

Modul : Introduction to AI

AI Application

KK IF - Teknik Informatika- STEI ITB

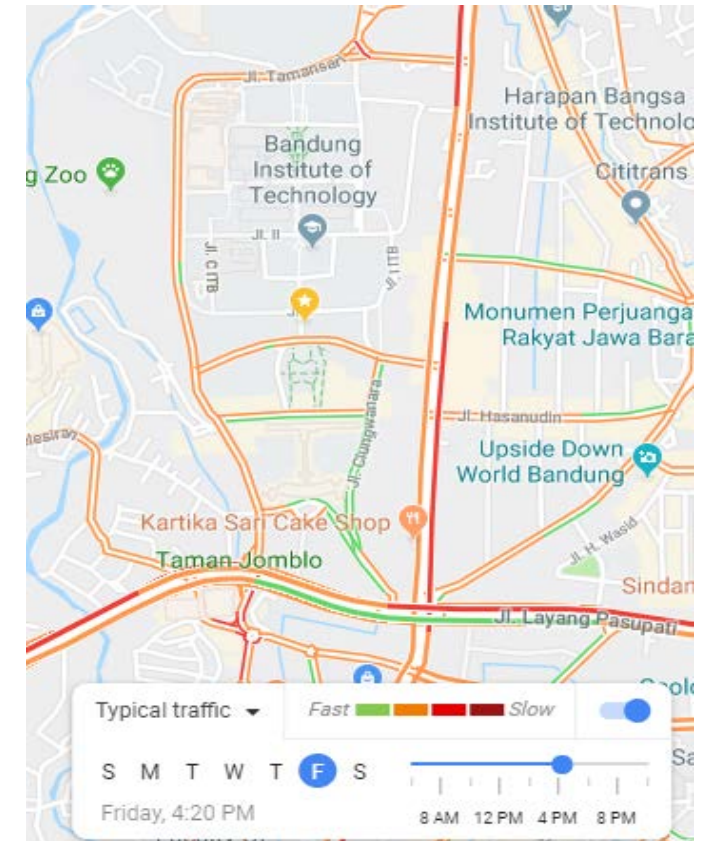
Inteligensi Buatan
(Artificial Intelligence)



AI in Life: Path Finding



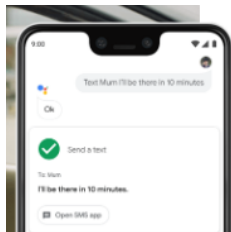
Path Finding / Direction



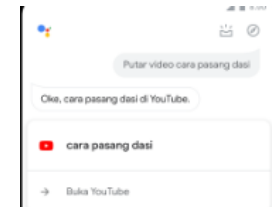
Traffic pattern



AI in Life: AI Assistant



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



“Hey Google, play my morning playlist”



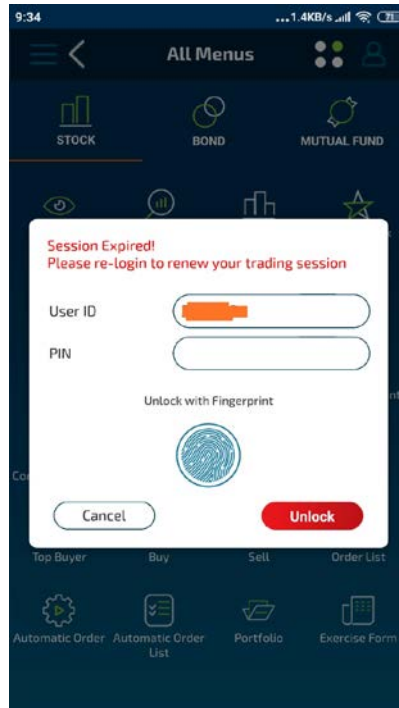
“Hey Google, dim the bedroom lights”



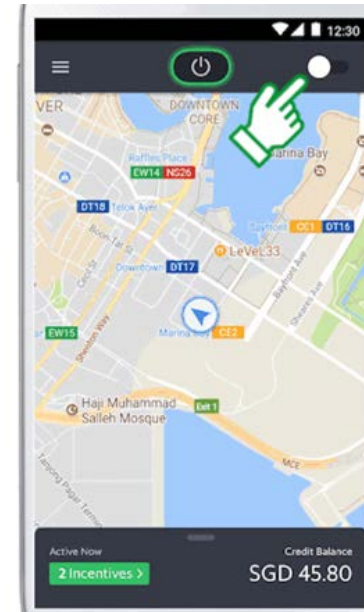
“Hey Google, set the temperature to 20 degrees”



