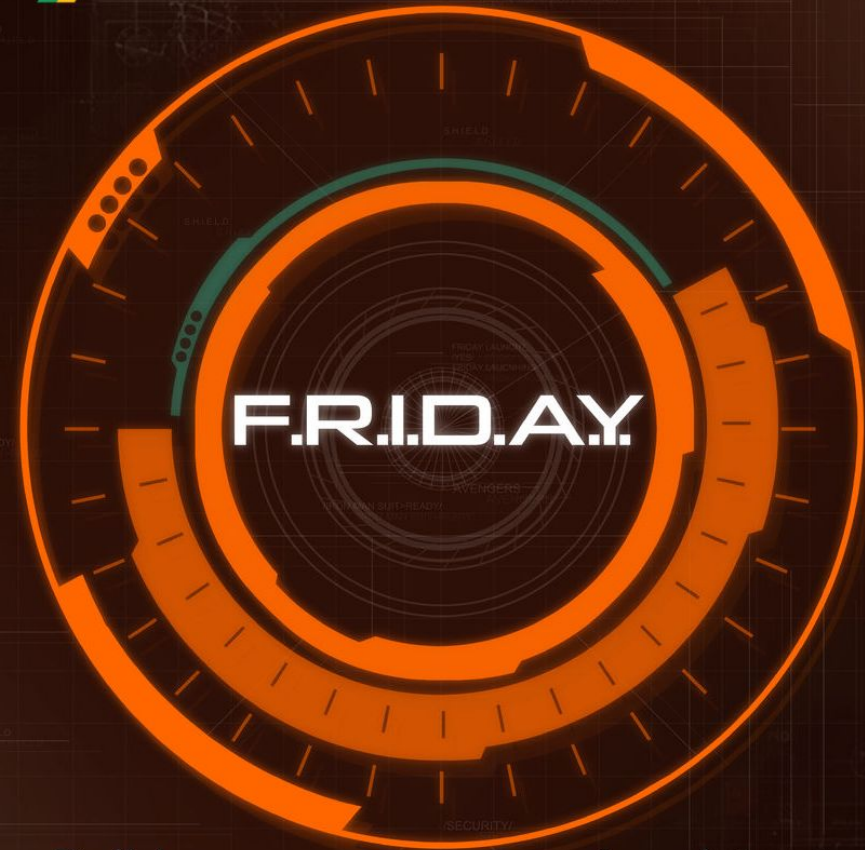




GDG Thessaloniki



Build your own personal assistant
Machine Learning with Voice Integration

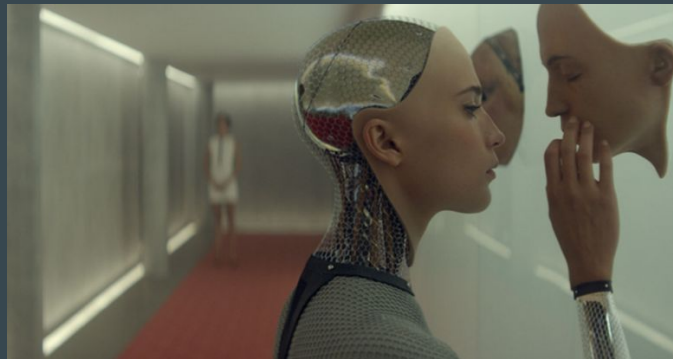
Who we are

George Kortsaridis | Christos Melidis

Where we are
i4G

AI | Voice Assistant | Working prototype

“I know what AI means... I think”



“I know what AI means... I think”



“I know what AI means... I think”

Intelligent behavior in an autonomous agent — THIS is AI.

AI research is leading toward something more advanced: **artificial general intelligence, or AGI.**

Artificial General Intelligence (AGI) is the intelligence which can be as intelligent as human beings.

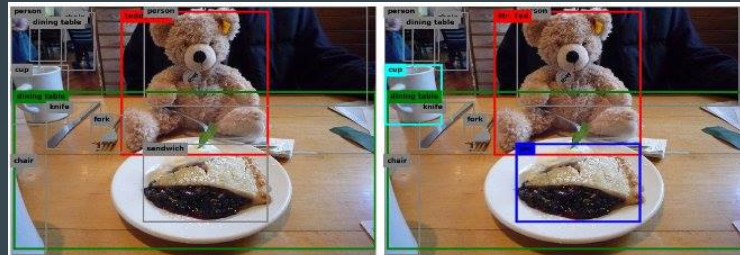
- **reason**, use strategy, solve puzzles, and make judgments under uncertainty;
- **represent knowledge**, including commonsense knowledge;
- **plan**;
- **learn**;
- **communicate** in natural language;
- and integrate all these skills towards common **goals**.

