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INTELLIGENT SYSTEMS STREAMING (Odd 2017-2018)

Novita Hanafiah

Intelligent Systems

What is Artificial Intelligence?

- usually defined as the science of making computers **do things that require intelligence** when done by humans.

AI is surround you!

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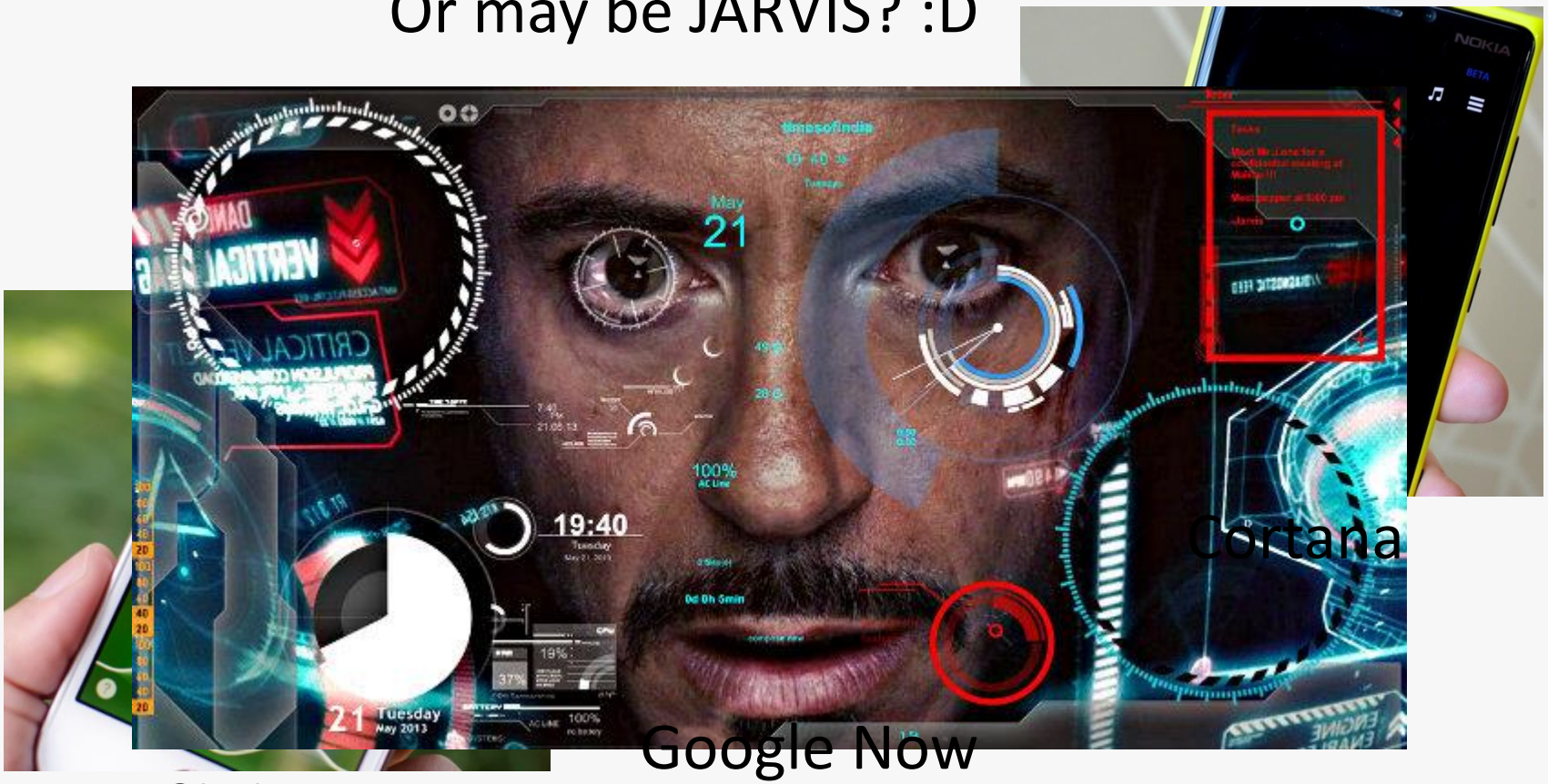
Virtual Personal Assistants