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*



AI in Life: OpenAI Five for Dota 2



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

APRIL 15, 2019 • 7 MINUTE READ

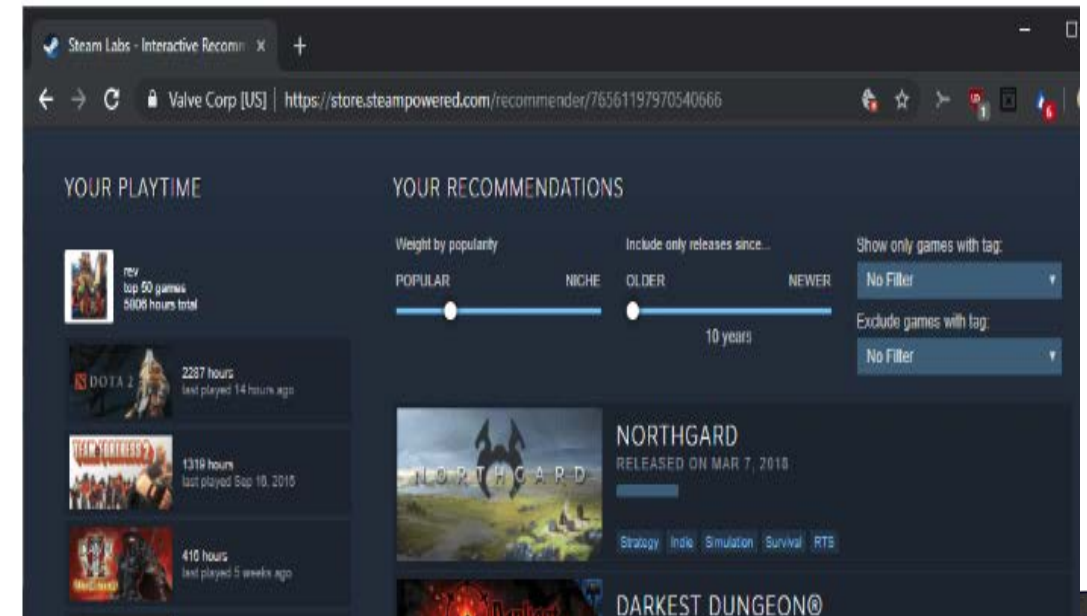
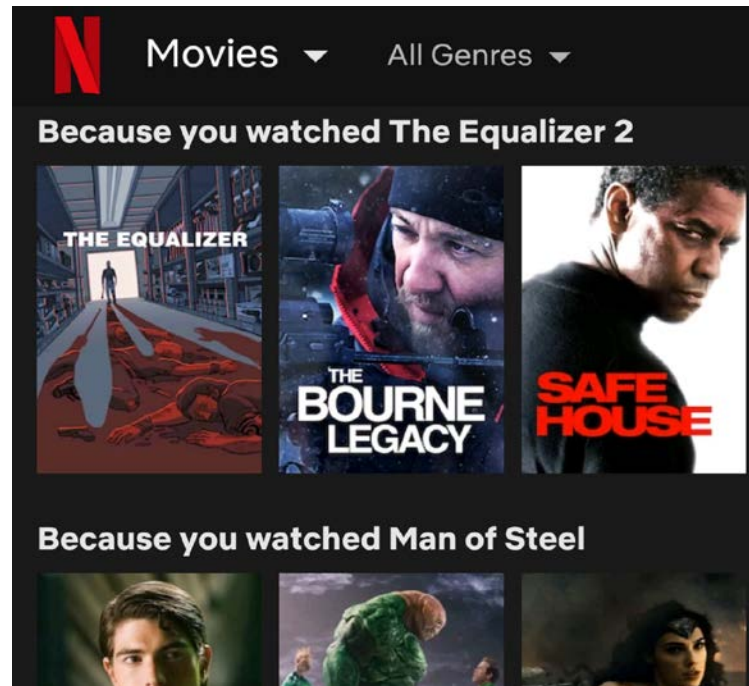
OpenAI Five Defeats Dota 2 World Champions

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.