Tests for confirming human-level AGI

- The Turing Test (Turing)
- The Coffee Test (Wozniak)
- The Robot College Student Test (Goertzel)
- The Employment Test (Nilsson)
- The flat pack furniture test (Tony Severyns)

What we have in place today, Weak AI

AI to solve specific problems



A **teddy bear** sitting on a **table** with a plate of food.

A **Mr. Ted** sitting at a **table** with a **pie** and a **cup** of coffee.



85%

Of customer interactions are projected to be managed without a human by 2020.

31B

Installed base of IoT devices worldwide by 2020

\$11T

Economic impact of the IoT by 2025, according to estimations by the McKinsey Global Institute

3,327

Number of AI
companies listed on
Crunchbase

\$5B

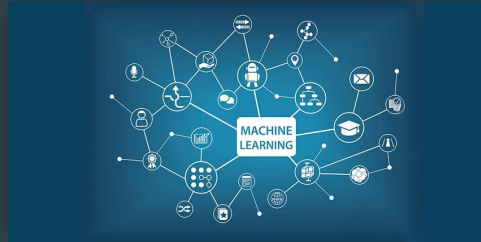
Amount venture
capital firms invested
in AI-related firms in
2017

\$37B

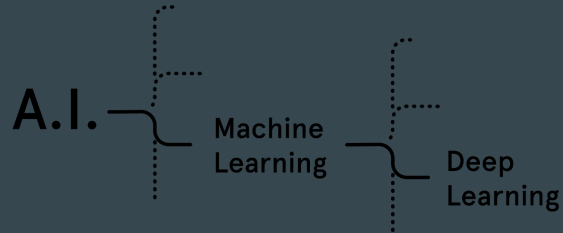
Amount of total spend
in AI by 2025

Buzzwords

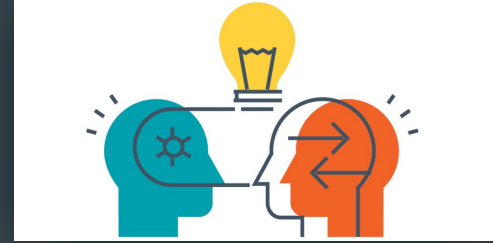
Machine Learning



Deep Learning



Natural Language Processing



Context Awareness



Machine Learning

Supervised Learning

(Input and Output is specified for training)

Unsupervised Learning

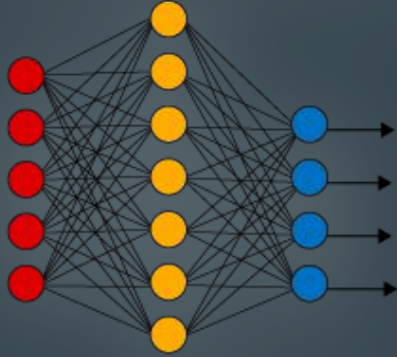
(Only input is given to recognise patterns)

Reinforcement learning

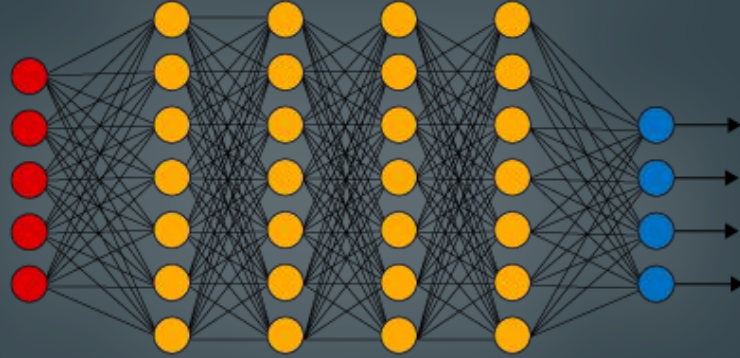
(Real world feedback is provided to system on the go)