Or may be JARVIS? :D



Cortana

Google Now

SIRI

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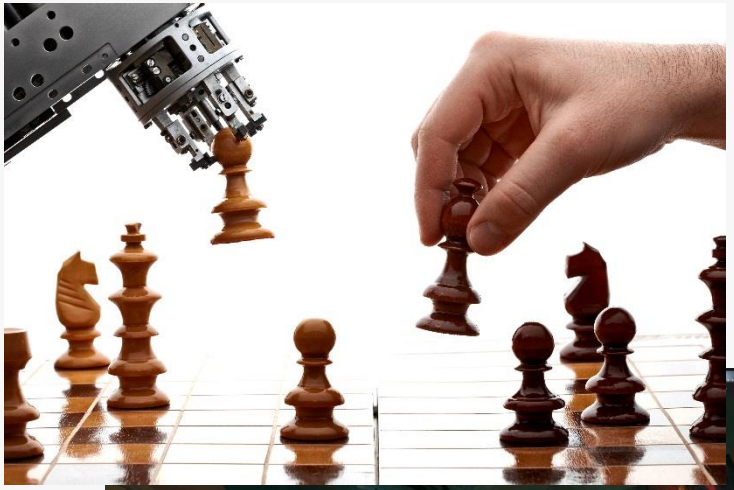
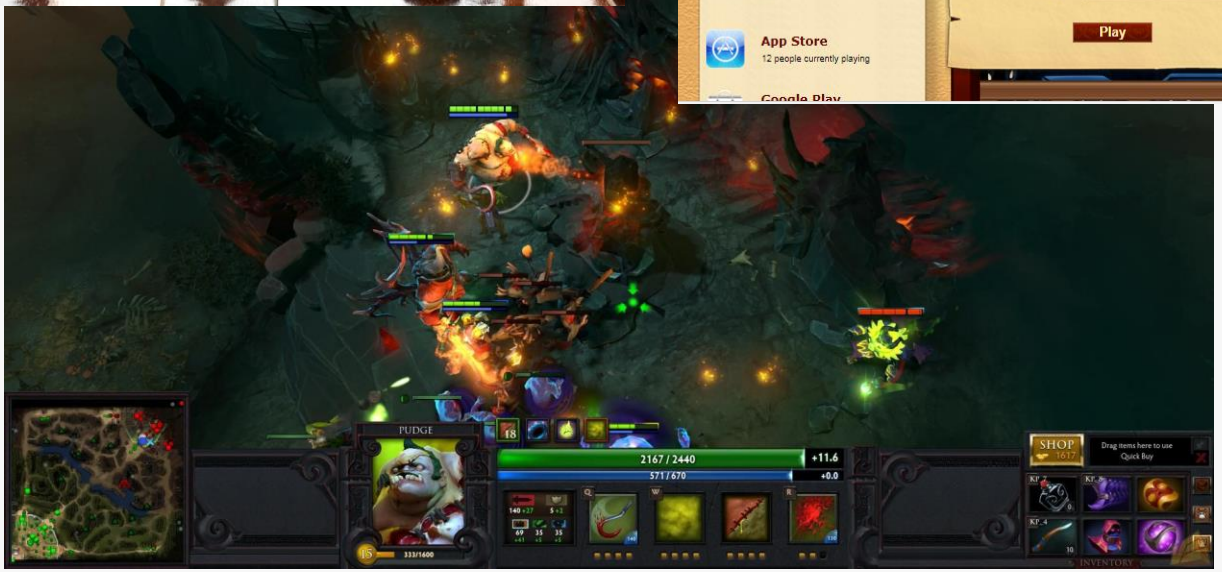
Games





