

Modul : Introduction to AI

AI Application

KK IF - Teknik Informatika- STEI ITB

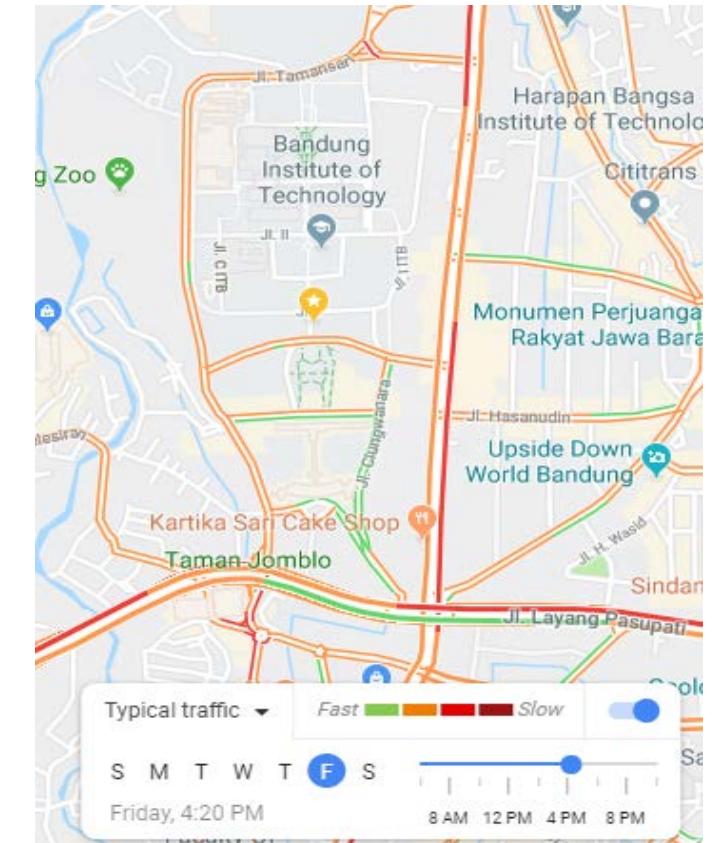
Inteligensi Buatan
(Artificial Intelligence)



AI in Life: Path Finding



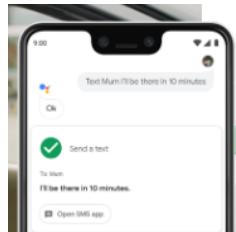
Path Finding / Direction



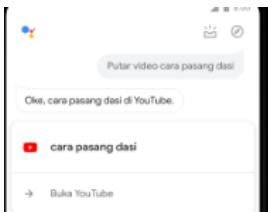
Traffic pattern



AI in Life: AI Assistant



“Hey Google, text
Mum I'll be there in 10
minutes”



“Hey Google, play my
morning playlist”



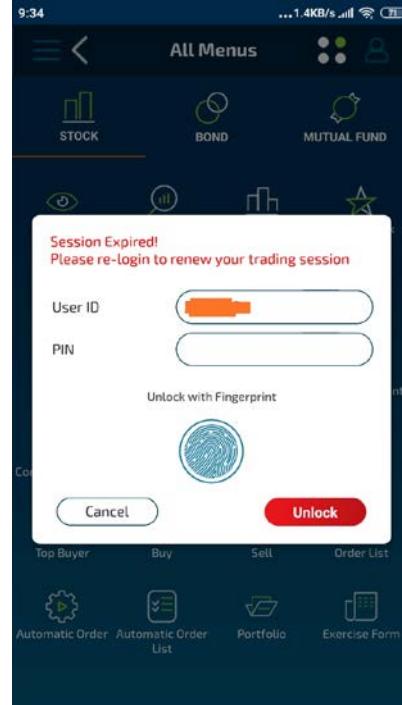
“Hey Google, dim the
bedroom lights”



