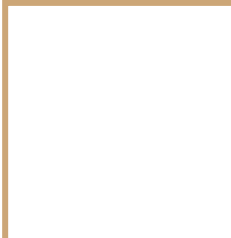
The theory and development of computer systems able to perform tasks that normally require human intelligence.

Machine Learning


A field of computer science that uses statistical techniques to give computer systems the ability to “learn” (e.g., progressively improve performance on a specific task) with data, without being explicitly programmed.

Deep Learning

(also known as **deep structured learning** or **hierarchical learning**) is part of a broader family of machine learning methods based on learning data representations, as opposed to task-specific algorithms.



Machine Learning Applications



Convolutional Neural Networks (CNNs)

- Image Recognition
- Video Analysis

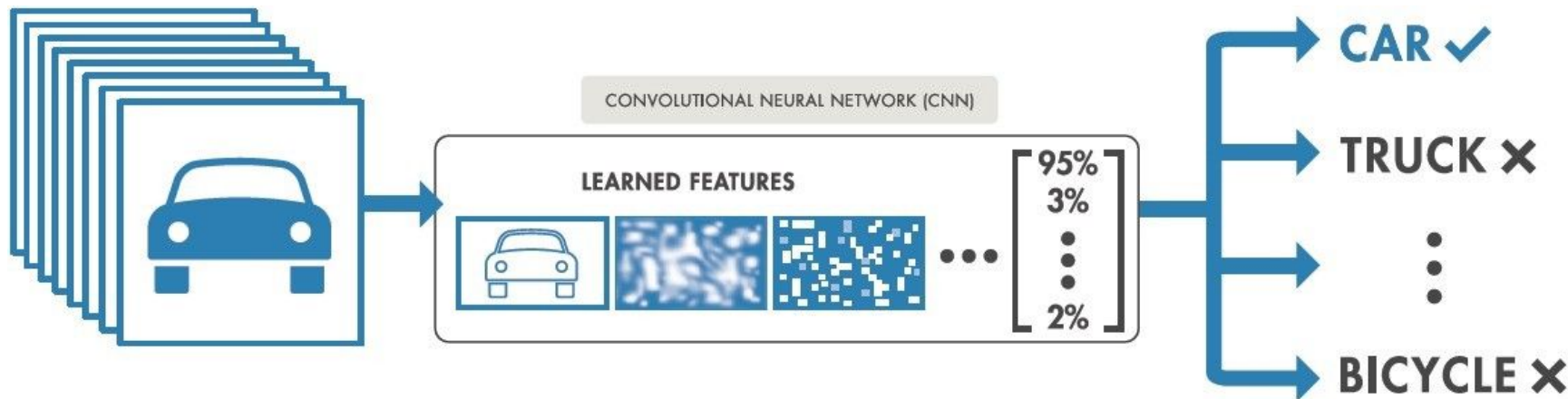


Image Recognition

- Face Recognition
- Face Emotion Recognition
- Object Detection

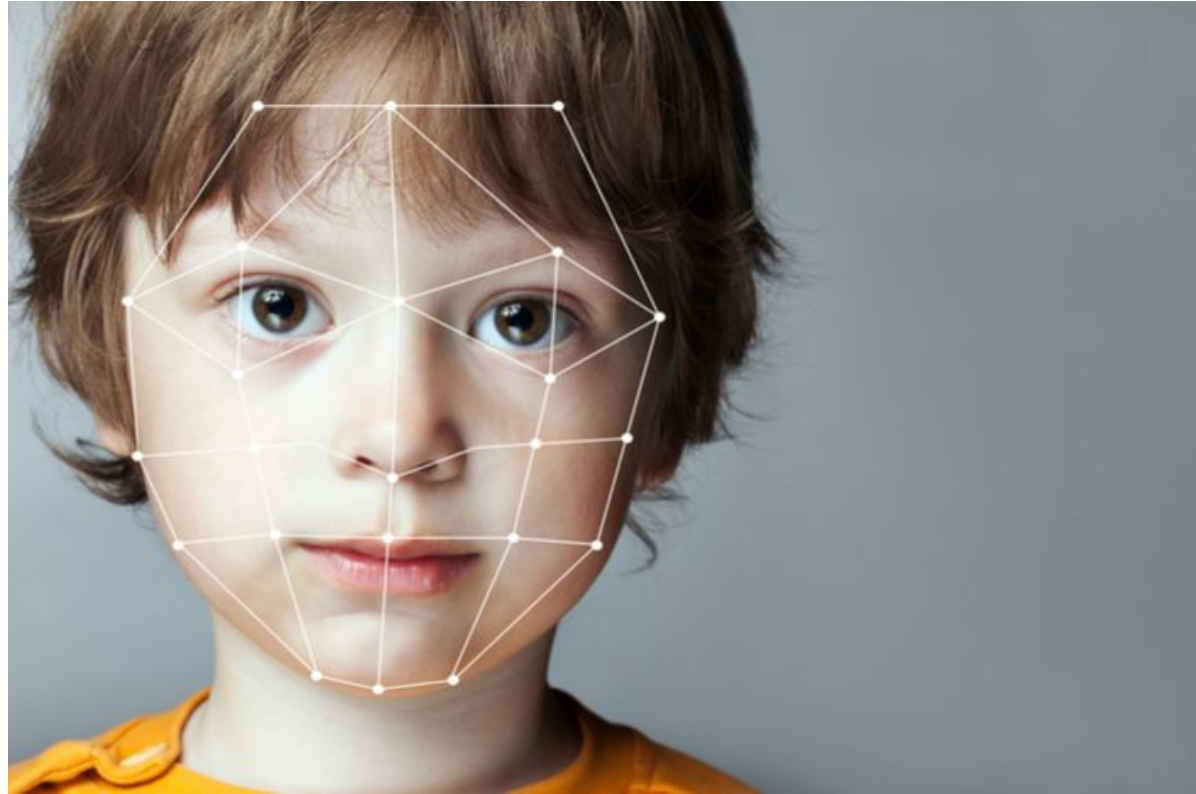


Image Recognition

- Face Emotion Recognition

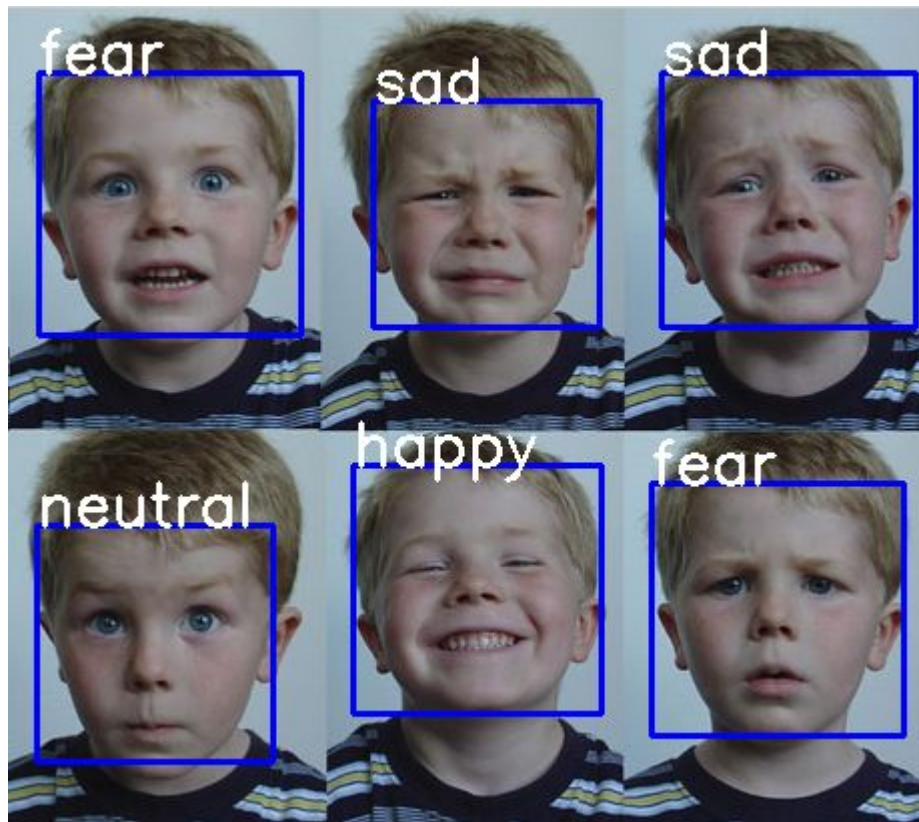
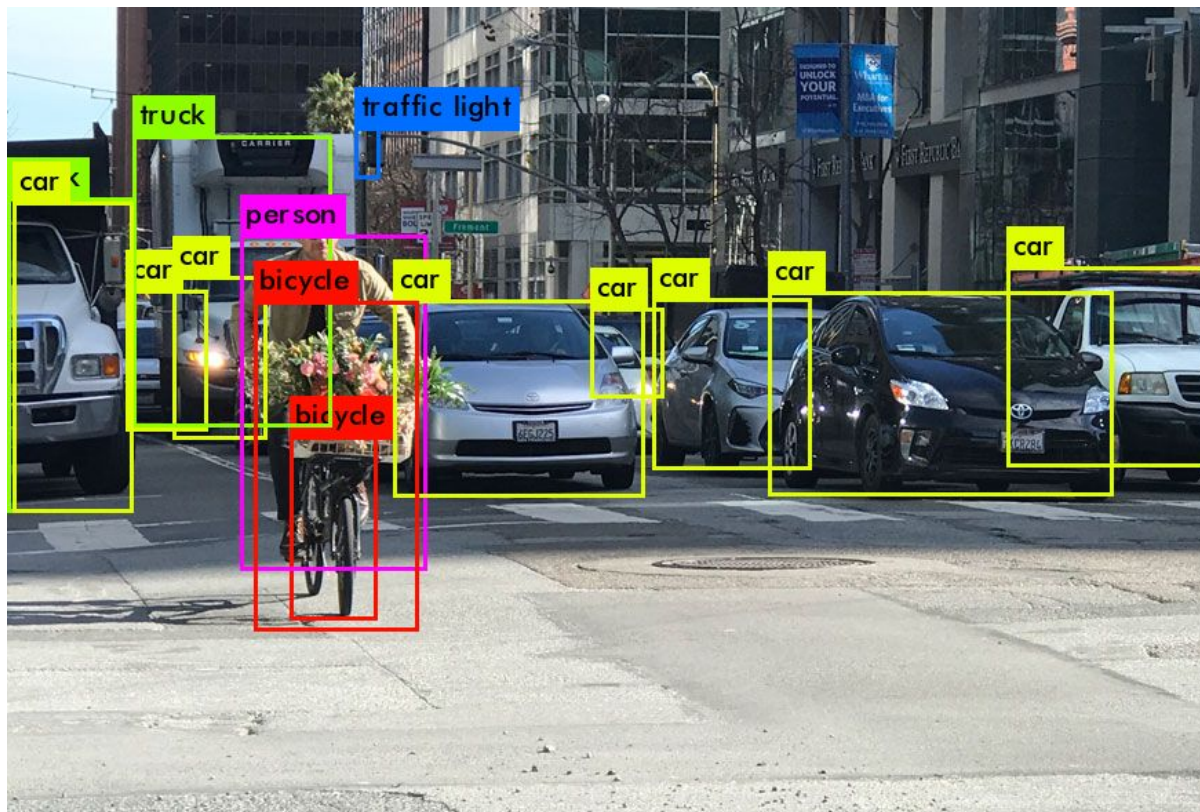