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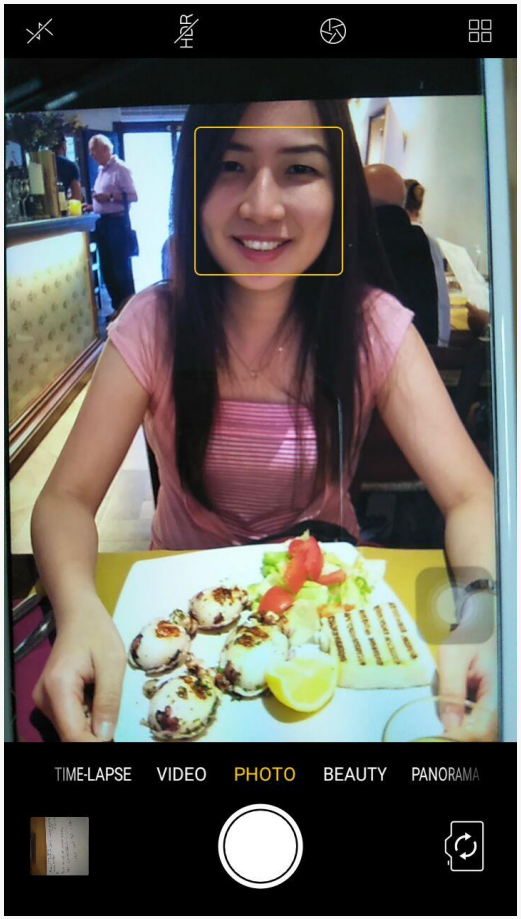
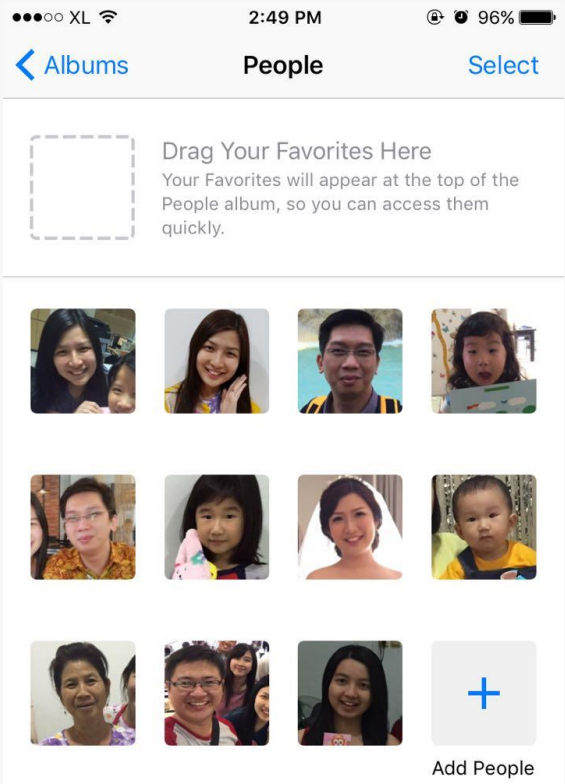
Face Detection





- Your smartphone can also detect the face when you want to take a photo. In some smartphones, there is also a feature where the phone can detect all the people faces of all photos that you have.

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Autonomous Cars

- Self-driving cars are moving closer and closer to reality.
  - Google's self-driving car project and Tesla's "autopilot" feature are two examples that have been in the news lately