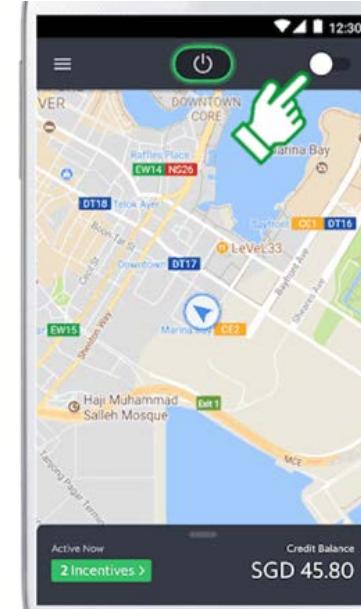
“Hey Google, set the
temperature to 20
degrees”



AI in Life: Biometric Application

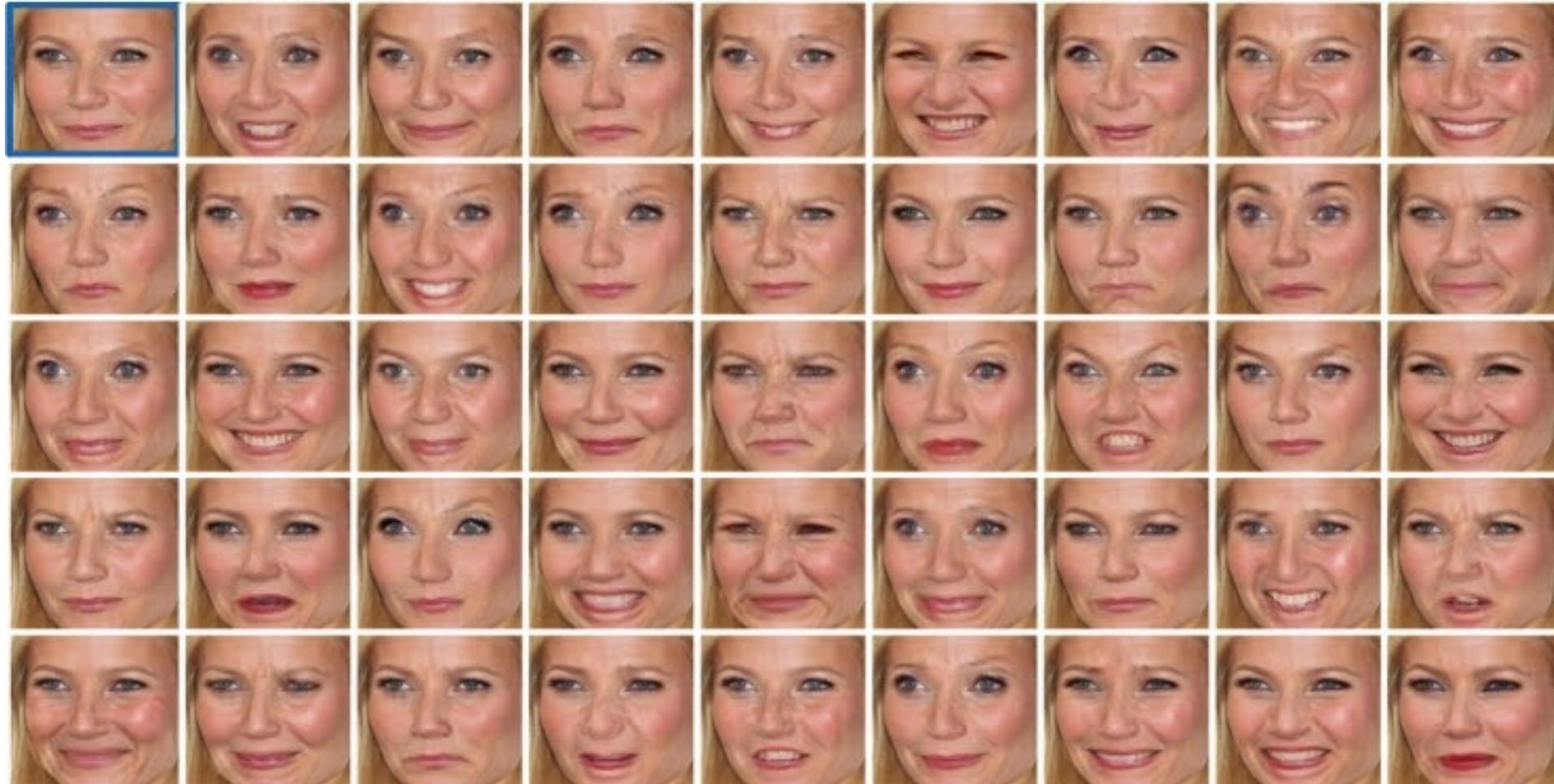


Fingerprint verification



Face verification

AI in Life: Transform Your Face



Pumarola, A., Agudo, A., Martinez, A.M., Sanfeliu, A., & Moreno-Noguer, F. (2019). *GANimation: One-Shot Anatomically Consistent Facial Animation*. In *International Journal of Computer Vision*.

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AI in Life: OpenAI Five for Dota 2



APRIL 15, 2019 • 7 MINUTE READ

OpenAI Five Defeats Dota 2 World Champions

OpenAI Five is the first AI to beat the world champions in an esports game, having won two back-to-back games versus the world champion Dota 2 team, OG, at Finals this weekend. Both OpenAI Five and DeepMind's AlphaStar had previously beaten good pros privately but lost their live pro matches, making this also the first time an AI has beaten esports pros on livestream.

<https://www.youtube.com/watch?v=UZHTNBMAfAA>

<https://openai.com/blog/openai-five-defeats-dota-2-world-champions/>



AI in Life: Recommender System



A screenshot of the Netflix mobile app interface. At the top, it says "Movies" and "All Genres". Below that, it says "Because you watched The Equalizer 2" and shows three movie thumbnails: "THE EQUALIZER", "THE BOURNE LEGACY", and "SAFE HOUSE". Further down, it says "Because you watched Man of Steel" and shows three movie thumbnails: Clark Kent, the Hulk, and Wonder Woman.

A screenshot of the Steam Labs - Interactive Recommender interface. It shows "YOUR PLAYTIME" with a list of games and their playtimes (e.g., DOTA 2, THE WALKING DEAD 2, etc.). It also shows "YOUR RECOMMENDATIONS" with a list of recommended games like "NORTHGARD" and "DARKEST DUNGEON®". There are various filter options on the right side, such as "Weight by popularity", "Include only releases since 10 years", and "Show only games with tag: No Filter".



