Artificial General Intelligence

and the role of Python

Keyvan Mir Mohammad Sadeghi

March 2017

Questions for you

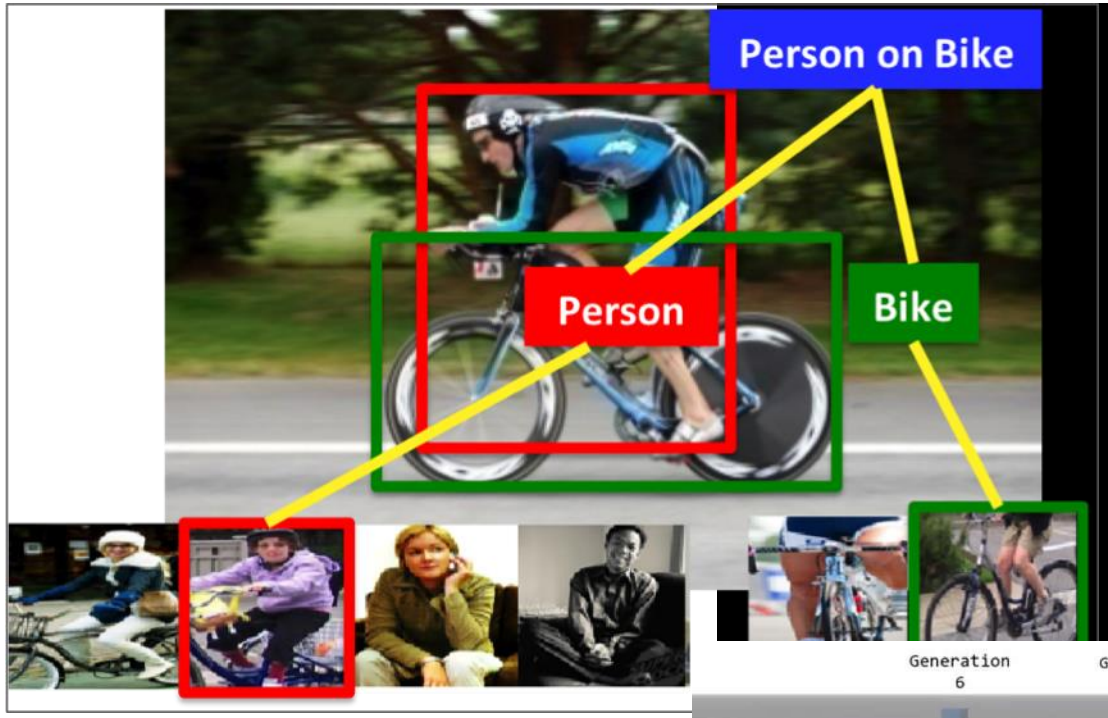
- Name
- What do you do?
- Opinion on technology?

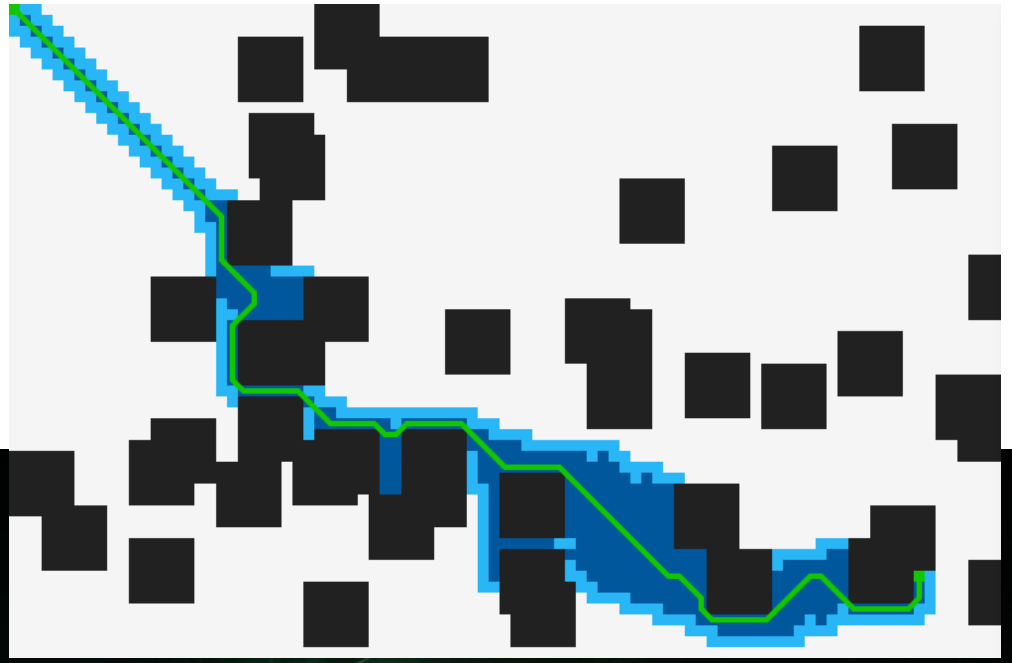
About me

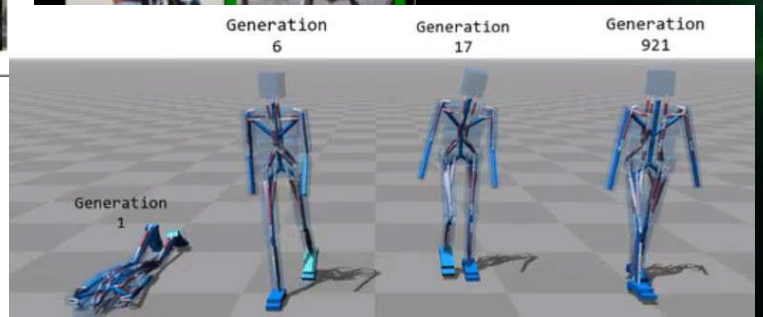
- Born 1988
- MSc Artificial Intelligence, University of Southampton UK, 2010-2011
- Project Associate, OpenCog ITF project, PolyU, Hong Kong, 2011-2013
- AGI Researcher, Novamente LLC, 2013-2014
- Cloud Computing Group, Isfahan Science Technology Town, 2014-2015
- Lecturer, Khorasgan University, 2014-2015
- Technical Director, MAPS technology center, 2015-2017
- Systems Engineer, Miras Technologies International, 2015-2016
- Software Architect, Satratech, 2016-2017
- Open Source Advocate, present!