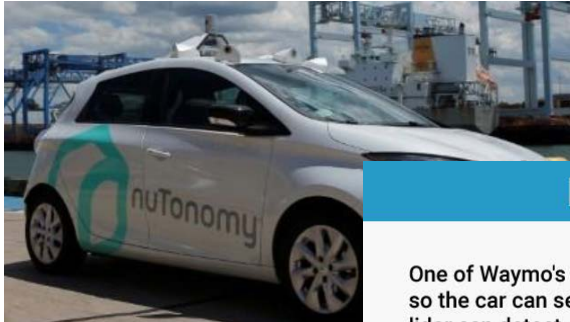
<https://openai.com/blog/openai-five-defeats-dota-2-world-champions/>



AI in Life: Recommender System



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



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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Inteligensi Buatan
(Artificial Intelligence)



4 Approaches in AI Definition

Humanly or Rationally

Thinking

or

Acting

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

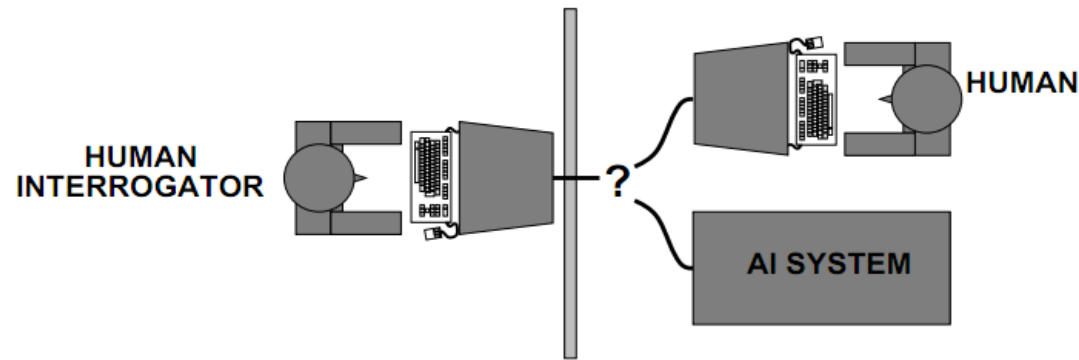


The study of how to make computers do things at which, at the moment, people are better
(Rich and Knight, 1991)

am i human or ai ?



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



TURING TEST



LOEBNER PRIZE

Annual Turing Test
Competition



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



Acting Humanly Approach: Applications Examples

PXDES, pneumoconiosis
diagnosis from X-ray app,
imitating a
pneumoconiosis expert

AGREX, Agricultural Doctor
(Agricultural Expert
System)



Modul: Introduction to AI

What is AI (2): Thinking Humanly

KK IF – Teknik Informatika – STEI ITB

Inteligensi Buatan
(Artificial Intelligence)



4 Approaches in AI Definition

Humanly or Rationally

Thinking

or

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Thinking Humanly

Thinking Rationally

Acting Humanly

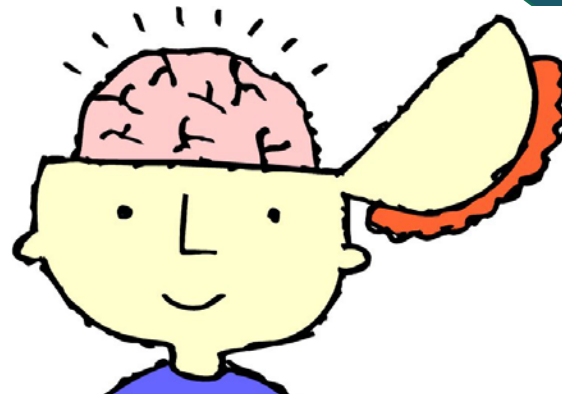
Acting Rationally



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



NuPIC

Numenta Platform for Intelligent Computing

<https://numenta.org/>

Sighthound VIDEO
intelligent security camera software

Our patented deep learning computer vision technology teaches your cameras to see video just like the human brain.