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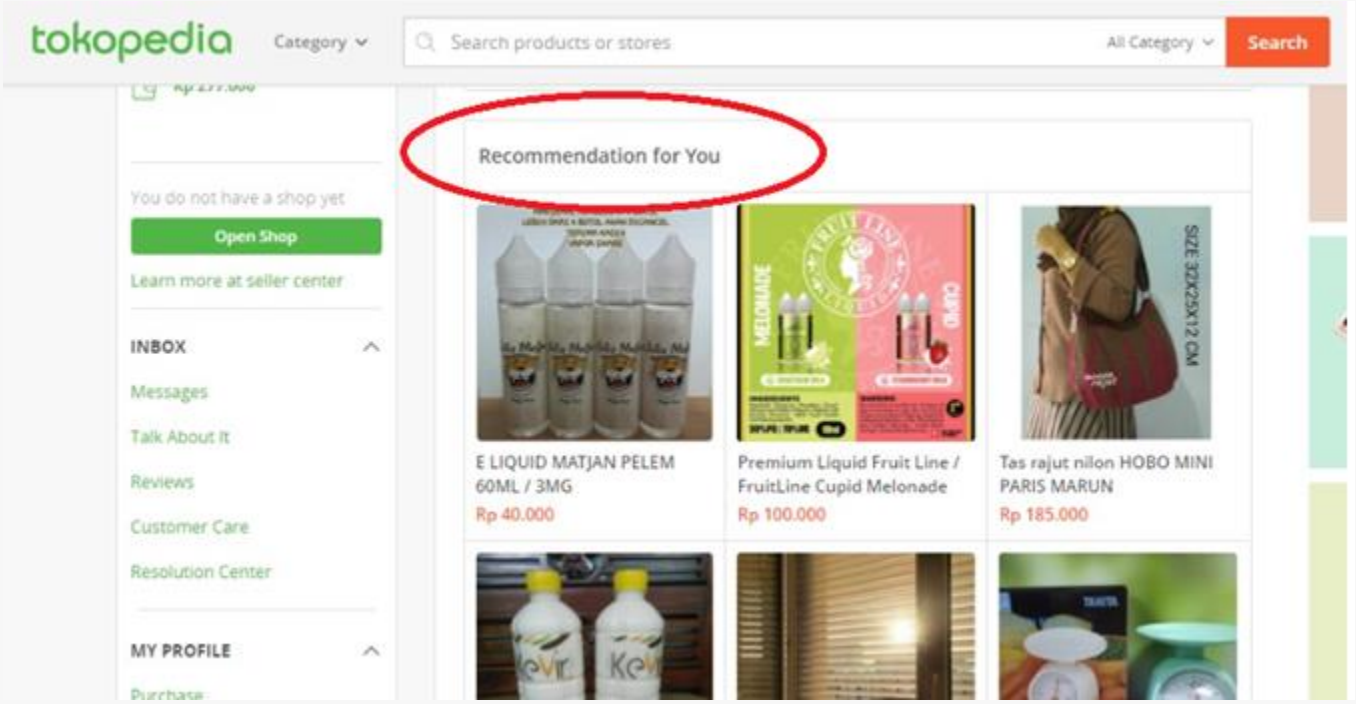
Purchase Prediction



- This can be used in a wide variety of ways, whether it's sending you coupons, offering you discounts, targeting advertisements, or stocking warehouses that are close to your home with products that you're likely to buy.

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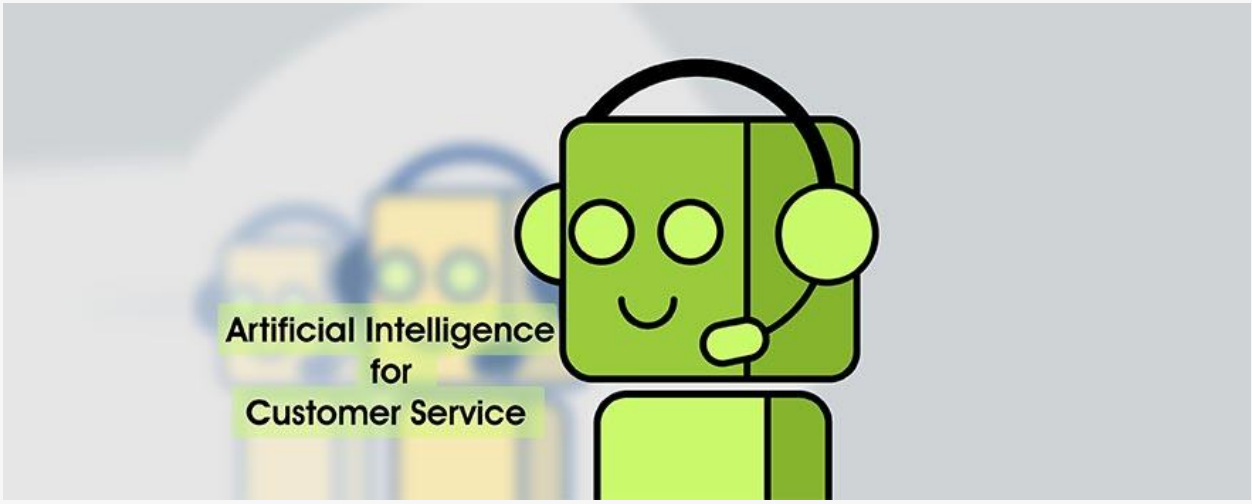
Fraud Detection

- Artificial intelligence is often the technology deployed to monitor for some types of fraud.
- In many cases, computers are given a very large sample of fraudulent and non-fraudulent purchases and asked to learn to look for signs that a transaction falls into one category or another. After enough training, the system will be able to spot a fraudulent transaction based on the signs and indications that it learned through the training exercise.