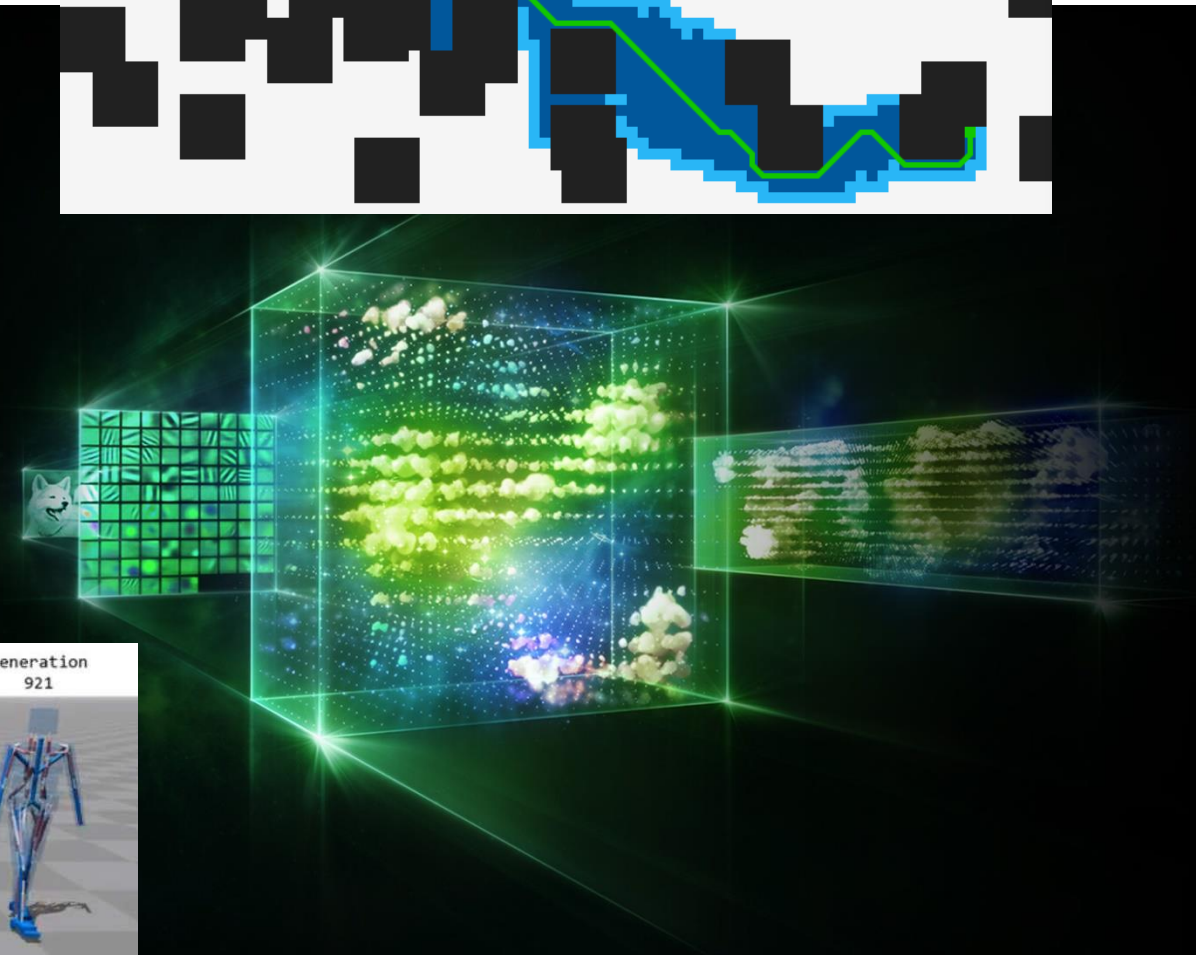
What is AI?