AI in Life: Self Driving Car



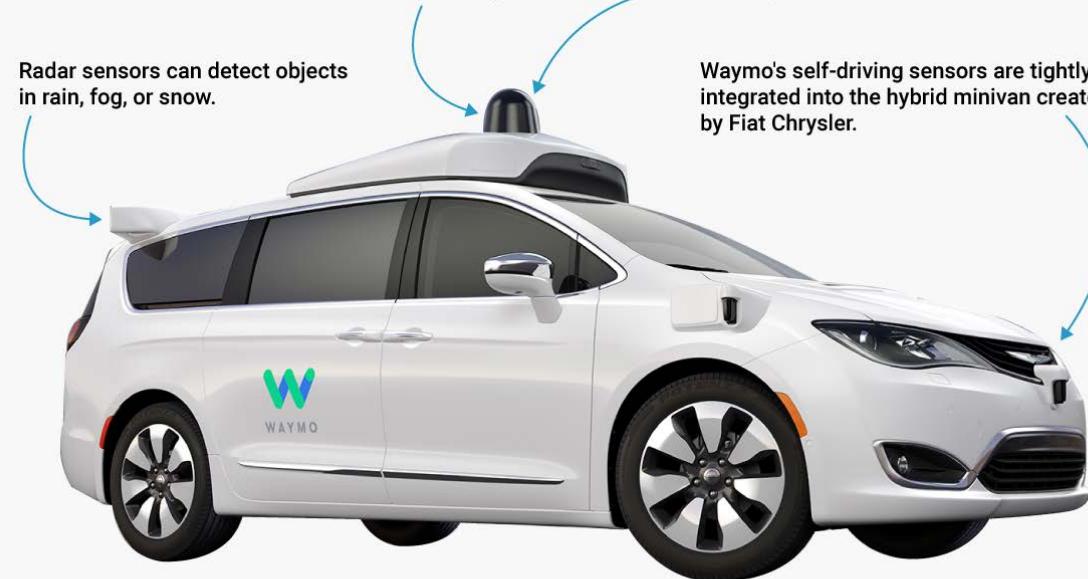
HOW WAYMO'S SELF-DRIVING CAR WORKS

One of Waymo's three lidar systems that shoots lasers so the car can see its surroundings. Waymo says this lidar can detect a helmet two-football fields away.

A forward facing camera works with 8 others stationed around the car to provide 360 degrees of vision.

Radar sensors can detect objects in rain, fog, or snow.

Waymo's self-driving sensors are tightly integrated into the hybrid minivan created by Fiat Chrysler.



SOURCE: Waymo

BUSINESS INSIDER

<http://www.businessinsider.sg/how-does-googles-waymo-self-driving-car-work-graphic-2017-1/?r=US&IR=T>

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VARIOUS AI APPLICATION

AI for **HEALTHCARE**

AI for **EDUCATION**

AI for **ENERGY INDUSTRY**

AI for **MANUFACTURING**



Modul: Introduction to AI

What is AI (1): Acting Humanly

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4 Approaches in AI Definition

**Thinking
or
Acting**

Humanly or Rationally

Thinking Humanly

Thinking Rationally

Acting Humanly

Acting Rationally



1st Approach of What is AI: ACTING HUMANLY

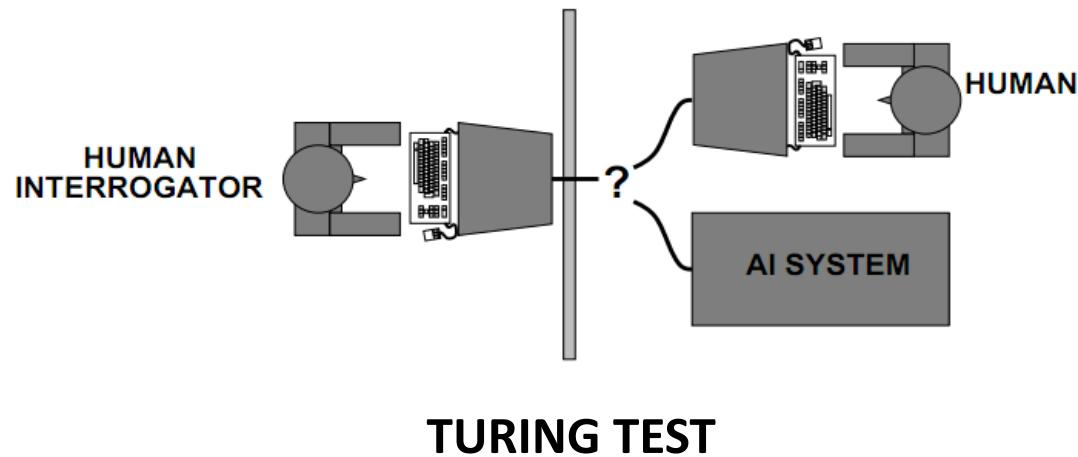
The art of creating machines
that perform functions that
require intelligence when
performed by people
(Kurzweil, 1990)