Image Recognition

- Object Detection



Video Analysis

wheelchair basketball: 0.829
basketball: 0.114
streetball: 0.020



ML in Bioinformatics

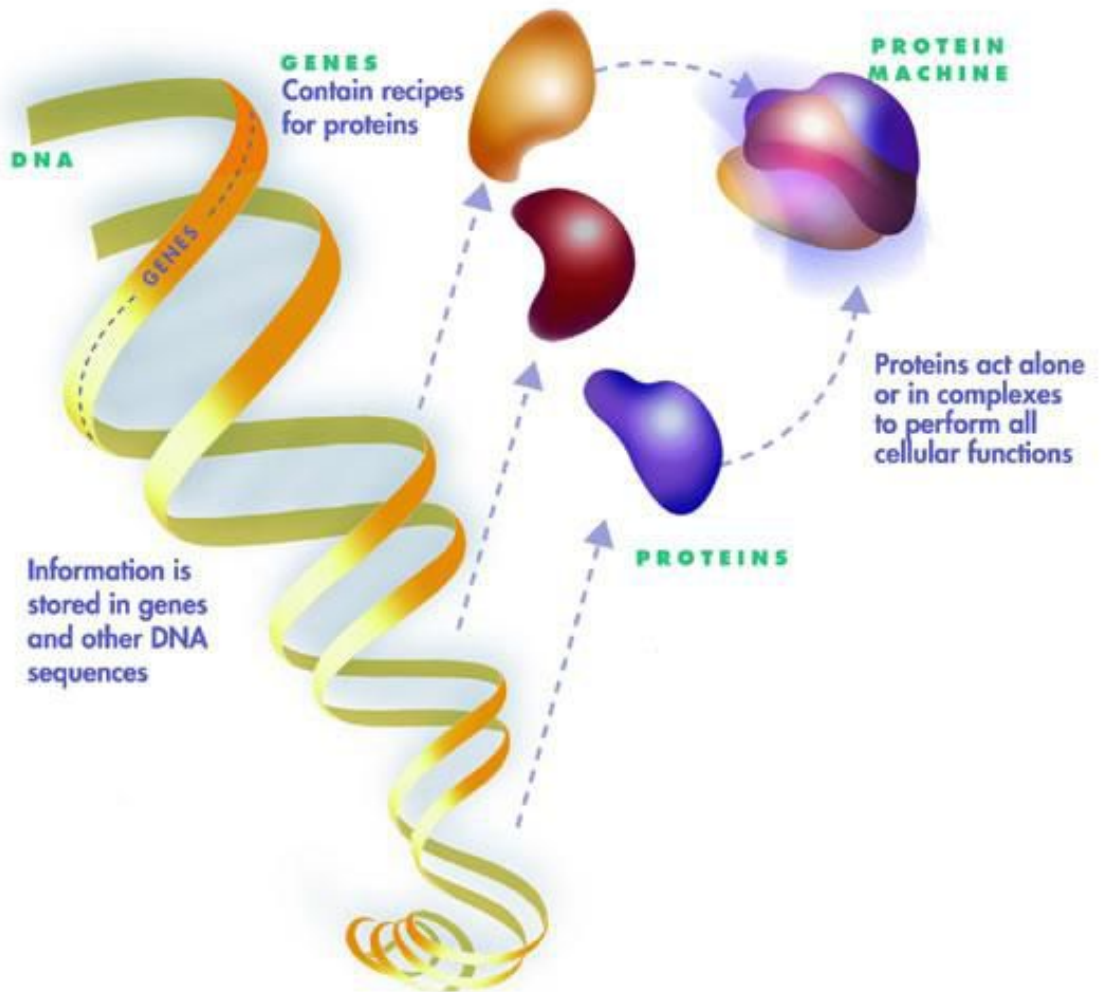
- Genomics
- Proteomics
- Microarrays
- Systems Biology