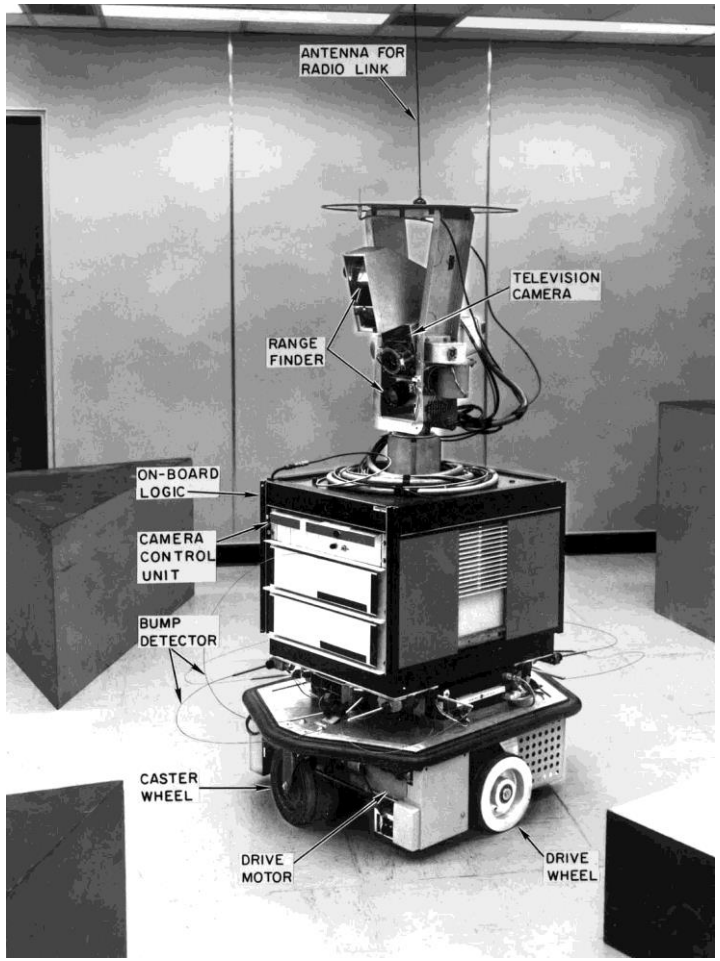
- Ultimately, AI **is** Search

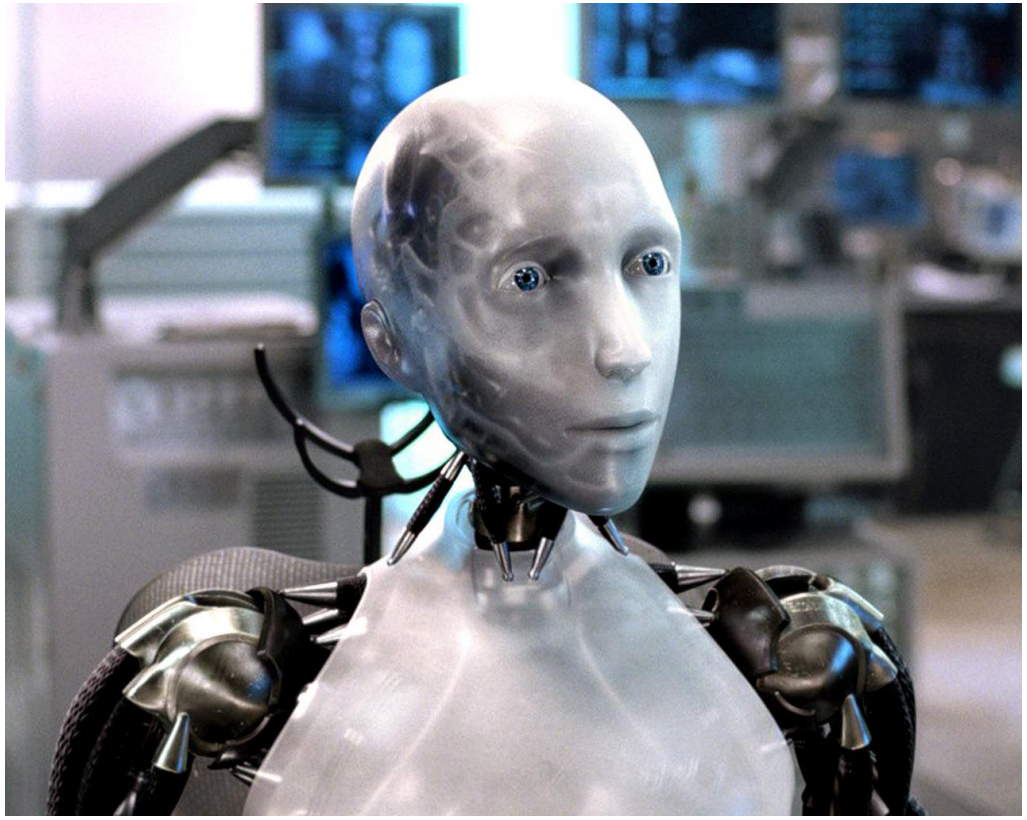


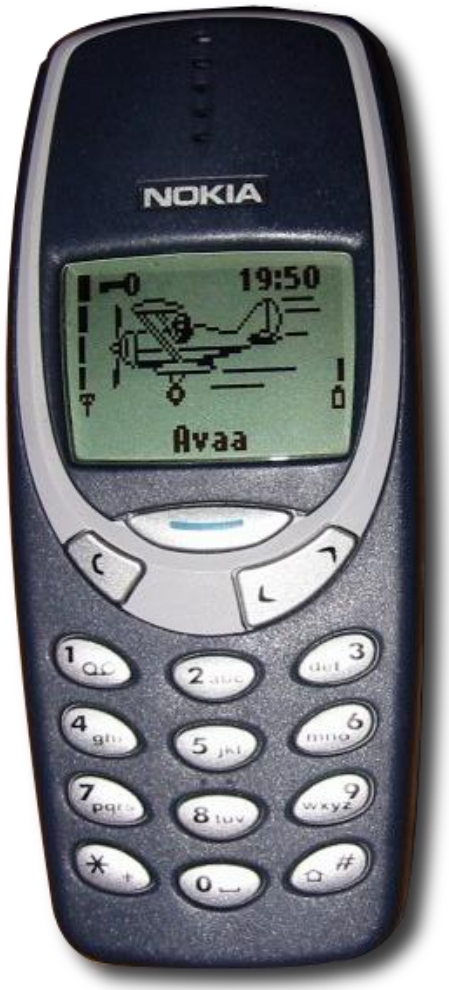







ANTENNA FOR RADIO LINK
TELEVISION CAMERA
RANGE FINDER
ON-BOARD LOGIC
CAMERA CONTROL UNIT
BUMP DETECTOR
CASTER WHEEL
DRIVE MOTOR
DRIVE WHEEL

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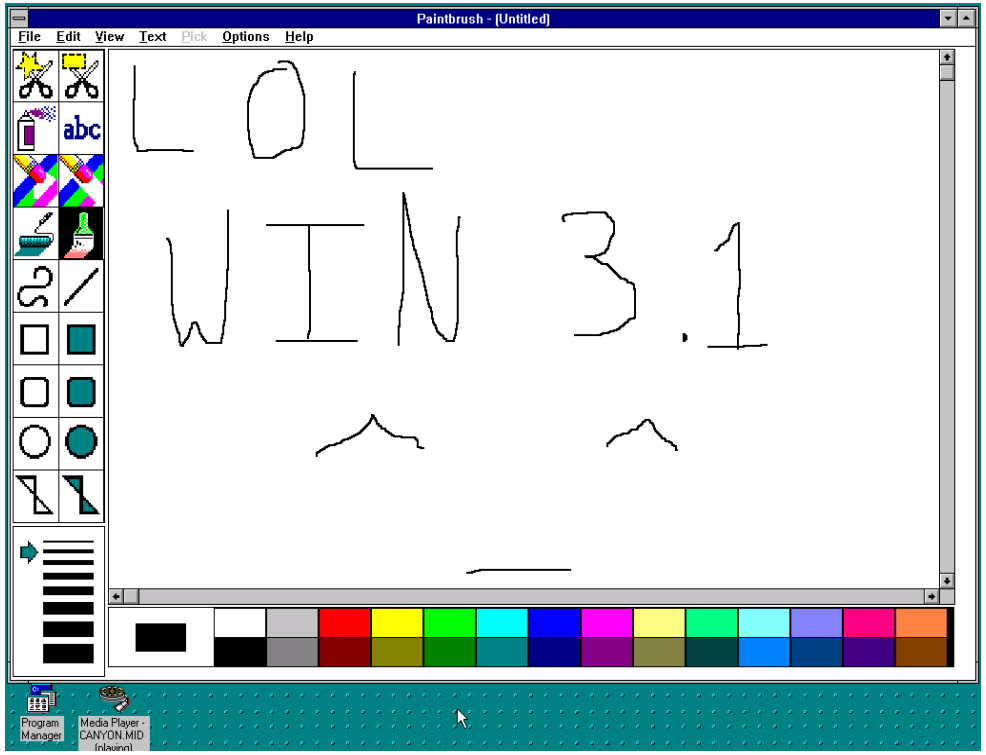
Tuesday, 10 January
Press home to unlock