I can listen,
speak, see,
think

The study of how to make
computers do things at
which, at the moment,
people are better
(Rich and Knight, 1991)



1st Approach of What is AI: Acting Humanly (2)



LOEBNER PRIZE
Annual Turing Test
Competition

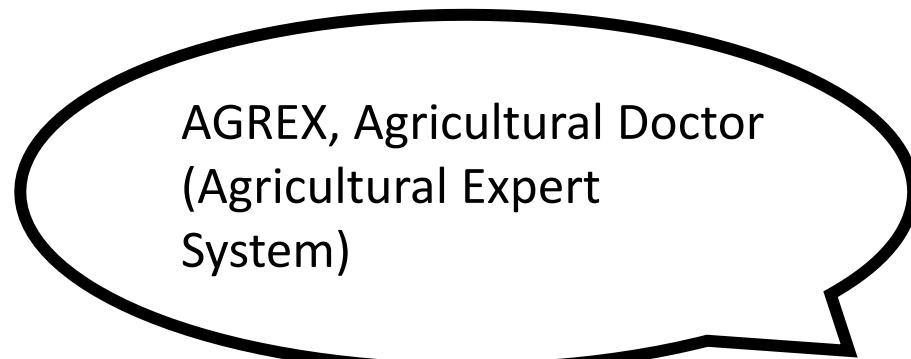
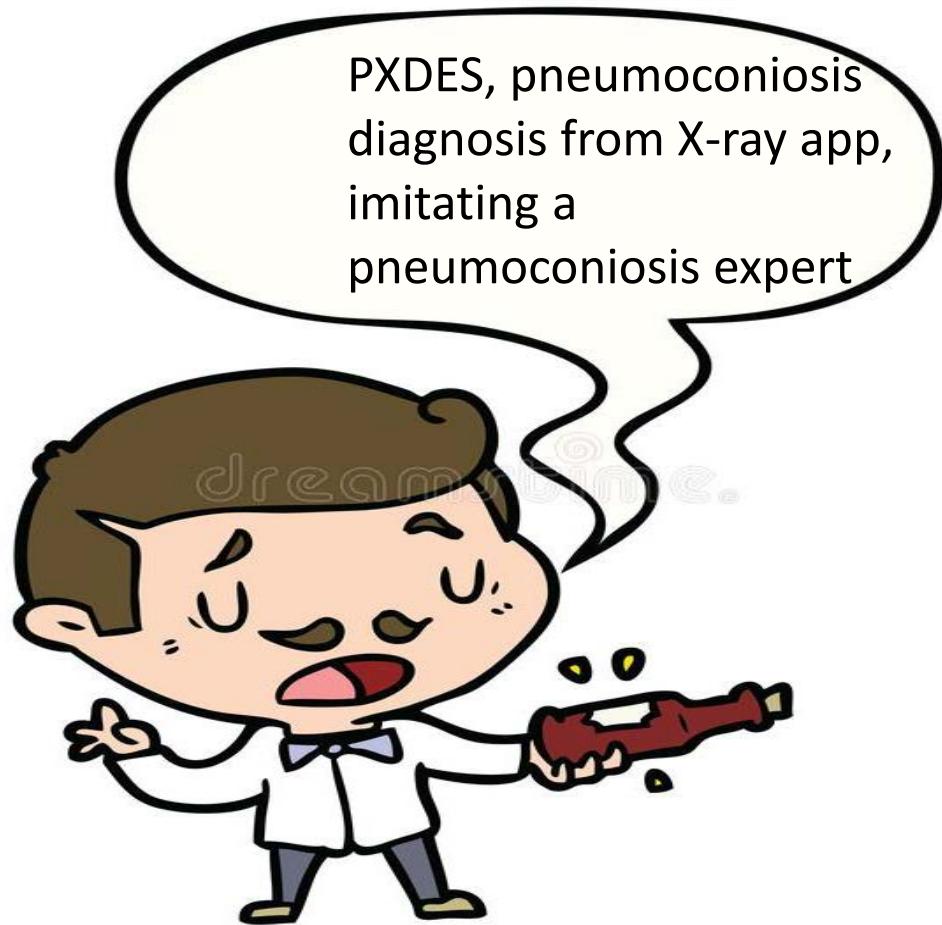
The logo for Mitsuku Chatbot features a circular medallion on the left with a portrait of Alan Turing. To the right of the medallion, the word "mitsuku" is written in a large, stylized, orange-to-yellow gradient font. Following "mitsuku" is the word "Chatbot" in a bold, white font. Below "Chatbot" is the text "AN ARTIFICIAL LIFEFORM LIVING ON THE NET". The background of the logo is a grid of green binary code digits (0s and 1s). To the right of the text is a cartoon illustration of a blonde woman with blue eyes.

