How will AI change our daily life in the future?

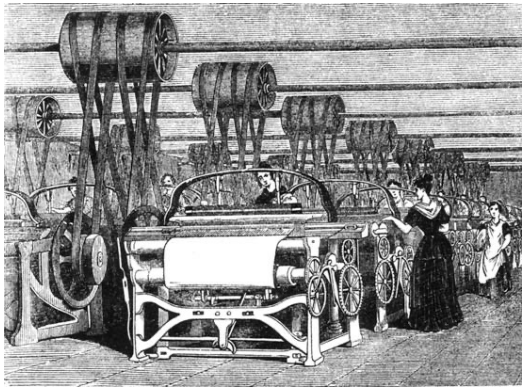
Tsz-Chiu Au

chiu@unist.ac.kr

Ulsan National Institute of Science and Technology (UNIST)
South Korea

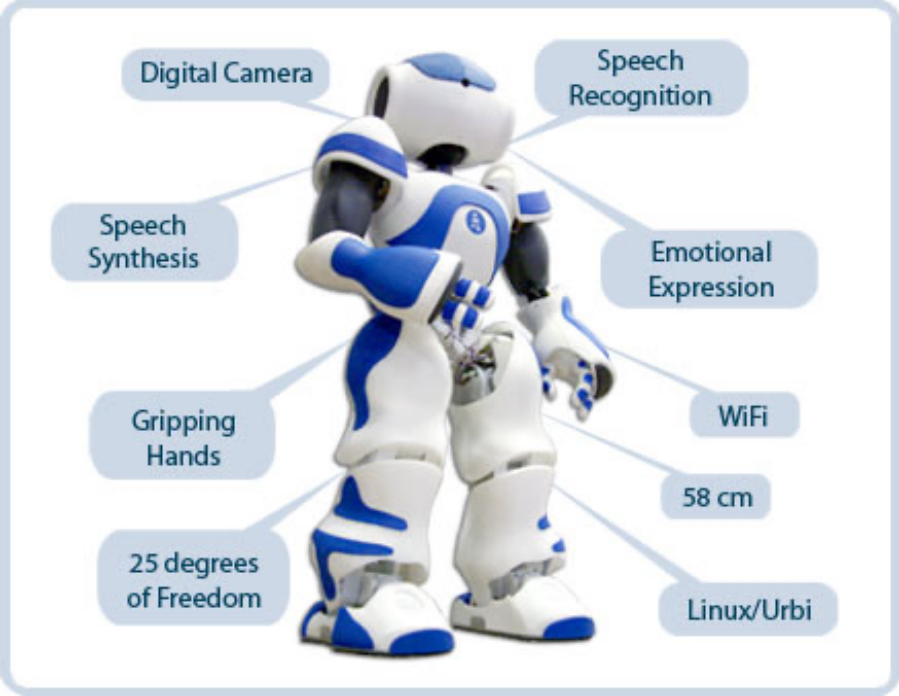
Information Revolution

- The automation of information processing tasks by computers.
- Computer science is the main driving force.
- Artificial Intelligence is the key to the ultimate success.



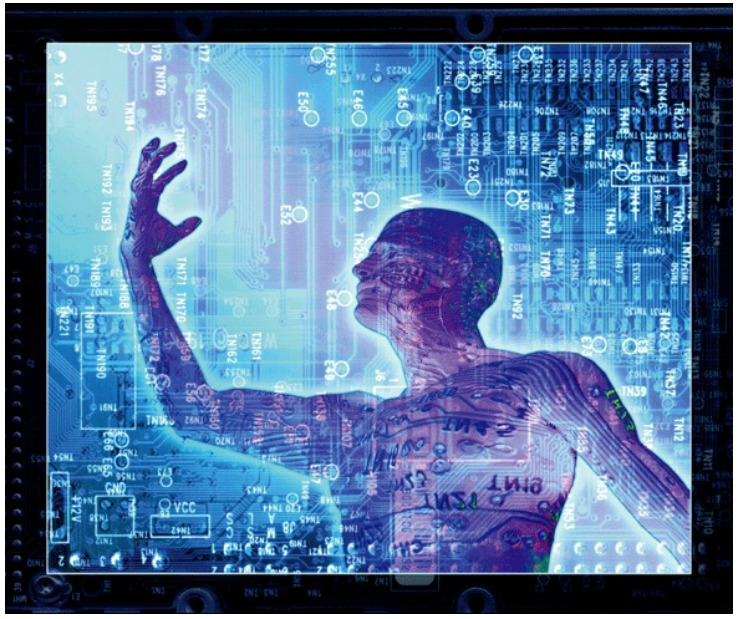
What is Artificial Intelligence?

- Systems that *think* like humans
- Systems that *act* like humans
- Goal: imitate human intelligence



Superintelligence

- Systems that think *better* than humans
- Systems that act *better* than humans
- Goal: achieve a high level of intelligence *beyond* human intelligence.