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



Modul: Introduction to AI

What is AI (3): Thinking Rationally

KK IF – Teknik Informatika – STEI ITB

Inteligensi Buatan
(Artificial Intelligence)



4 Approaches in AI Definition

Humanly or Rationally

Thinking

or

Acting

Thinking Humanly

Thinking Rationally

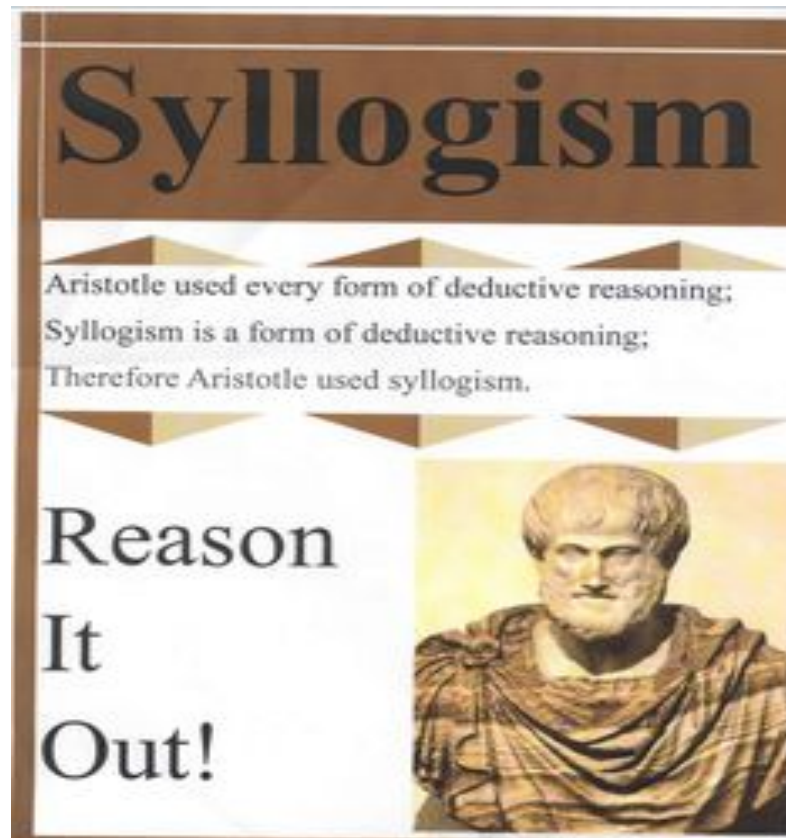
Acting Humanly

Acting Rationally



3rd Approach of What is AI: THINKING RATIONALLY

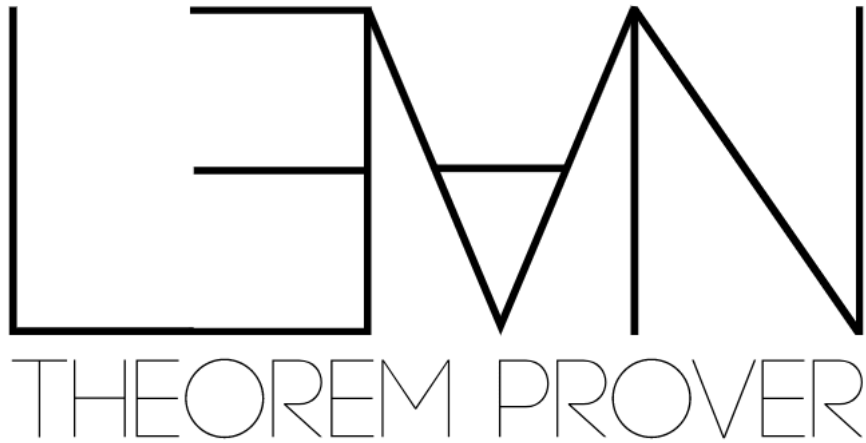
The study of mental faculties through the use of computational models
(Charniak and McDermott, 1985)



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

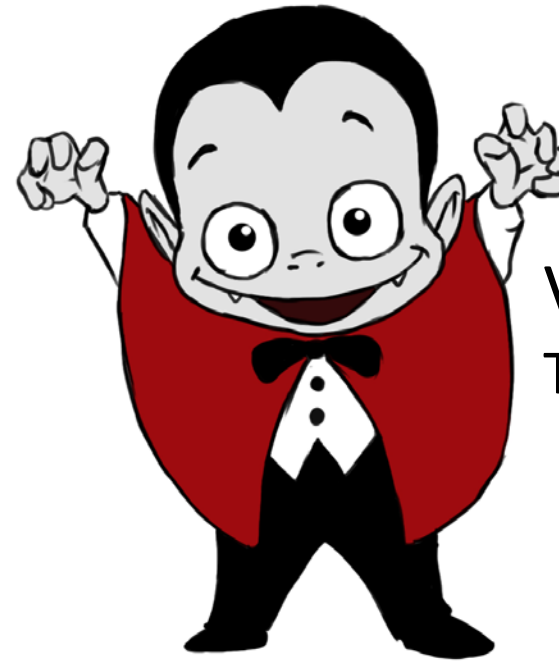


Thinking Rationally Approach: Applications Examples



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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Inteligensi Buatan
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4 Approaches in AI Definition