Paintbrush - [Untitled]
File Edit View Text Pick Options Help
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WIN 3.1
Program Manager
Media Player - CANYON.MID [playing]

Recycle Bin
Most used
Get Started
Maps
People
Calculator
Alarms & Clock
Snipping Tool
Recently added
paint.net
3D Builder
3D Scan
Adobe Photoshop Express
Alarms & Clock
American Express
Audible
Autodesk Pixlr
Life at a glance
Mail
Find the cat
Where the Ninja Cats are...
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Cortana
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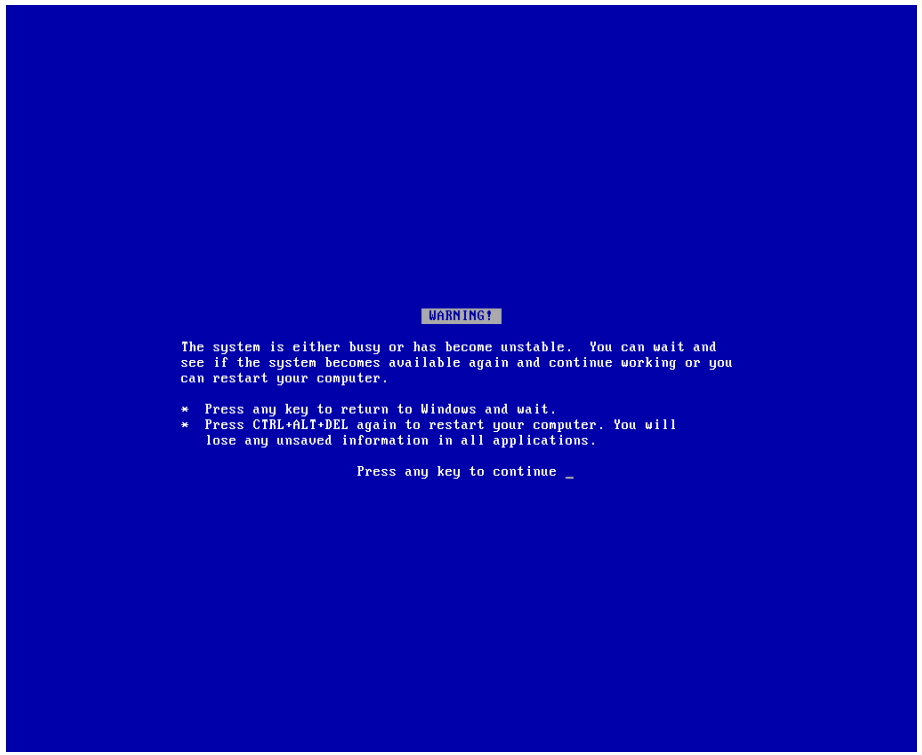
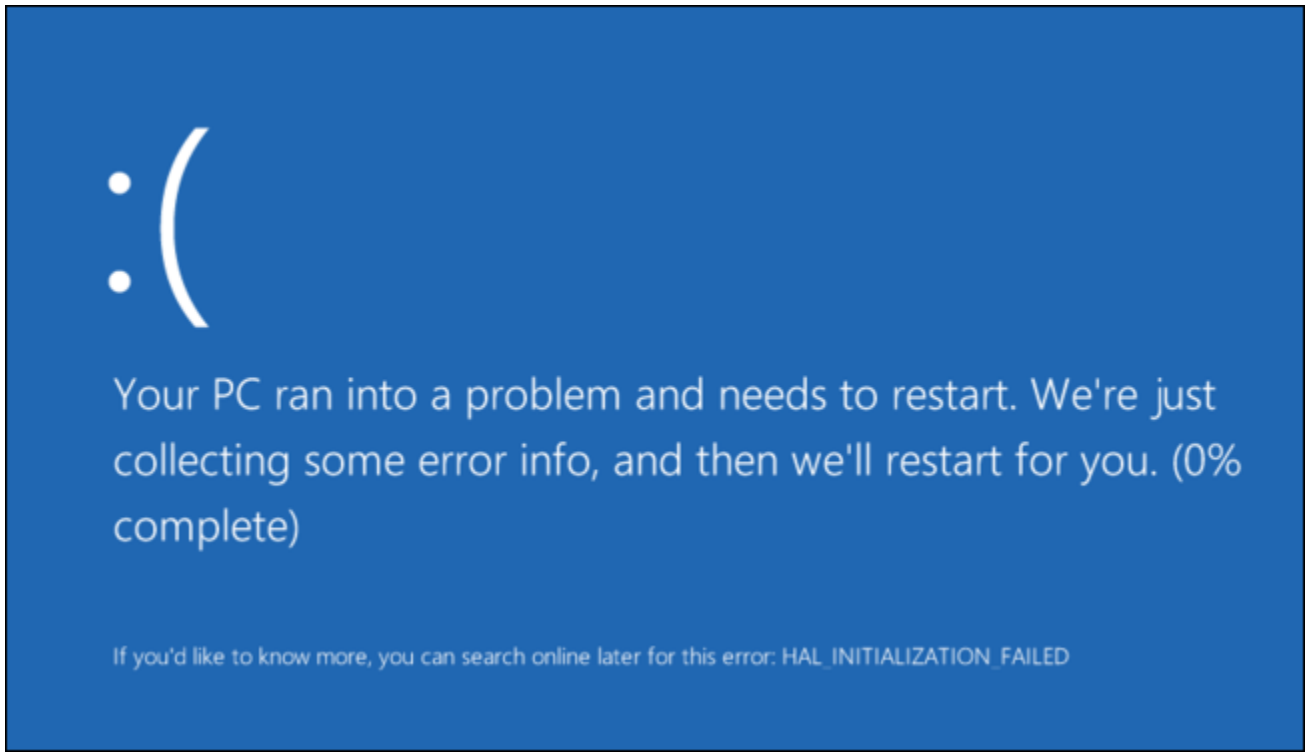
USA TODAY
Microsoft Edge
@BlueJays Life-size bobblehead anyone?
Twitter
Wed Thu Fri
Bellevue
Draft trades illustrate scarcity of talent at...
Sports
Pemex says fire at facility in Coatzacoalcos, Mexico, is no...
Breaking...
Office
Play and explore
Xbox (beta)
Microsoft Solitaire Collection
Minecraft
Movies & TV
Other cool apps
Wunderlist
Wireless Displ...
Remote Deskt...
Photoshop Ex...
Give all the feedbacks!
Feedback Hub
Ask me anything
4:55 PM
4/20/2016
Windows 10 Pro Insider Preview