Online Customer Support

- **Chat Bots**
- some of Chat Bots are actually able to extract knowledge from the website and present it to customers when they ask for it.
- these chat bots need to be adept at understanding natural language, which is a rather difficult proposition.



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News Generator

- According to *Wired*, the AP, Fox, and Yahoo! all use AI to write simple stories like financial summaries, sports recaps, and fantasy sports reports.
- **Hoax Detector**

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Security Surveillance

- **LETTER: Intelligent systems will make roads safer**

- September 17, 2015
- But coming soon — and likely by the end of the decade — is V2V (vehicle-to-vehicle) technology, which will allow transportation agencies to send data directly to your car or truck about accidents, approaching storms and alternate routes. V2V also will collect data about surrounding cars' speeds and even traffic volumes to prevent crashes or redirect drivers to alternate routes.

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Robot Helper

Your next nurse could be a robot

Robots can successfully imitate human motions in the operating room

Date: October 5, 2016

Source: Frontiers

Summary: The nursing assistant for your next trip to the hospital might be a robot.

The human-like and the non-human-like trajectories were performed in a random order (10 human-like and 10 non-human-like).

Credit: Courtesy of Dr. Elena De Momi, Politecnico di Milano.

The nursing assistant for your next trip to the hospital might be a robot. This is the implication of research recently published by Dr. Elena De Momi and colleagues in the open access journal *Frontiers in Robotics and AI (Artificial Intelligence)*.

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And many more …

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Benefit to Learn AI

- Familiarity with problem solving
- Experience in having deeper understanding to the concept in Computer Science
- Easy to map courses for student exchange
- Good preparation for next degree study in Computer Science
- Be an inventor, not only implementer

Course Structure

4th Semester

COMP8108	Natural Language Processing	2/1
COMP7066	Expert Systems	2/1
COMP7116	Computer Vision	2/2

5th Semester

COMP7117	Artificial Neural Network	2/2
COMP7126	Artificial Intelligence in Games	2/2

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Course Description

- **Natural Language Processing**

- The course will provide you with the fundamental techniques of natural language processing, such as understanding words and their properties, modeling natural language, doing parsing and getting overview of natural language processing application.

Course Description

- **Expert System**

- You will learn the concept of Expert System and the way to construct it. By completing the course, the students are expected to explain many kinds of knowledge representation, inference methods, reasoning, and how to design an expert system.

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Course Description

- **Computer Vision**

- Computer Vision is concerned with the development of various approaches that enable computer to understand images and videos which extract descriptions of the world from pictures or sequence of pictures.

- You will learn some techniques for solving several of the most relevant problems in Computer Vision, including object detection, object recognition, tracking, and reconstruction.

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Course Description

- **Artificial Neural Network**

- The course discusses artificial network system and gives you the basic knowledge related with the topic.

- You will learn how to demonstrate the use of neural network application in accordance with the models of neural network.

Course Description

- **AI in Games**

- The course provides you with the foundation of AI in Game, understanding how the AI works in Game. You will learn some techniques applying in many kinds of AI game, and implement the algorithm to build a game.