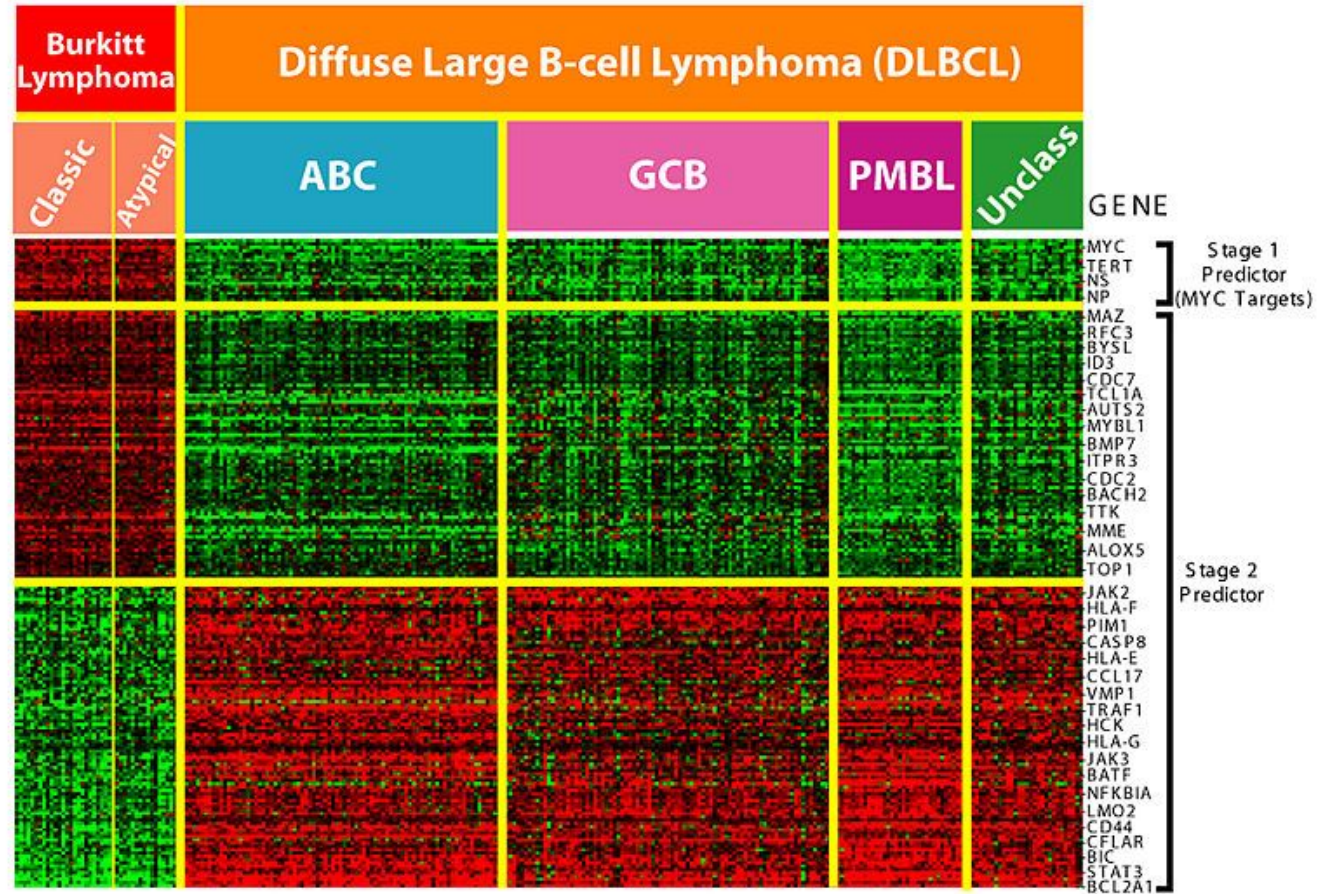


Genomics

Proteomics



Microarrays

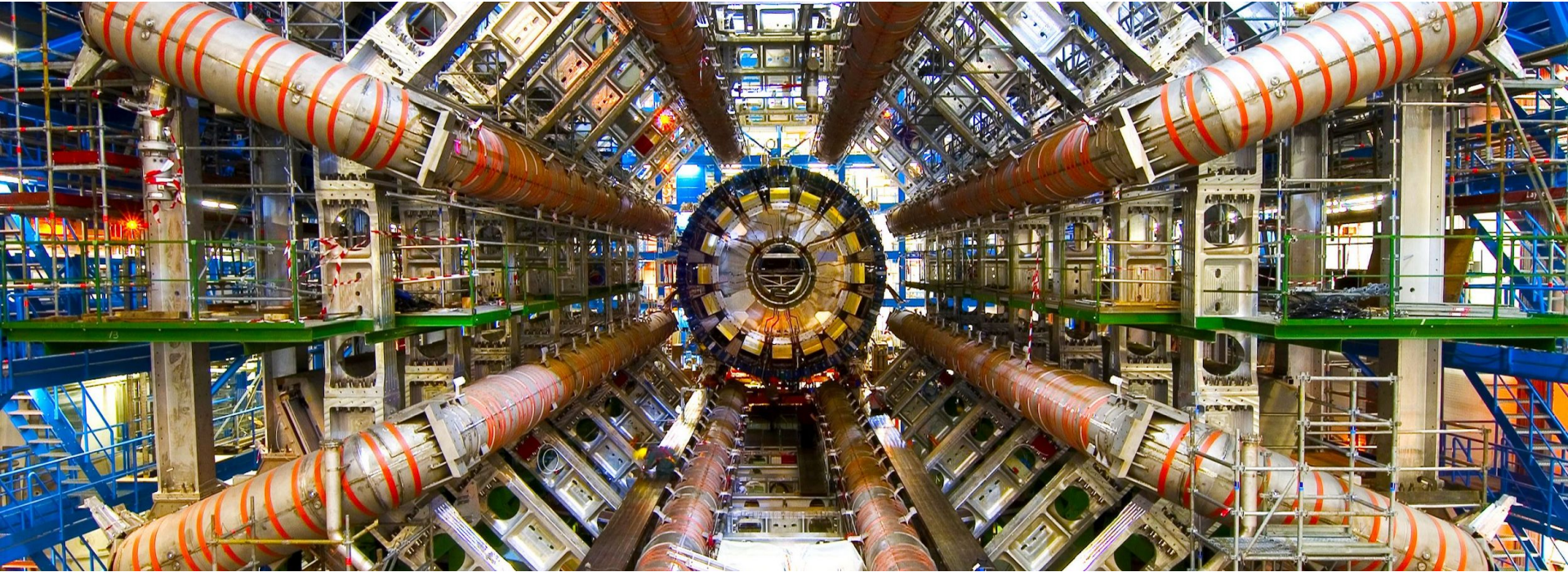




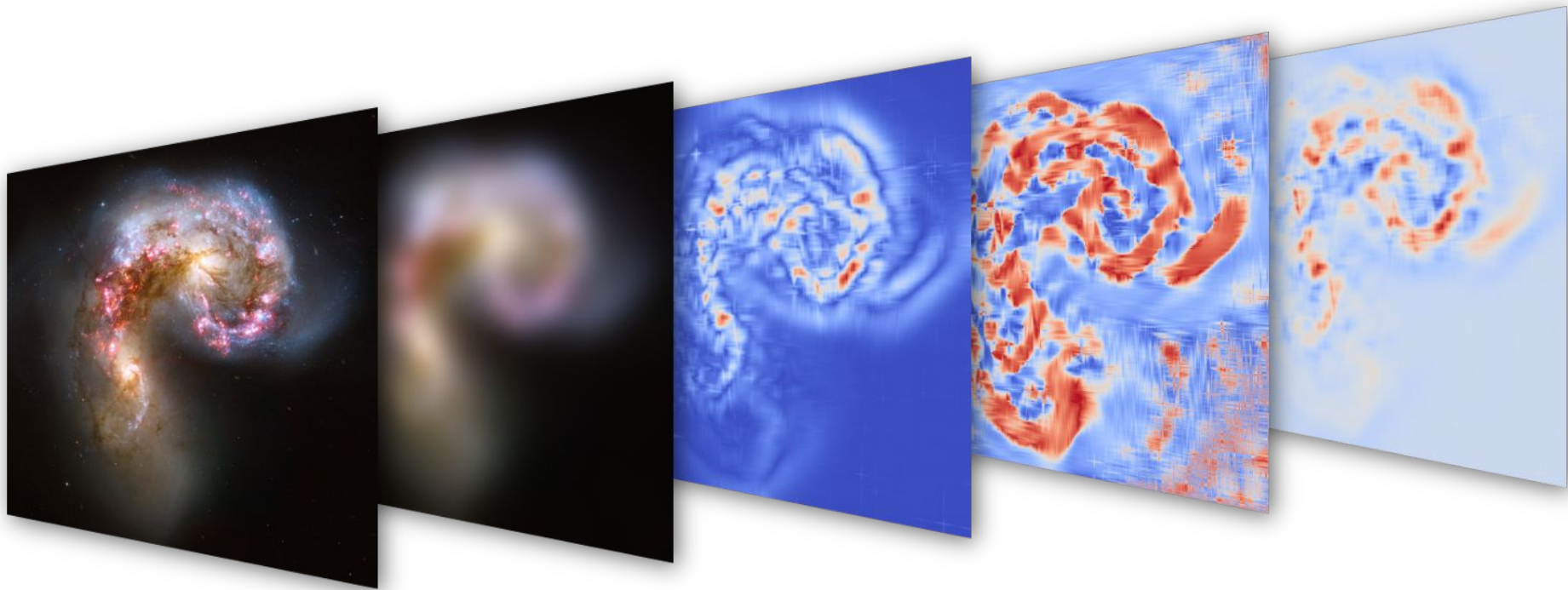
The image features a central dark gray circle containing the text "Systems Biology" in white. To the left of the circle is a network graph with green and red nodes and edges, and to the right is a network graph with red, blue, and yellow nodes and edges. Both graphs are dense and complex, with many nodes and edges connecting them.

Systems Biology

ML @ CERN



ML in Astrophysics & Cosmology



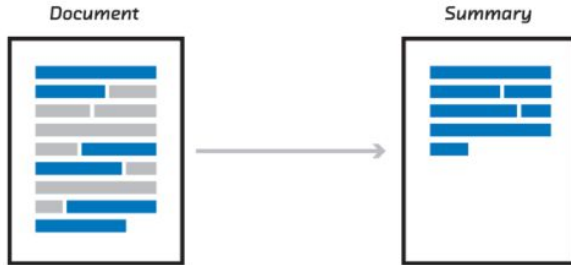
Natural Language Processing

- Machine Translation
- Named Entity Recognition
- Natural Language Generation
- Question Answering
- Sentiment Analysis
- Chatbots
- Text Summarization