WARNING!
The system is either busy or has become unstable. You can wait and see if the system becomes available again and continue working or you can restart your computer.
* Press any key to return to Windows and wait.
* Press CTRL+ALT+DEL again to restart your computer. You will lose any unsaved information in all applications.
Press any key to continue _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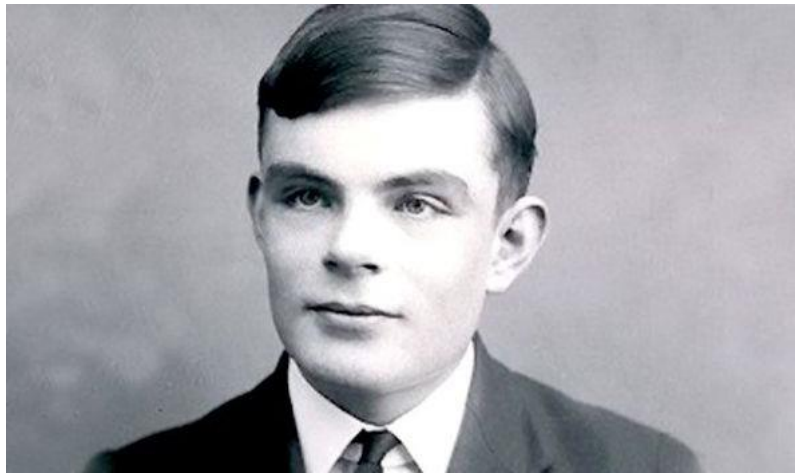
Your PC ran into a problem and needs to restart. We're just collecting some error info, and then we'll restart for you. (0% complete)
If you'd like to know more, you can search online later for this error: HAL_INITIALIZATION_FAILED

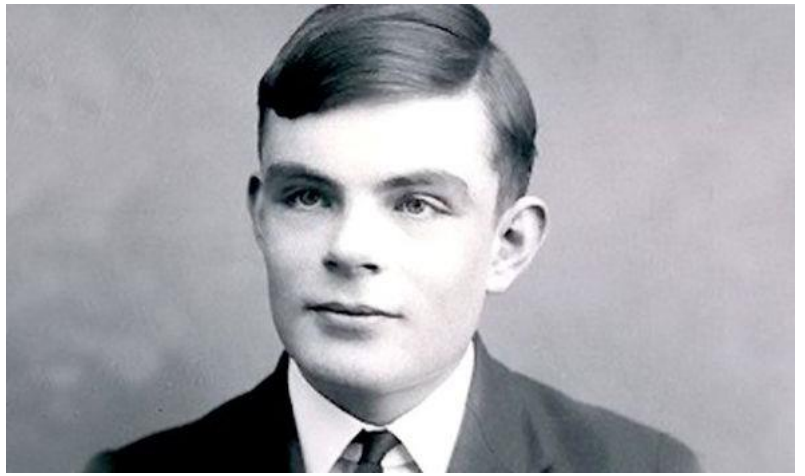
AI, a brief history

Turing Test, 1950



AI, a brief history

Turing Test, 1950



Dartmouth Conference, 1956

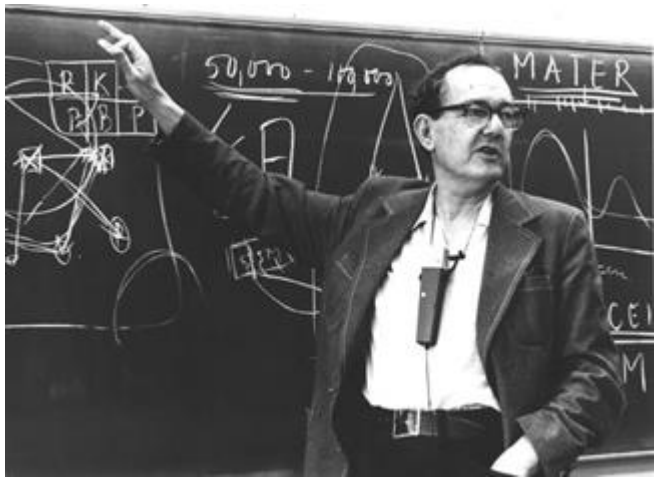
John McCarthy coined the term “Artificial Intelligence”

AI, a brief history

1958, Herbert Simon

Over Christmas, Allen Newell and I created **a thinking machine**.

there are now in the world machines that **think**, that **learn** and that **create**.



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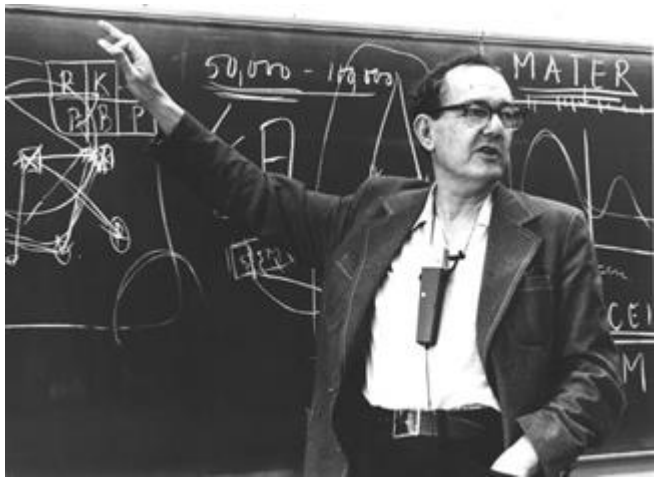
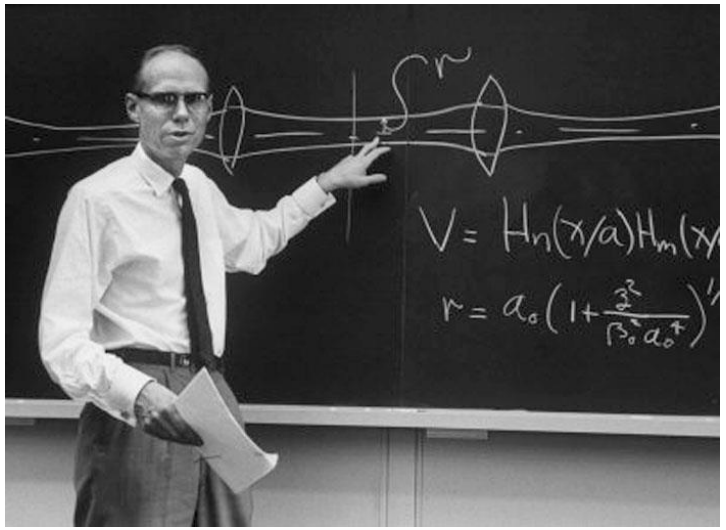