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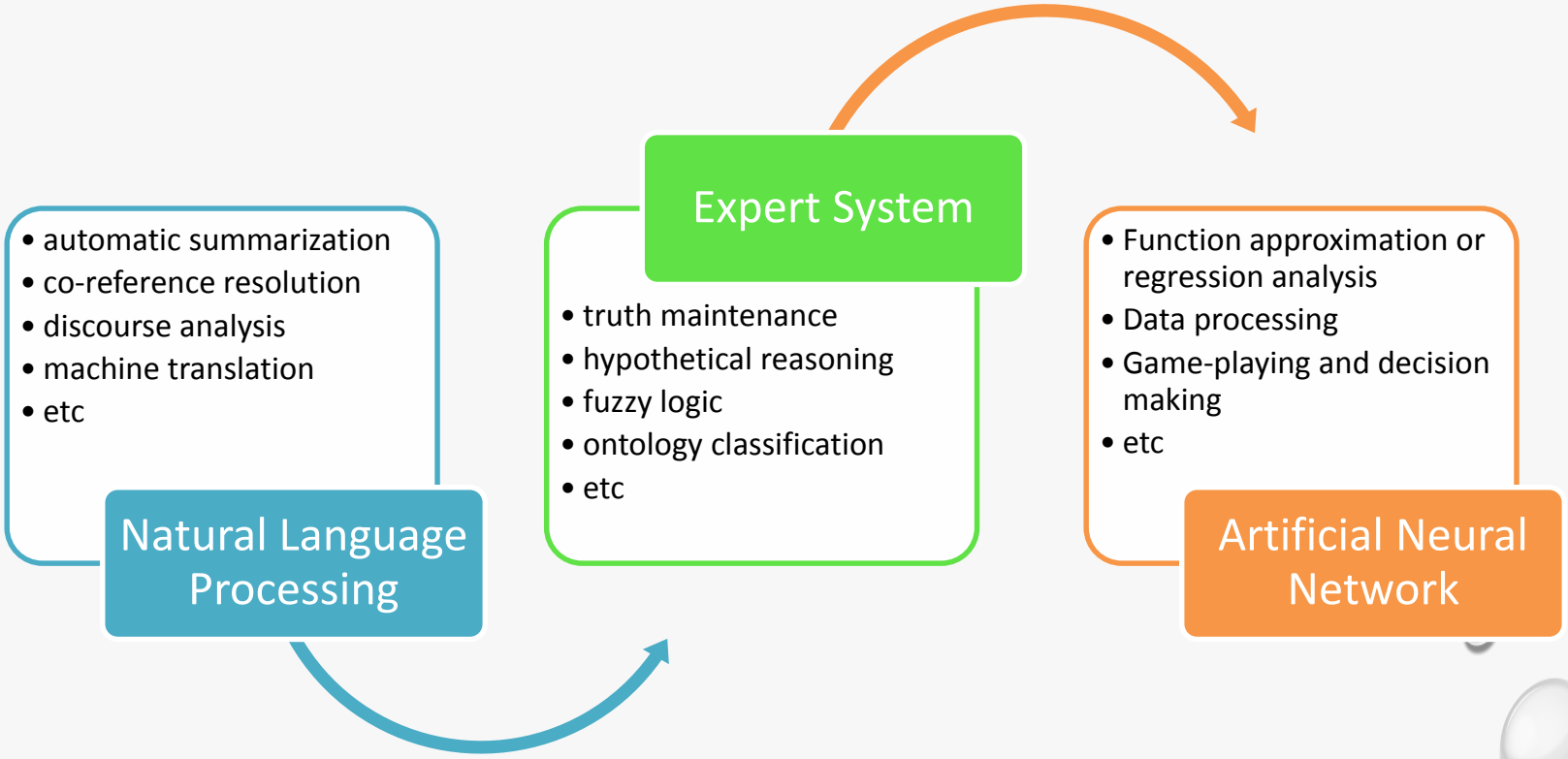
Research topic