1 Loebner Prize Winner
2013/2016/2017/2018/2019

<https://www.pandorabots.com/mitsuku/>



Acting Humanly Approach: Applications Examples



Modul: Introduction to AI

What is AI (2): Thinking Humanly

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4 Approaches in AI Definition

Humanly or **Rationally**

Thinking
or
Acting

Thinking Humanly

Thinking Rationally

Acting Humanly

Acting Rationally



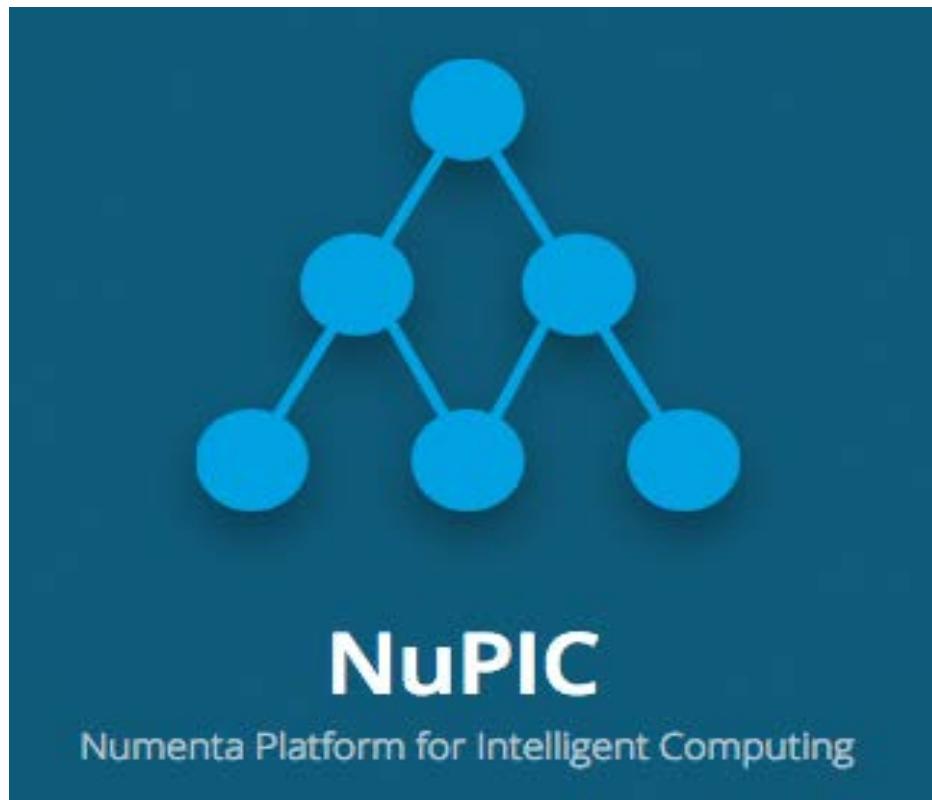
2nd Approach of What is AI: THINKING HUMANLY