1958-1966

$$$$$$$$$$$$$

AI, a brief history

ALPAC report,
John Pierce et al,
1966



AI, a brief history

ALPAC report,
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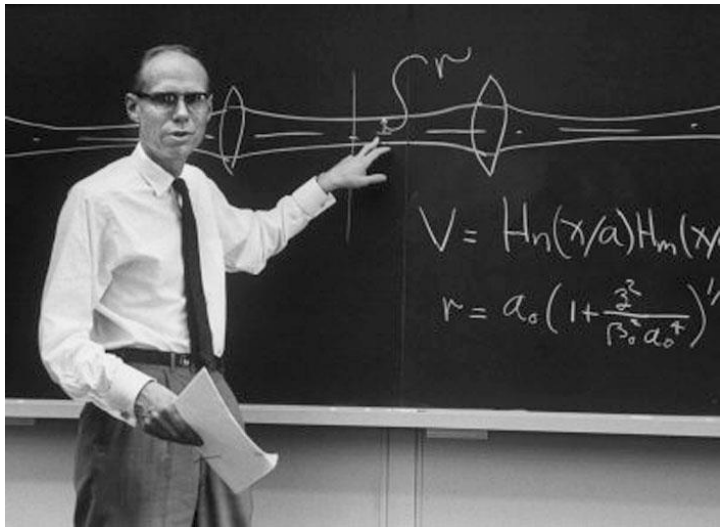


Lighthill report,
James Lighthill,
1973

AI researchers **had failed** to address the issue of **combinatorial explosion** when solving problems within **real world** domains.

AI, a brief history

AI Winter, 1966-199x

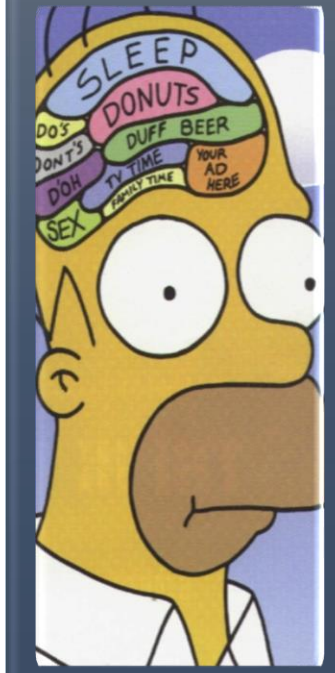
AI lived on, as niches

Expert Systems, Knowledge Representation, Optimization, Simulation

,…

Different takes on AI

Computationalism



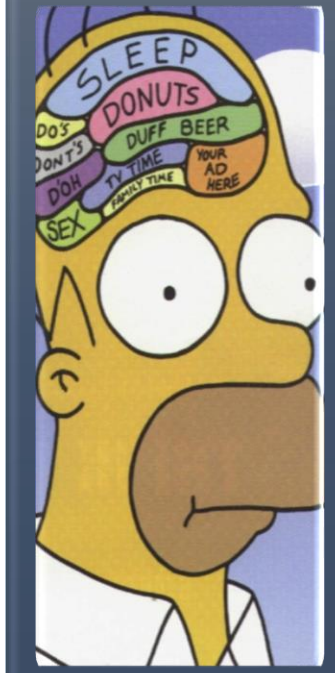
- 'Thinking' is an algorithmic process and cognitive abilities can be explained in terms of computation.

Connectionism

- 'Cognition' is not symbol manipulation, it is the *pattern* of activities within large numbers of interconnections.