Humanly or Rationally

Thinking

or

Acting

Thinking Humanly

Thinking Rationally

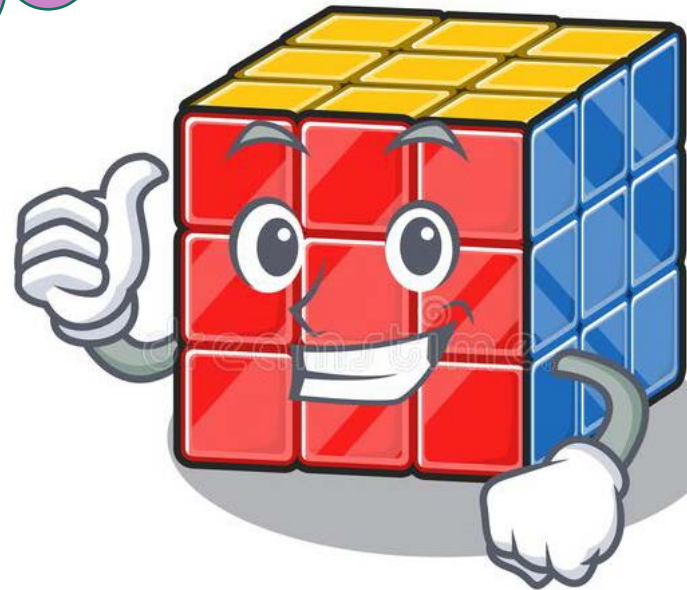
Acting Humanly

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



Contoh

Berdasarkan keempat pendekatan IB, tentukan pendekatan yang digunakan pada aplikasi/teknologi berikut ini, ataukah aplikasi tersebut tidak menggunakan pendekatan kecerdasan buatan. Jelaskan dengan singkat jawaban anda.

- NuPIC, platform perangkat lunak yang berbasis pada model struktur dan operasi pada neocortex (bagian pada otak mamalia).
- PXDES, aplikasi yang melakukan diagnosis X-ray layaknya seorang pakar melakukan diagnosis, untuk penentuan pneumoconiosis (penyakit paru-paru yang disebabkan oleh penghisapan debu).
- Pc-Nqthm, aplikasi 'proof-checker' yang berlandaskan pada teori automated reasoning, berdasarkan aturan formal logika.
- AceMoney, aplikasi yang membantu mengorganisasikan dan mengatur keuangan individu (mencatat pemasukan dan pengeluaran).
- Vampire, automatic theorem prover untuk first order logic yang menjuarai 11 kali world cup in theorem prover sejak 1999.
- Robot melakukan eksplorasi pada suatu lingkungan yang belum pernah dikenali sebelumnya. Robot tersebut bekerja untuk sampai pada lokasi tertentu yang diinginkan oleh pemiliknya dari posisi awal mereka diletakkan.
- Logic Problem Solver, aplikasi yang dapat membantu menyelesaikan persoalan logika yang ada di buku atau majalah logic puzzle.
- AGREX, aplikasi sistem pakar yang membantu petani/pebisnis agrikultur dengan memberikan saran yang benar pada saat yang tepat mengenai penjadwalan irigasi, diagnosis penyakit padi, pemupukan, dan perlindungan tanaman.
- Vitamin D, perangkat lunak yang digunakan untuk mendeteksi manusia atau objek bergerak pada video streams. Aplikasi ini memanfaatkan teknologi yang memodelkan neocortex (bagian dari otak manusia yang bertanggung jawab untuk high level perception).

EDUNEX ITB



d) thinking humanly → meniru otak

b) acting humanly → meniru perilaku pakar

c) thinking rationally

d) bukan AI

e) thinking rationally

f) acting rationally

g) gak dinyatakan menyelesaikan persoalan pake pendekatan apa, bisa aja searching biasa

h) acting humanly

i) thinking humanly

↳ pakai hukum² logika, bgmn seharusnya manusia berpikir

acting rationally

→ dfs, bfs, a*

→ model matematis yg telah ditemukan sebelumnya.

love denu r3
thx