[The automation of]
activities that we associate
with human thinking,
activities such as decision-
making, problem solving,
learning ...
(Bellman, 1978)

The exciting new effort to
make computers think ...
machines with minds, in
the full and literal sense
(Haugeland, 1985)



Thinking Humanly Approach: Applications Examples



<https://numenta.org/>



<https://www.sighthound.com/products/sighthound-video>



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What is AI (3): Thinking Rationally

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4 Approaches in AI Definition

Humanly or **Rationally**

Thinking
or
Acting

Thinking Humanly

Thinking Rationally

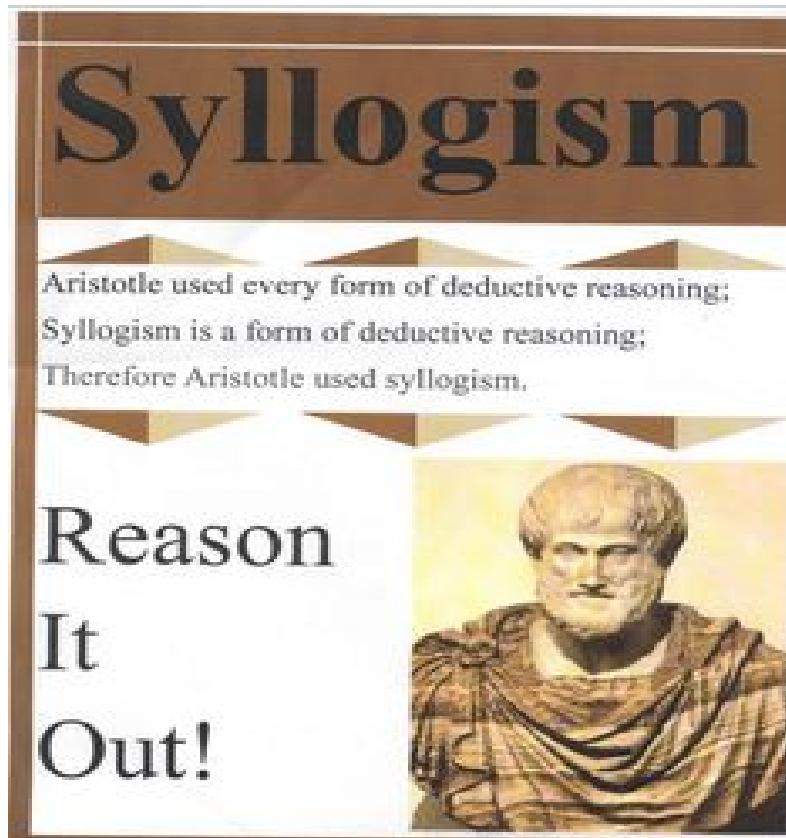
Acting Humanly

Acting Rationally



3rd Approach of What is AI: THINKING RATIONALLY

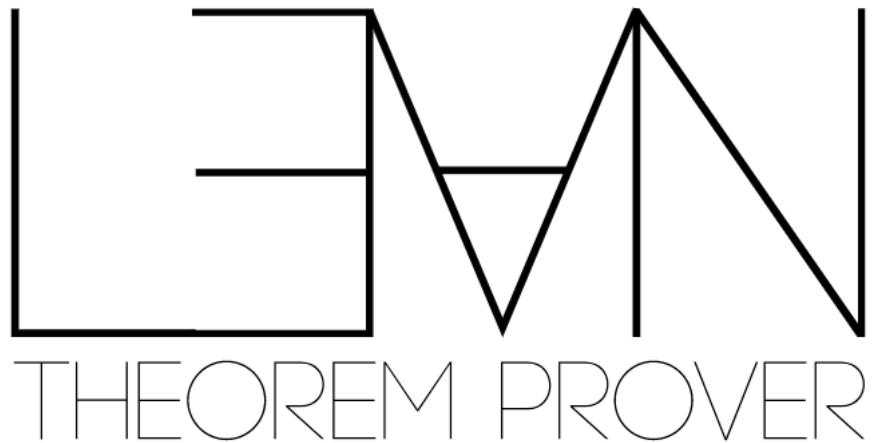
The study of
mental faculties
through the use
of computational
models
(Charniak and
McDermott,
1985)