Different takes on AI

Computationalism



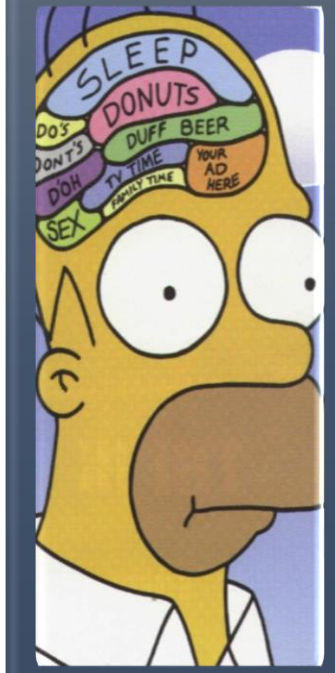
Computer-Like

Connectionism

Brain-Like

Different takes on AI

Computationalism



Computer-Like

Symbol

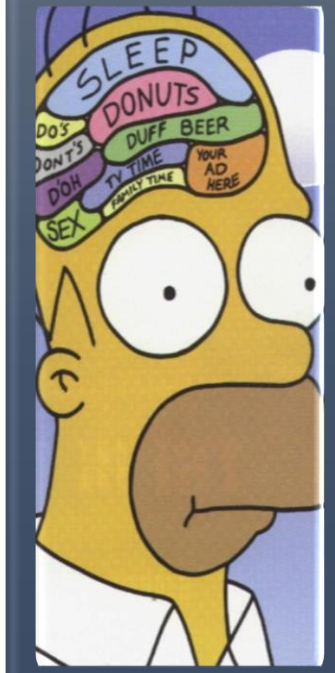
Connectionism

Brain-Like

Connection

Different takes on AI

Computationalism



Computer-Like

Symbol

Knowledge

Connectionism

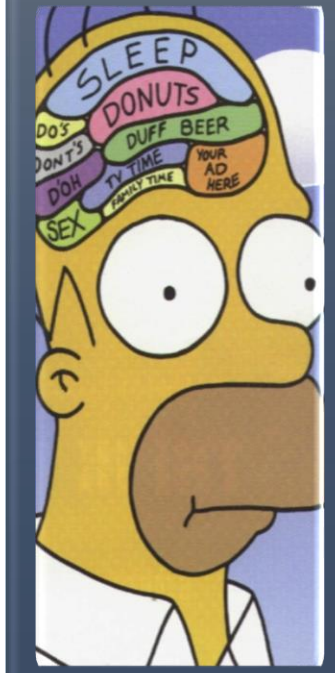
Brain-Like

Connection

Pattern

Different takes on AI

Computationalism



Computer-Like

Symbol

Knowledge

Narrow

Connectionism

Brain-Like