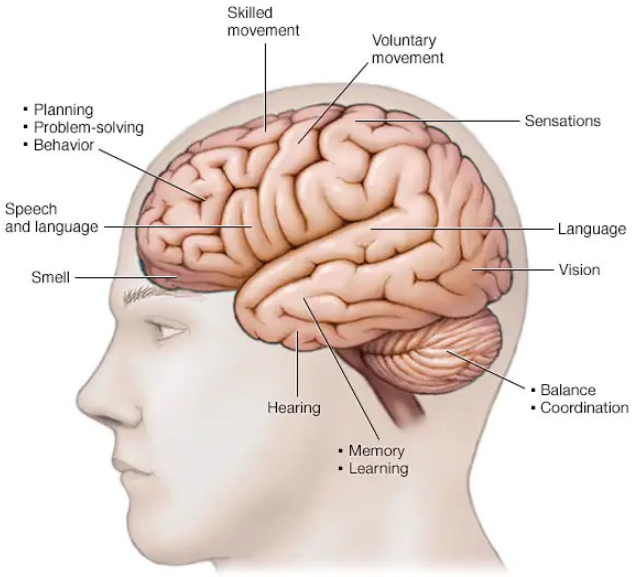


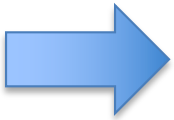
A Short History of AI

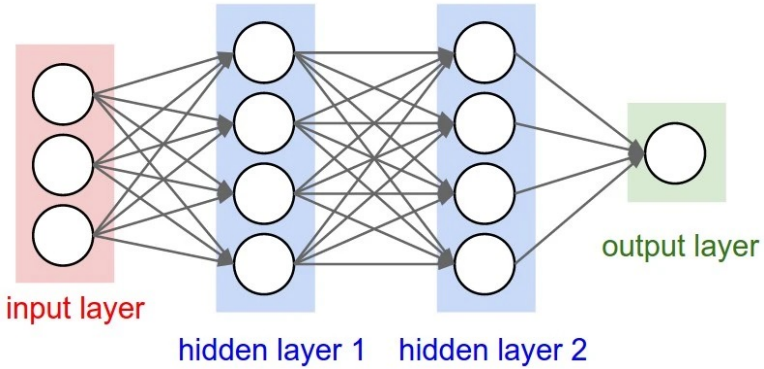
1930s-1940s	Digital computers
1950s-1960s	Machine translation
	Game-playing programs
	Automated theorem proving
1970s	Artificial neural networks
1980s	Expert systems
	Probabilistic reasoning
1990s-2000s	Increasing specialization of the field
	Machine learning
2010s-2020s	Deep learning
	(i.e., large-scale artificial neural networks)

Artificial Neural Networks

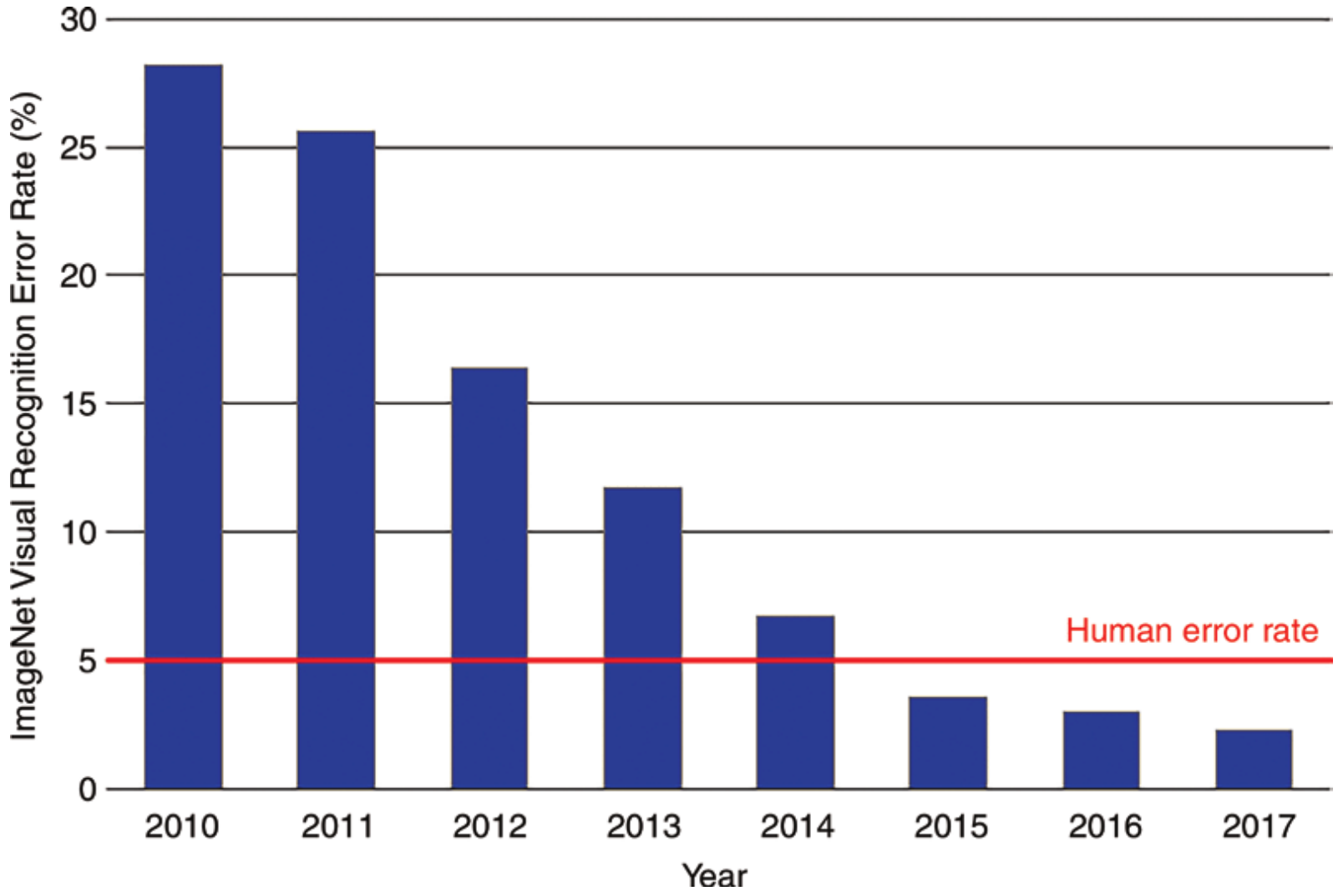
Systems of **artificial neurons** inspired by the biological neural networks that constitute animal brains.