The study of the
computations
that make it
possible to
perceive,
reason, and act
(Winston, 1992)

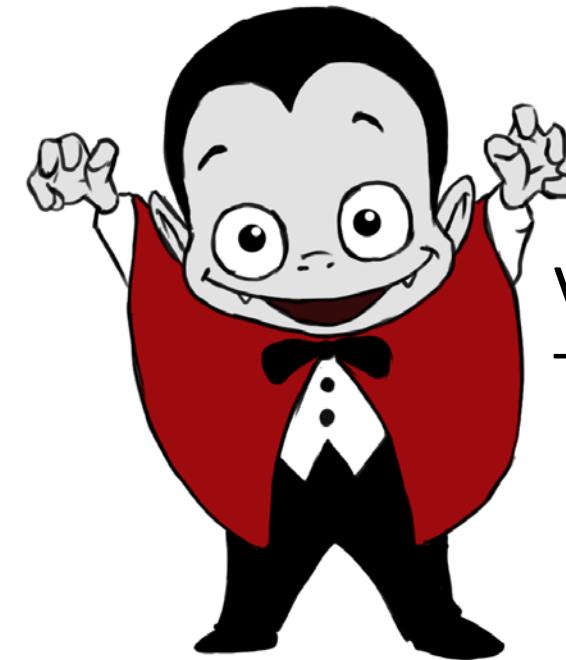


Thinking Rationally Approach: Applications Examples



Microsoft Research

<http://leanprover.github.io/>



VAMPIRE
Theorem Prover

<https://vprover.github.io/index.html>



Modul: Introduction to AI

What is AI (4): Acting Rationally

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4 Approaches in AI Definition

**Thinking
or
Acting**

Humanly or Rationally

Thinking Humanly

Thinking Rationally

Acting Humanly

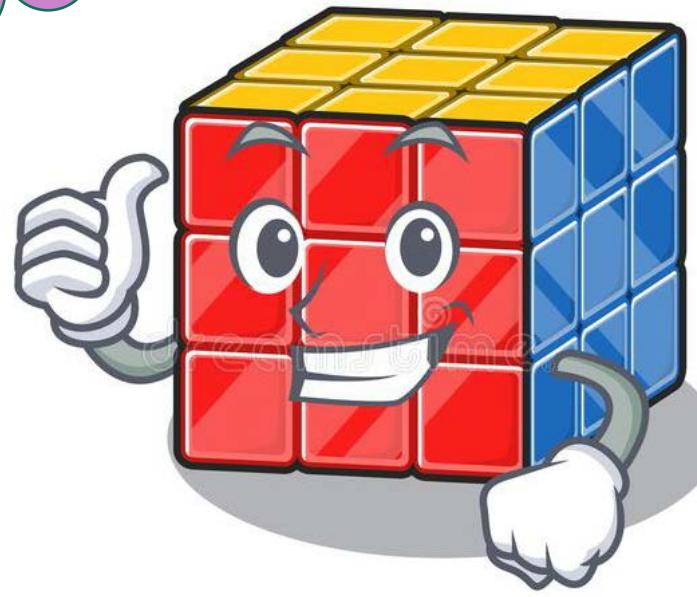
Acting Rationally



4th Approach of What is AI: ACTING RATIONALLY

Computational intelligence is the study of the design of intelligent agents(Poole et al., 1998)

AI...is concerned with intelligent behavior in artifacts (Nilsson, 1998)



Acting Rationally Approach: Applications Examples



<http://www.jobshop.72.sk/?m=0HU>



<https://blog.dota2.com/?l=english>



THANK YOU