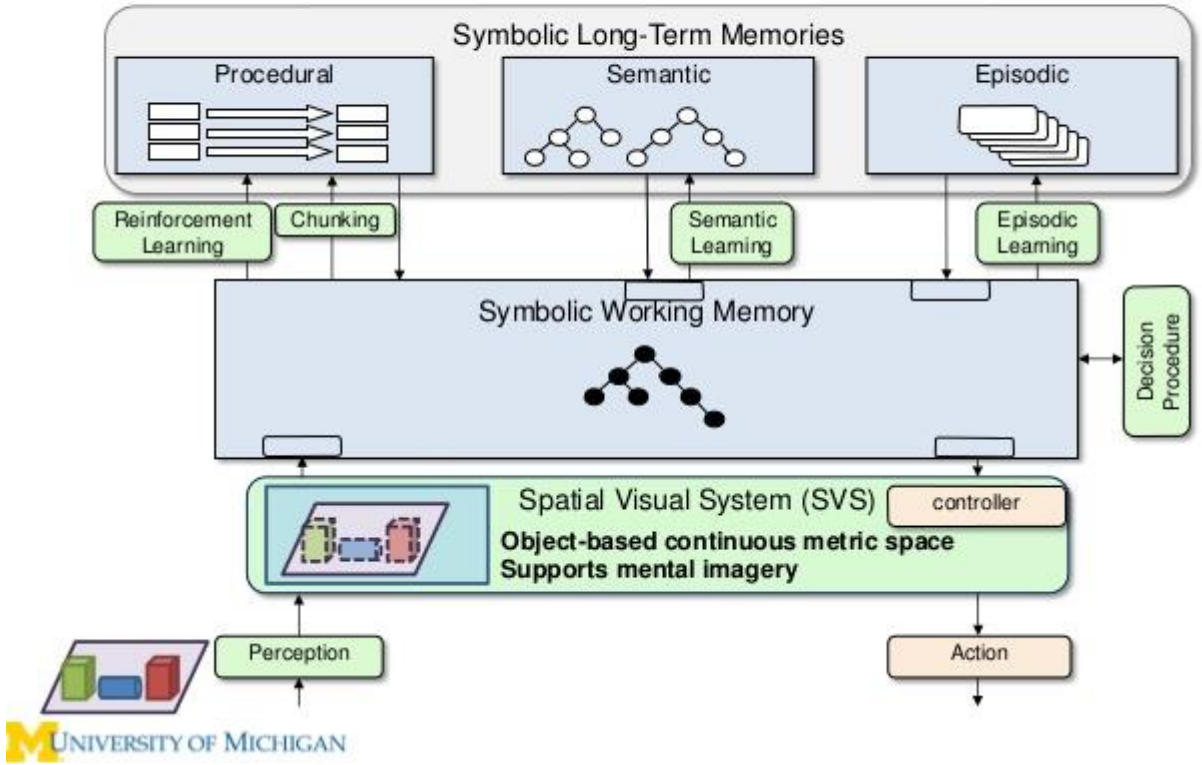
Connection

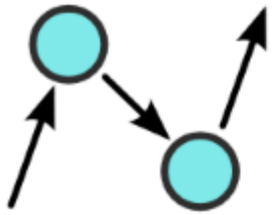
Pattern

Broad

Cognitive Architectures

Soar Structure





ConceptNet

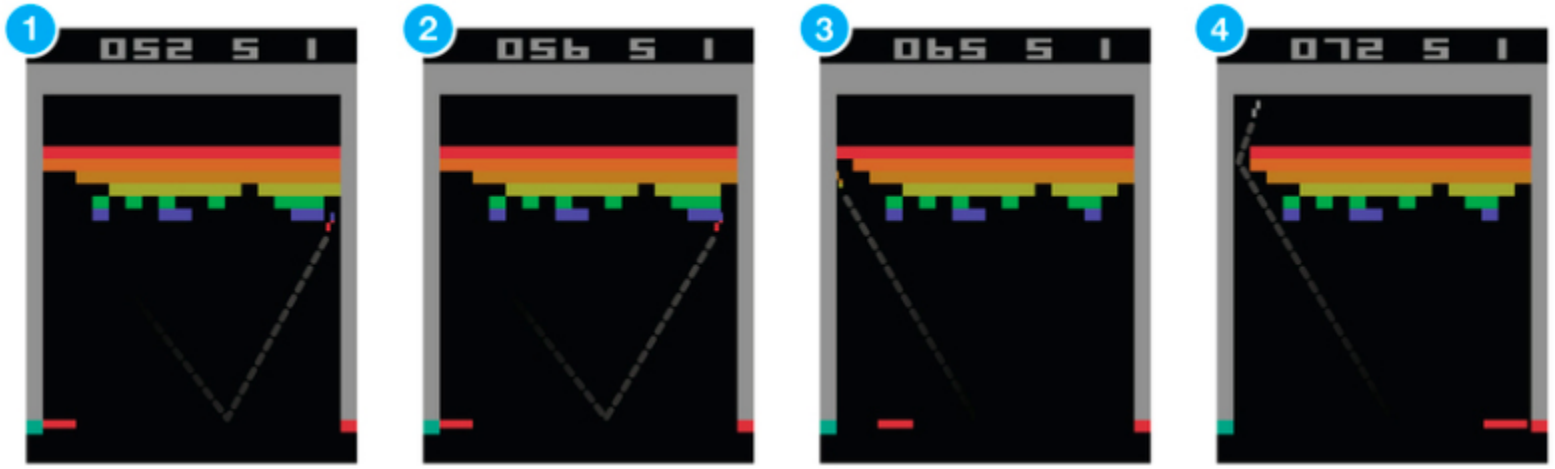
An open, multilingual knowledge graph

Artificial **General** Intelligence

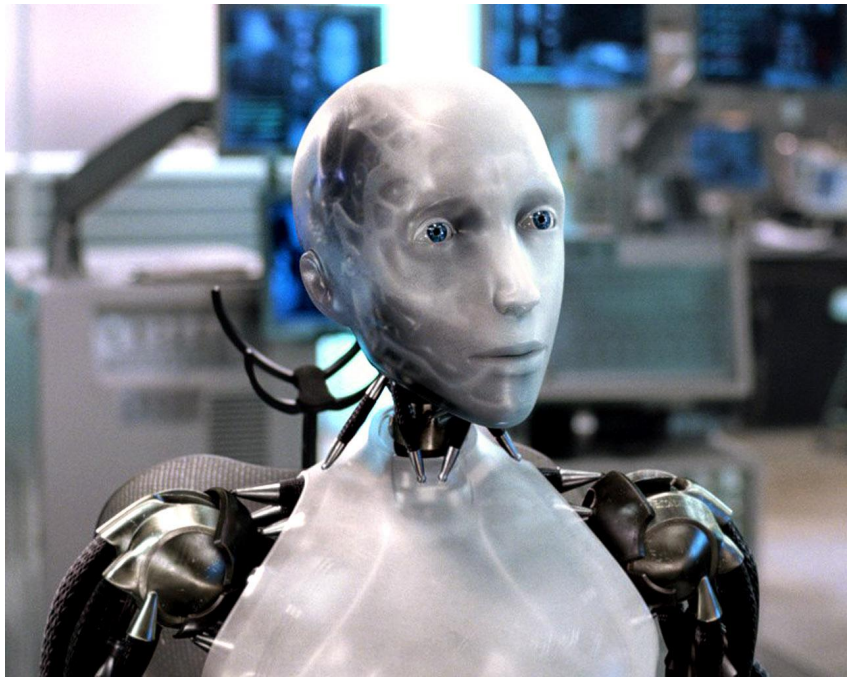
Chinese Room,
John Searle,
1980

Strong AI

Artificial **General** Intelligence



What’s remained of AGI is integration

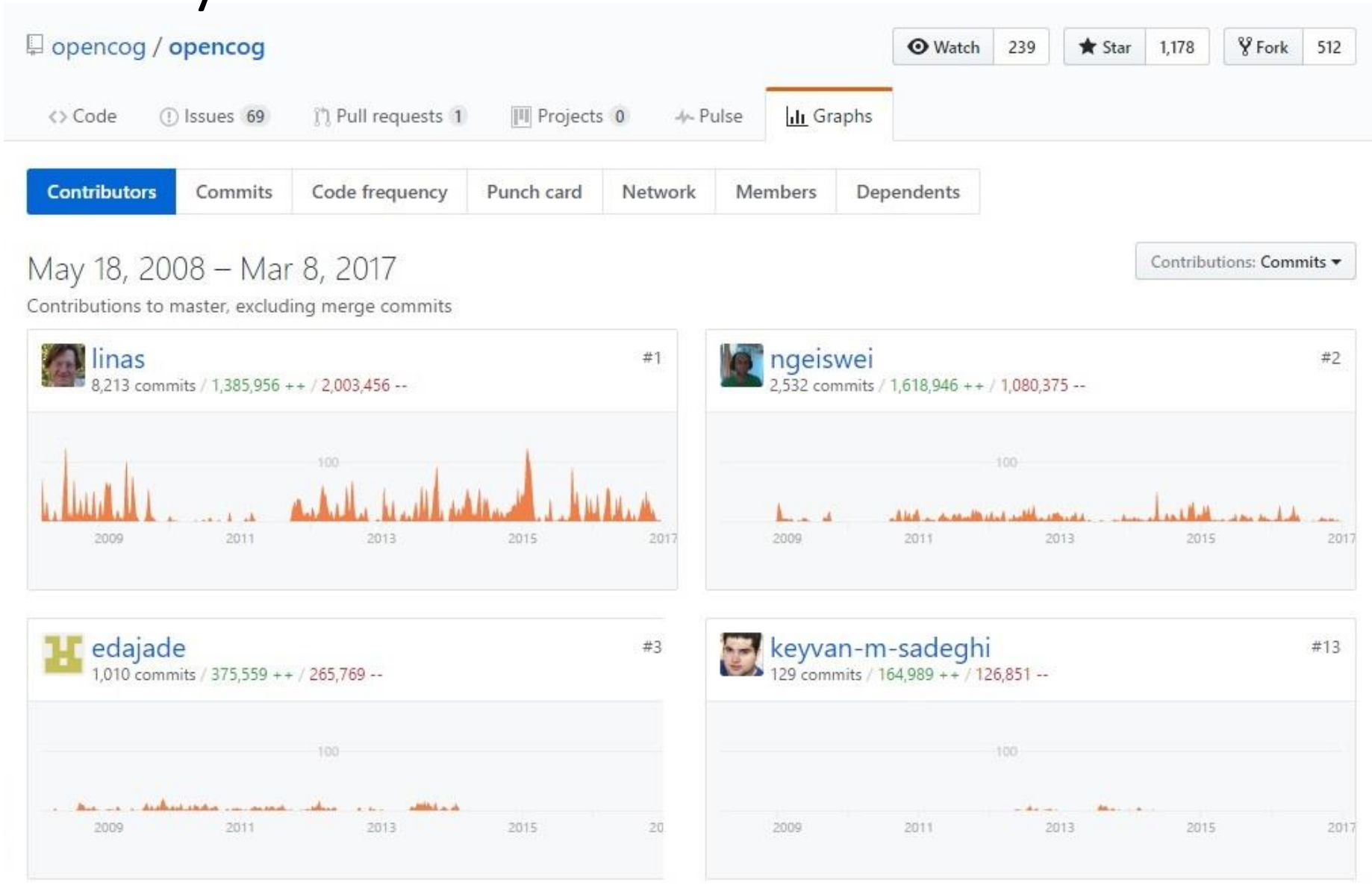


Role of Python

Natural Language
Analyses with NLTK

theano

Role of Python



Open discussion