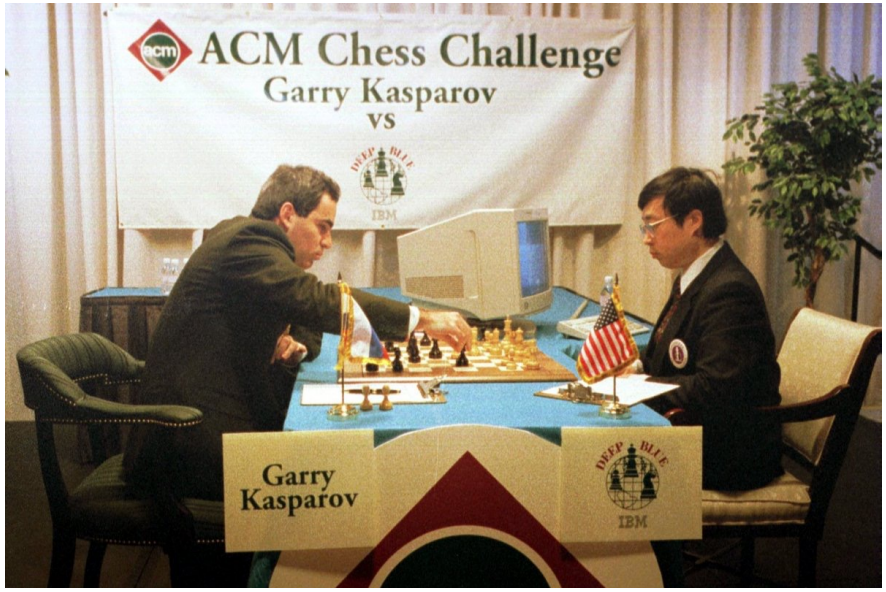


Performance of Visual Recognition

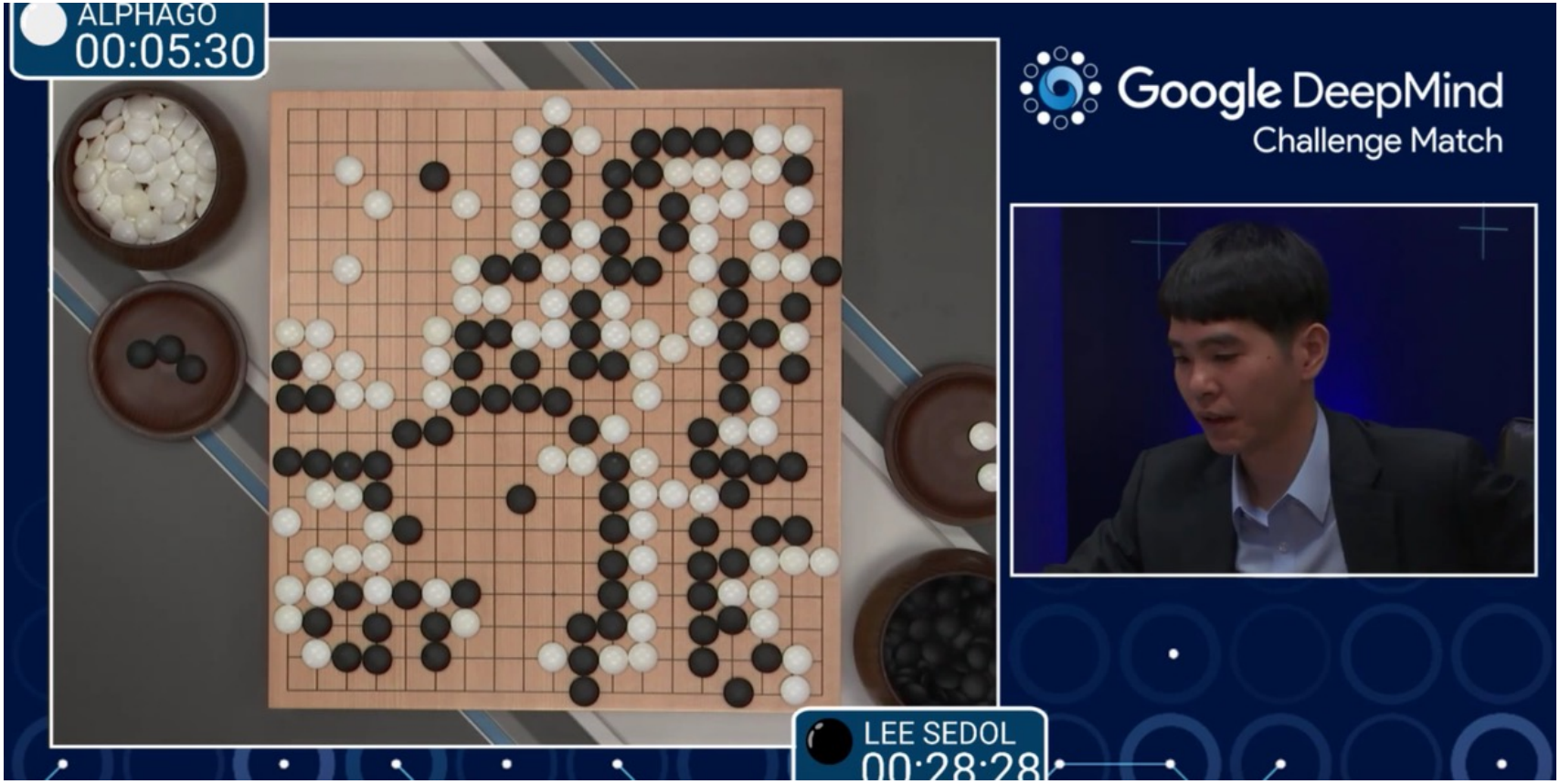


AI for Decision Making

IBM Deep Blue – the Chess Playing Program



Alpha Go


ALPHAGO
00:05:30
Google DeepMind
Challenge Match
LEE SEDOL
00:28:28

IBM Watson – the Question-Answering Machine

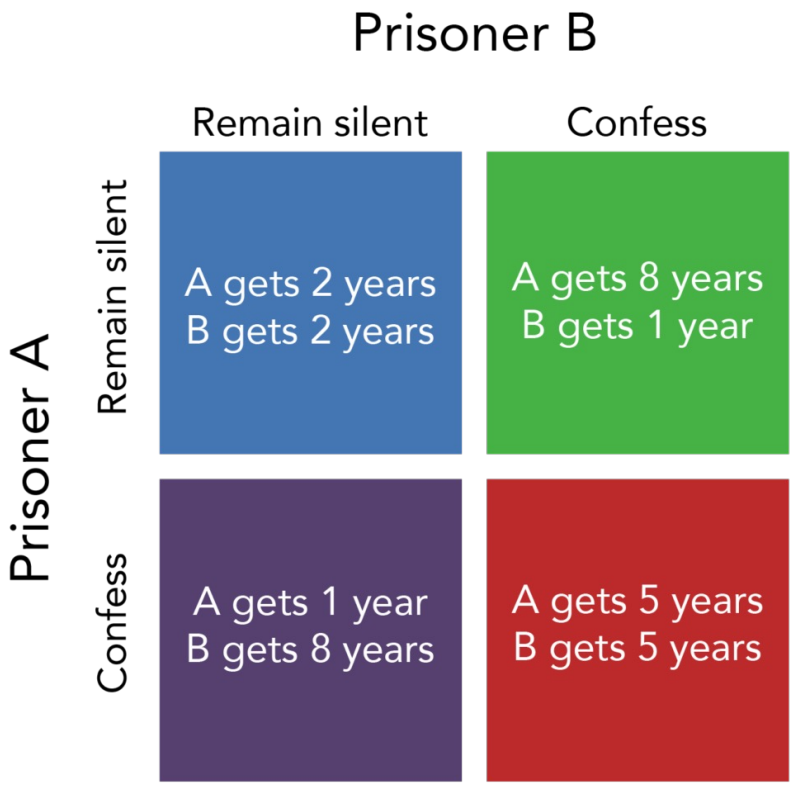
THIS YELLOW CARTOON CHARACTER LIVES IN A PINEAPPLE UNDER THE SEA

Who is SpongeBob?