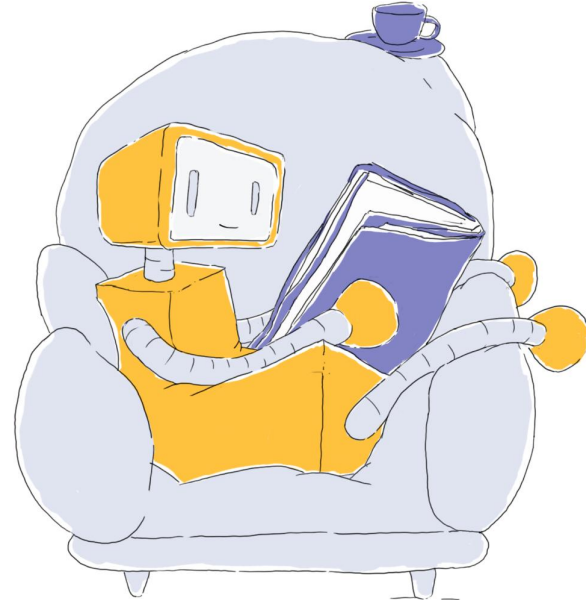
Text Summarization

- Media Monitoring
- Email Overload
- Research
- Meetings



Chatbots

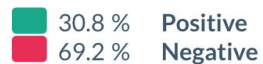
- Customer Service
- Medical Guidance



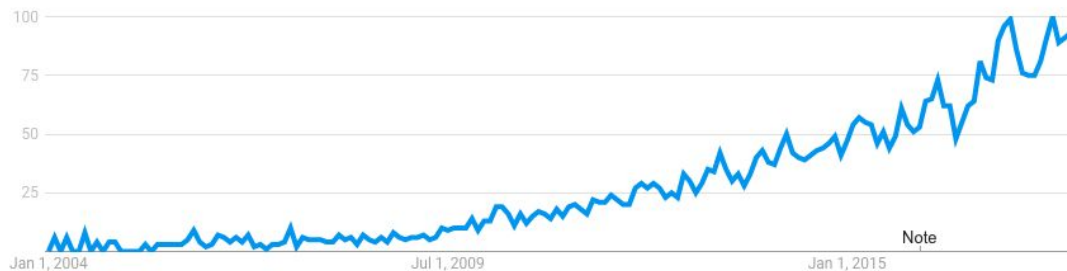
Sentiment Analysis

- Resource Management
- Reputation Management
- Social Media

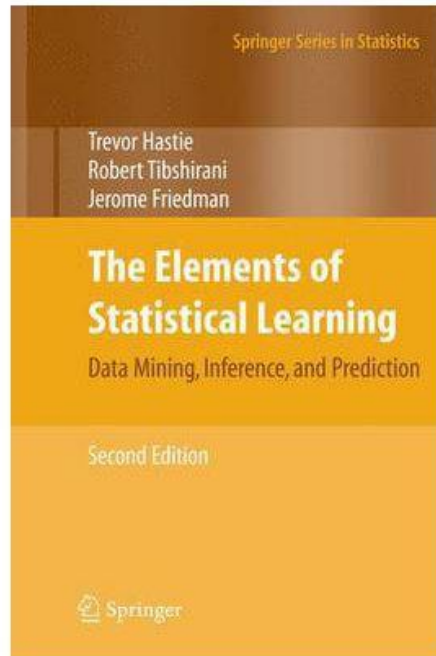
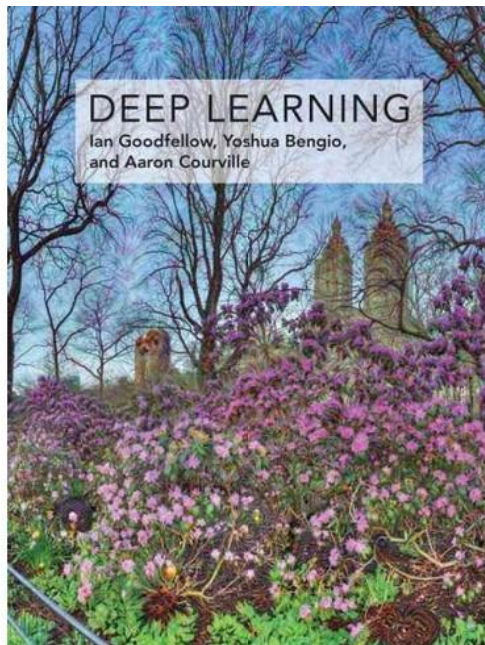
Sentiment



Interest over time ?



معرفی کتاب



معرفی دوره‌های آنلاین

- Machine Learning by Andrew Ng Coursera
- Deep Learning Specialization by Andrew Ng Coursera
 - Neural Networks and Deep Learning
 - Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
 - Structuring Machine Learning Projects
 - Convolutional Neural Networks
 - Sequence Models

معرفی دوره های آنلاین

- **Advanced Machine Learning Specialization** by National Research University Higher School of Economics
 - Introduction to Deep Learning
 - Bayesian Methods for Machine Learning
 - Practical Reinforcement Learning
 - Deep Learning in Computer Vision
 - Natural Language Processing
 - Addressing Large Hadron Collider Challenges by Machine Learning



هسته هوش مصنوعی

فعالیت ها :

- گروه مطالعاتی هفتگی
- برگزاری دوره های یادگیری ماشین
- همکاری با اساتید
- شرکت در مسابقه هایی مثل kaggle و ...

کانال تلگرام هسته ی هوش مصنوعی و انجمن علمی کامپیوتر



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