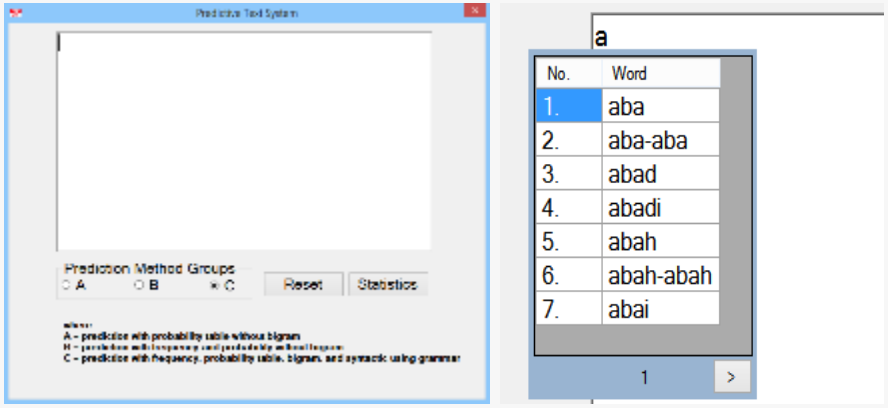
Former Students Thesis Topics

- Face Recognition untuk pengambilan barang di loker kolam renang
- Question Answering System untuk kebudayaan di Indonesia
- Analisa Discourse Structure pada Bahasa Indonesia
- Automated Thread Generator pada forum diskusi
- Automated Essay Scoring untuk esai bertipe narasi
- Sentiment Analysis dari sebuah produk baru di pasaran
- Automated Text Summarizer untuk Bahasa Indonesia
- Predictive Text pada Bahasa Indonesia
- Analisa Perbandingan Algoritma Greedy dengan Mini-Max
- Metode Lemmatization untuk Bahasa Indonesia

Former Students Thesis Topics

- Pengendali Rumah Otomatis dengan menggunakan Smartphone
- Pengukur Derajat Kebahagiaan sebuah Rumah Tangga
- Klasifikasi Mammogram untuk Kanker Payudara
- Pendeteksian Penyakit Diabetes Dini dengan metode Fuzzy
- Character Recognition pada KTP Warga Negara Indonesia
- Hand Detection dan Recognition untuk unlock Smartphone
- Klasifikasi Genre Musik secara Otomatis
- Identifikasi Mood seseorang dengan observasi wajah
- Pengukur Tingkat Kantuk Pengendara Mobil
- Pendeteksi Penyakit Tanaman Kopi

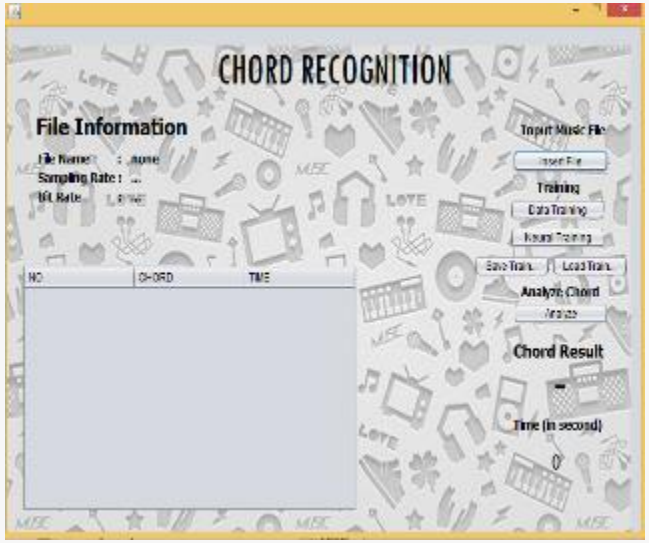
Student's Projects (Examples)



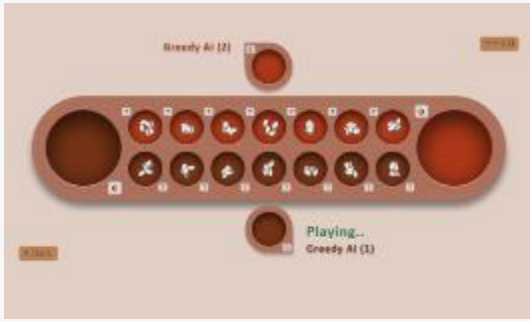
Predictive Text

Document Summarizer

Storage locker



Chord recognizer



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Job Opportunity

Management

- Chief Technology Officer
- Chief Information Officer
- IT Consultant

Intelligence System Development

- Intelligence System Developer

Scientist

- Lecturer / Trainer
- Researcher

Explore More about AI

- http://www.sciencedaily.com/news/computers_math/artificial_intelligence/
- https://www.udacity.com/course/intro-to-artificial-intelligence--cs271
- http://foundational-research.org/thoughts-on-robots-ai-and-intelligence-explosion/
- http://www-formal.stanford.edu/jmc/whatisai/node3.html
- http://sourceforge.net/directory/science-engineering/ai/os:windows/freshness:recently-updated/
- http://phys.org/news/2015-07-future-artificial-intelligence.html
- AI Startups in the World: https://angel.co/artificial-intelligence

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References

- AI in Daily Lifes: https://beebom.com/examples-of-artificial-intelligence/
- What is AI: http://www.alanturing.net/turing_archive/pages/reference%20articles/What%20is%20AI.html