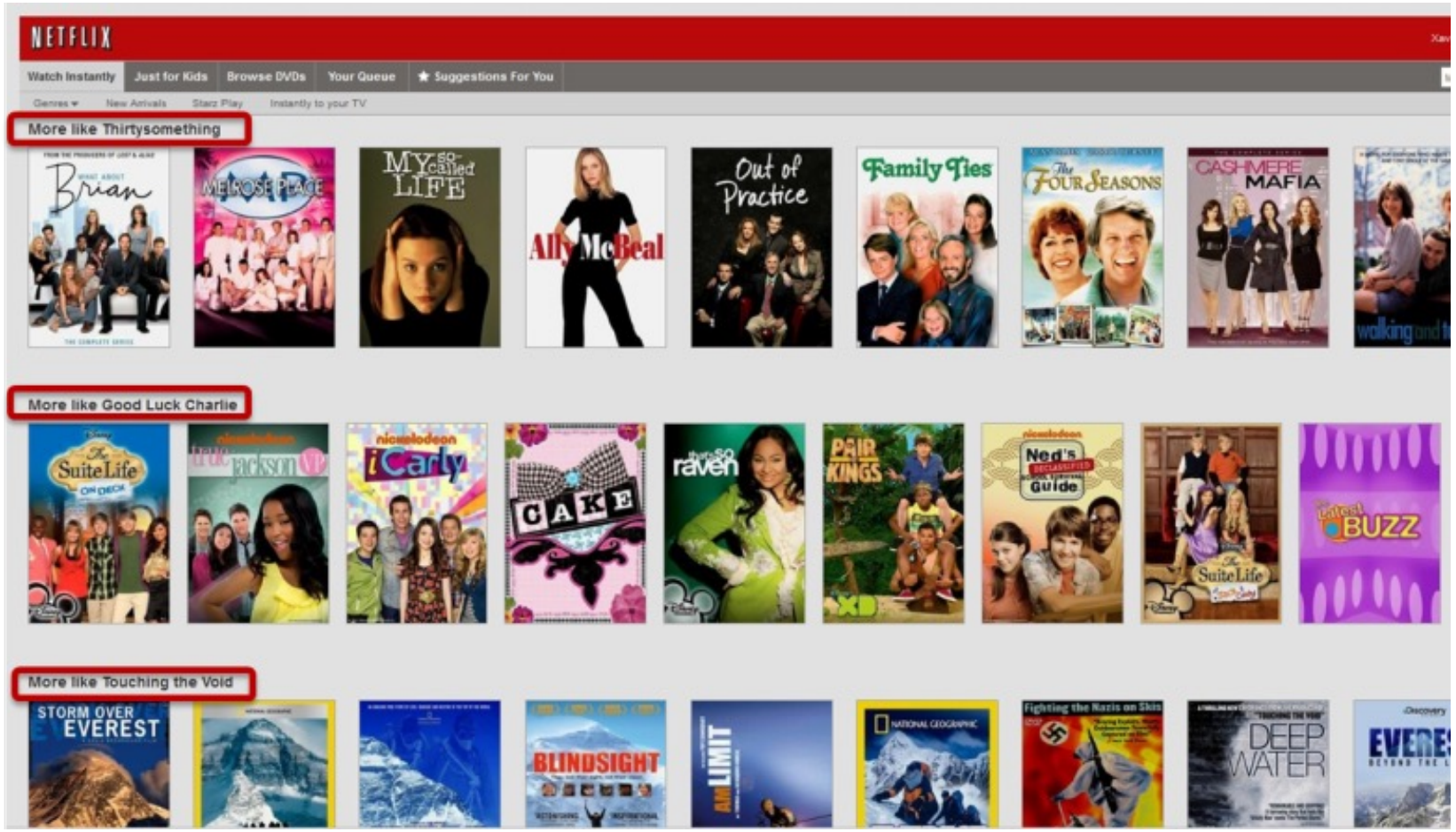
Game Theory and Its Applications

- **How can we design an environment such that players can behave in a desirable way?**
  - » Encourage cooperation
  - » Maximize fairness

Prisoner's Dilemma:



Recommendation Systems



Intelligent Robots

Boston Dynamics

https://www.youtube.com/watch?v=tF4DML7FIWk

Robotic Dog

https://www.youtube.com/watch?v=BMPWxcc-Xbk

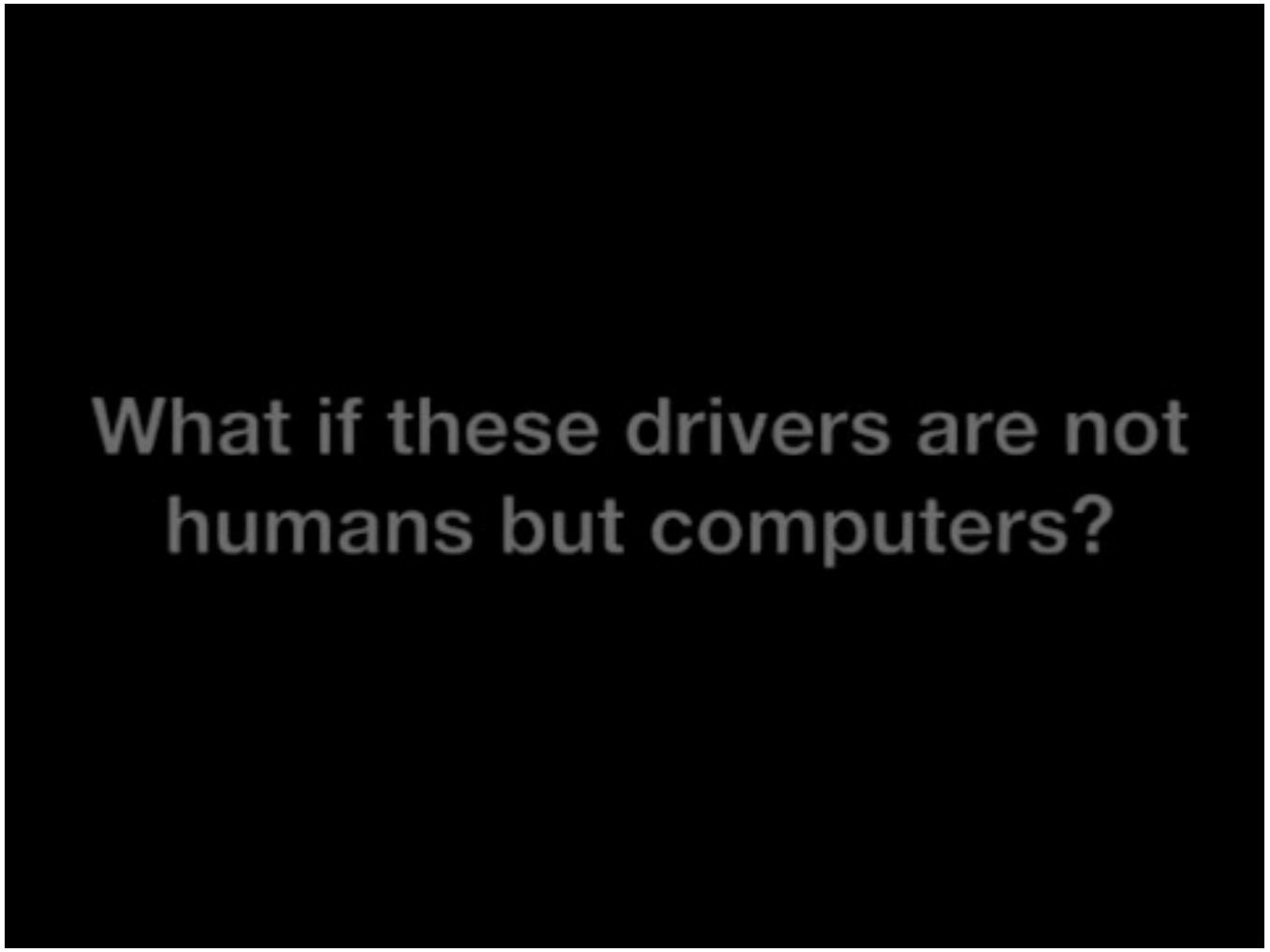
Service Robots

AI for Transportation

Self-driving Cars

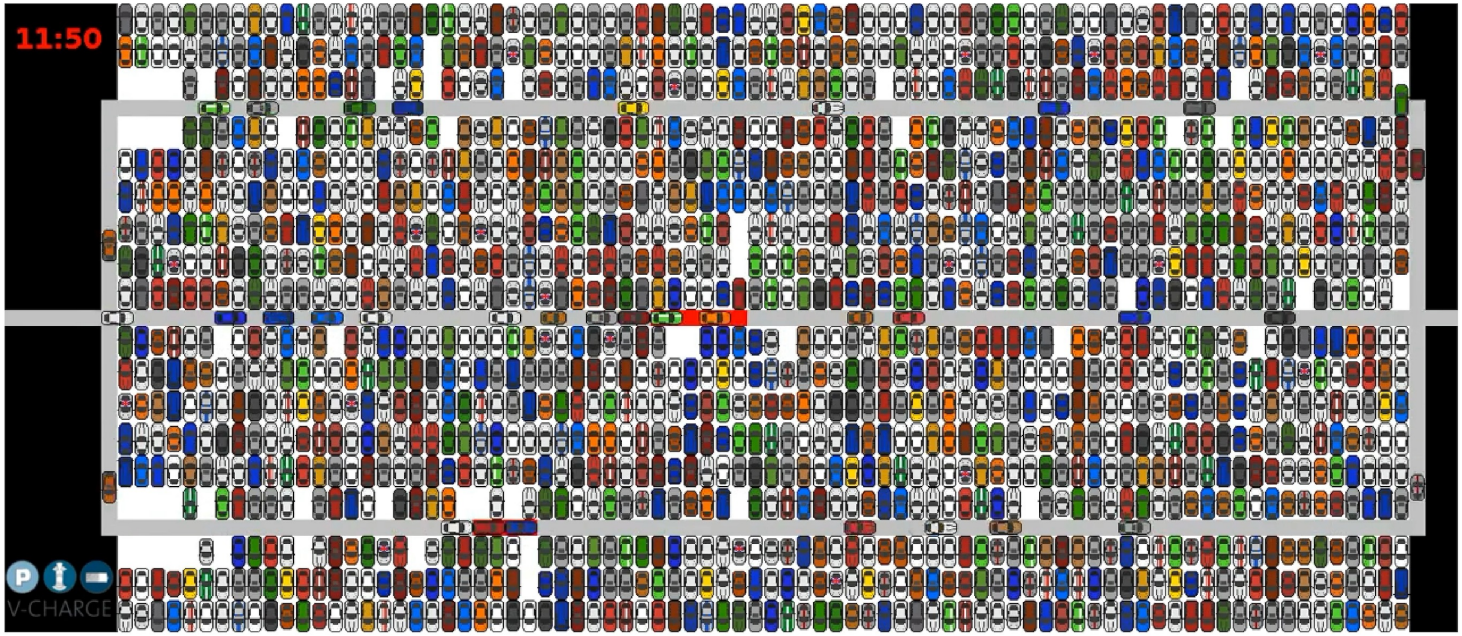
https://www.youtube.com/watch?v=NJDypGjLoSs

Autonomous Traffic Management



Parking Lots for Autonomous Vehicles

High-Density Parking (**HDP**): utilize autonomous driving to greatly increase the capacity of conventional parking lots

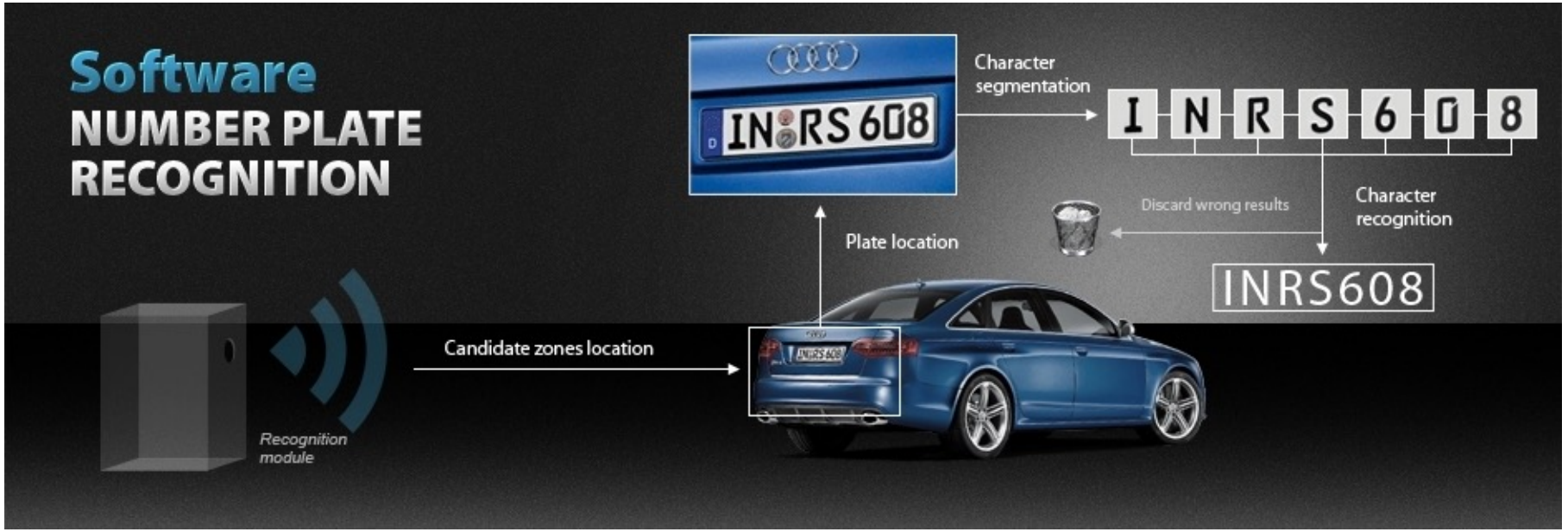


Source: https://www.youtube.com/watch?v=pCzI-l8tsPY

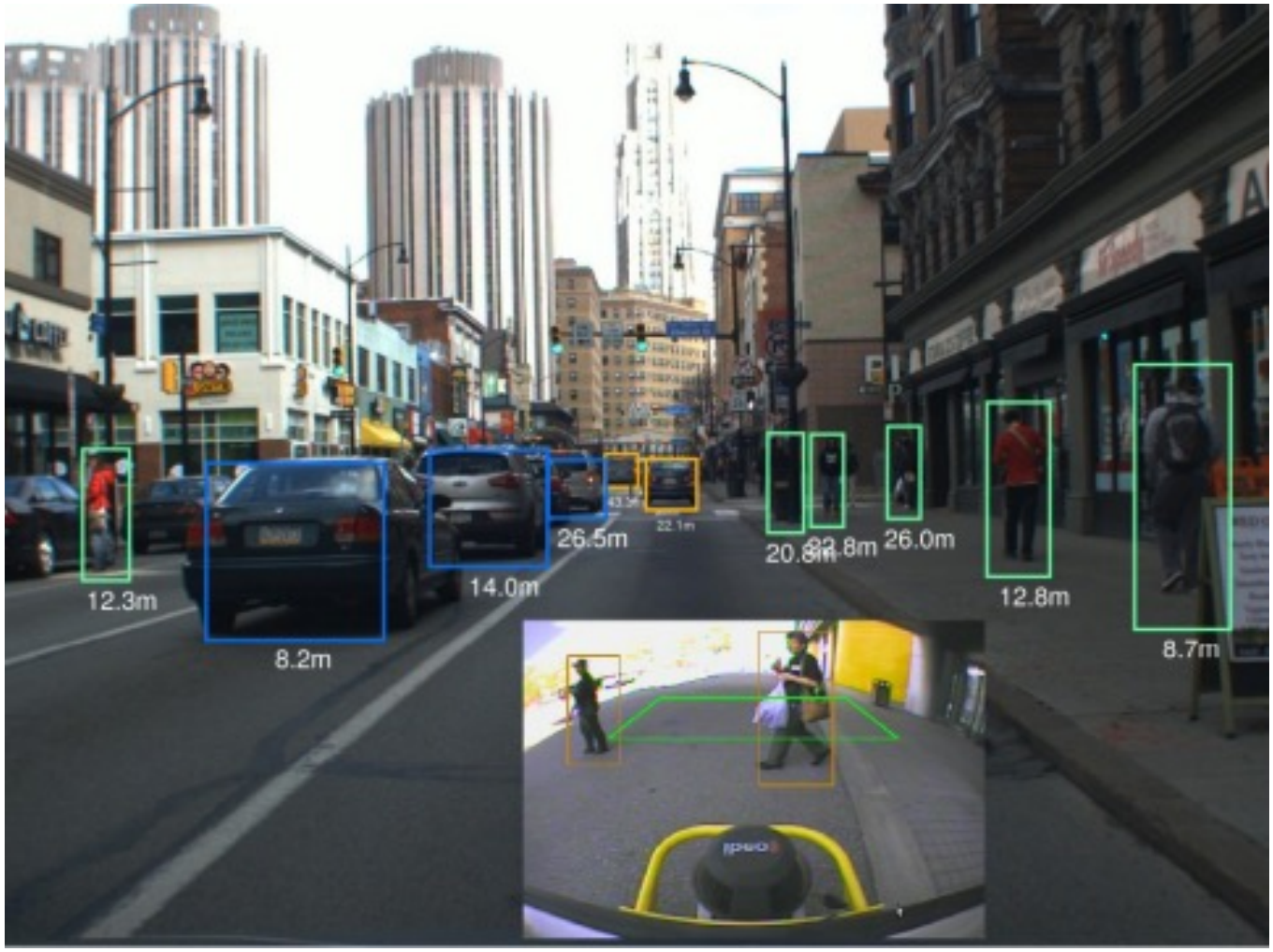
Fully Autonomous Drones

Cognitive Tasks

Text Recognition



Visual Recognition

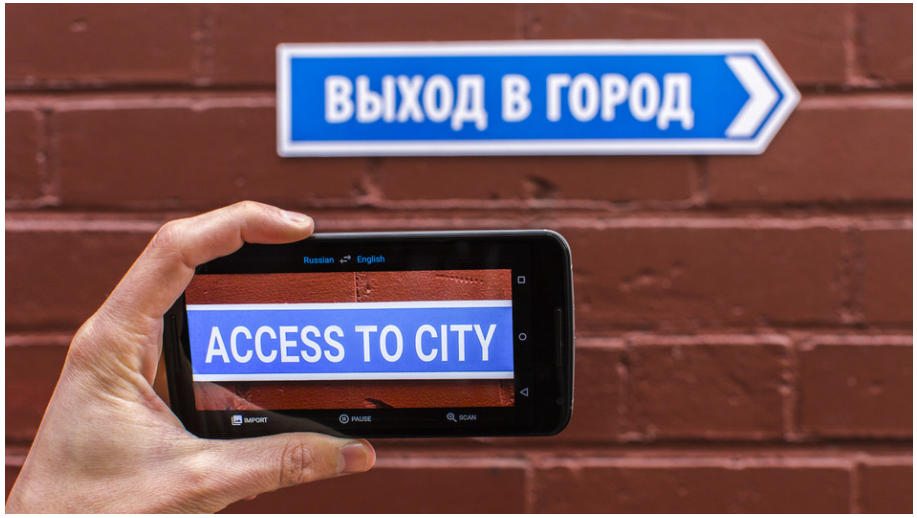


Machine Translation

영어 | 한국어 | 독일어 | 언어 감지 ▾ ⇄ 한국어 | 영어 | 일본어 ▾ 번역하기

We will have one exam and one project throughout the semester. For project, you have to team up with others.

우리는 하나의 시험과 학기에 걸쳐 하나의 프로젝트를해야합니다. 프로젝트의 경우, 다른 사람과 팀을해야합니다.



Speech Recognition

AI for Art and Design

DALLE-2


5. A propaganda poster depicting a cat dressed as
French emperor Napoleon holding a piece of cheese

DALLE-2

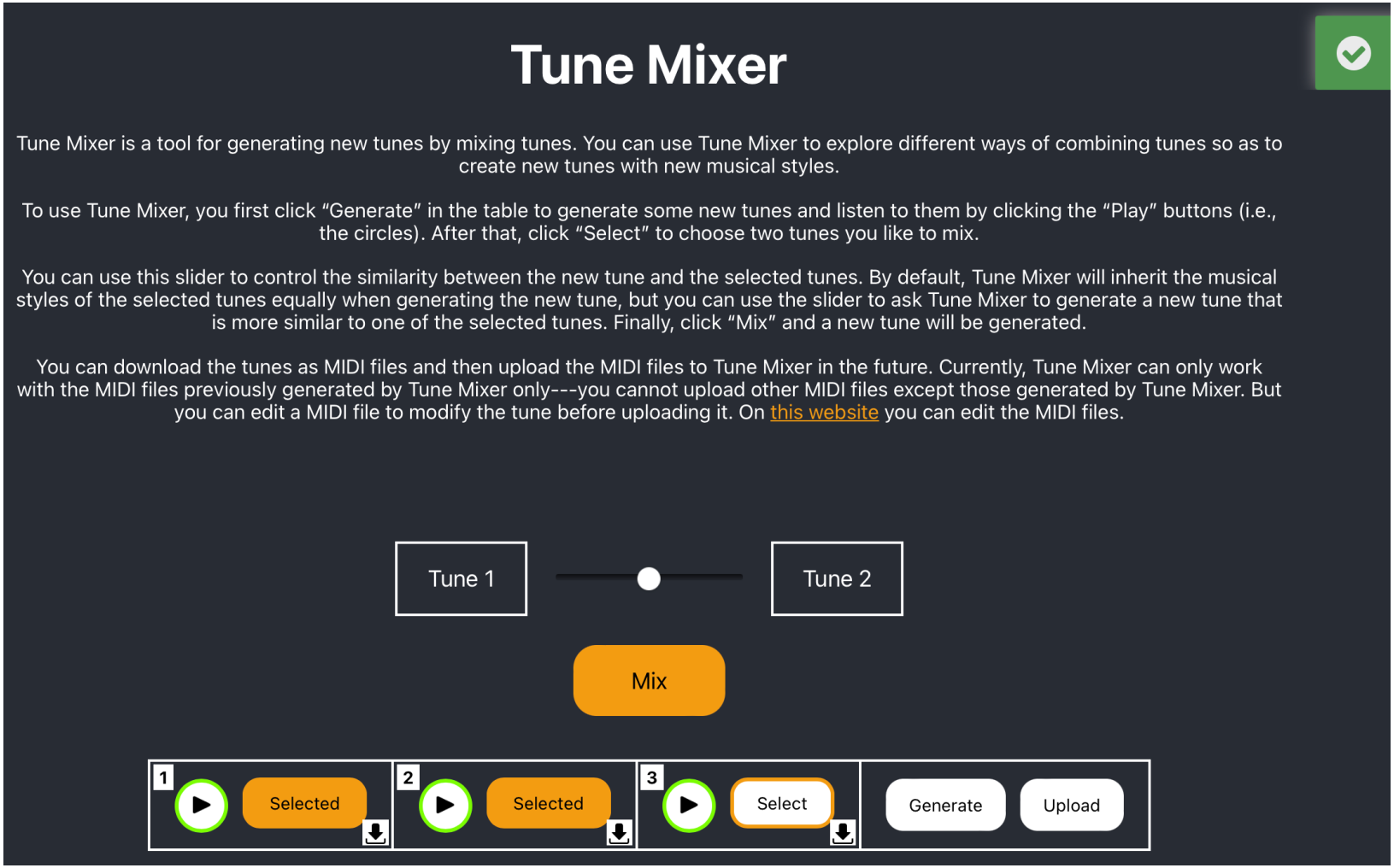
https://www.youtube.com/watch?v=qTgPSKKjfVg

Architecture

Music Generation

https://www.youtube.com/watch?v=LSHZ_b05W7o

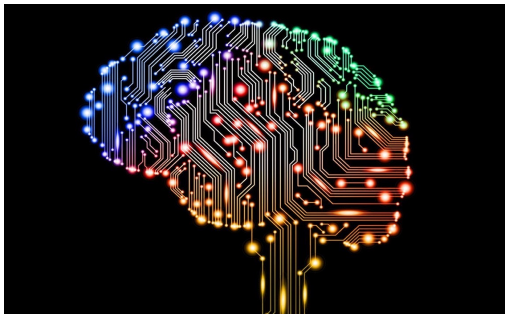
Tune Mixer



https://ai.unist.ac.kr/~chiu/Tune_Mixer

AI in the future

The ongoing information revolution will continue to lead our economic and social development.



Artificial Intelligence is the key to the success of full automation of information processing tasks.

AI will change **every aspect** of our daily life in the future.

Thank You!