Deep Learning

Simple Neural Network



Deep Learning Neural Network



● Input Layer

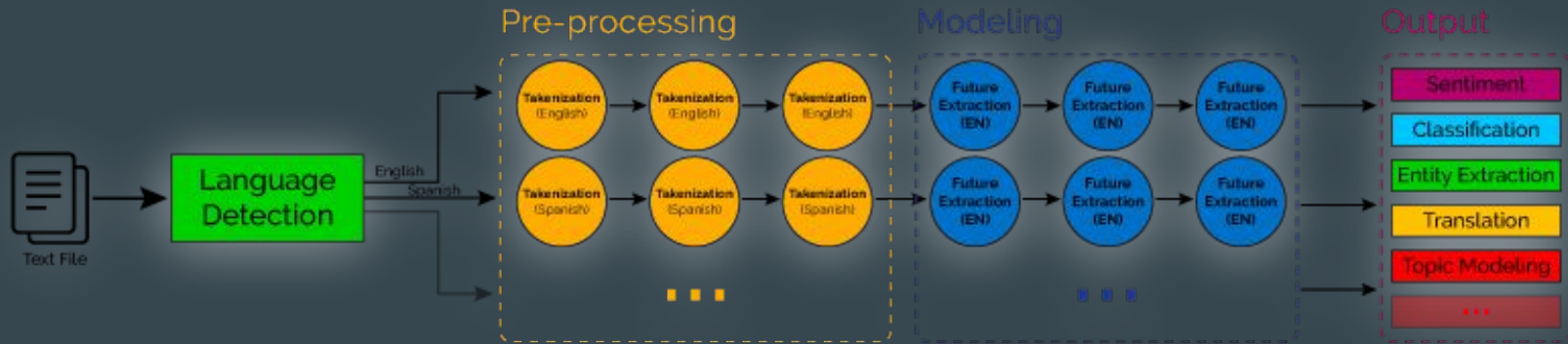
● Hidden Layer

● Output Layer

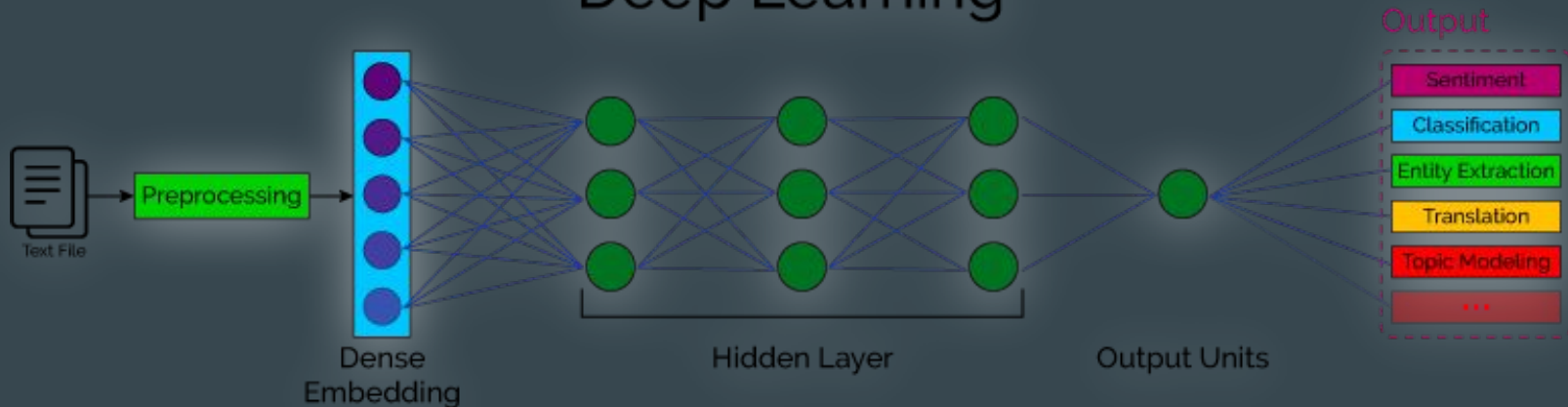
Deep Learning is **a type of Machine Learning** which includes **multiple adjustable blocks** to produce better results.

Neural networks is about applying the same rules of human brain to generate intelligence.

Natural Language Processing



Deep Learning



Context Awareness

Adaptation,

filtering of information, invocation of additional services, and deactivation of service components

Personalization,

adapt an application **to different persons**, such that they perceive the application differently at the same time

Proactivity,

delivering services to the user on the basis of **predictions** of future context information

Trends

Rise of Voice Commands in Assistants

As the quest for natural language communication continues, speech-to-text technology has improved immensely.

Siri

Amazon Echo

Google Home

Trends

Content as a Testing Ground

In order to get smarter, **AI** requires **lots of data, patterns** and **new situations**.

Users' consumption patterns are already being shaped by the machine learning behind Spotify's "Discover Weekly", Netflix's "Recommended For You" and Facebook's ability to keep you in a filter bubble of your own making.

Trends

AI is learning to be less biased

When a group of scientists recognized that their **AI** was **replicating** the **human bias** (think: “man : computer programmer :: woman : homemaker”) — they broke down the origins of bias and fixed it.

Intelligent Personal Assistants - IPA



Cortana.



Siri



amazon echo



Google now



Facebook M

Intelligent Personal Assistants - IPA

Speech-To-Text [**STT**]

Natural Language Processing [**NLP**]

Artificially Intelligent [**AI**]



Break

...

Time for Coffee

Planning our meetings

Schedule

Lab02	Lab03	Lab04	Lab05
<ul style="list-style-type: none">• In depth AI, NLP, Speech Recognition• Tech to date, 'n' a bit of science,• State of the art solutions	<ul style="list-style-type: none">• Data play, getting to know our data,• Data manipulations, setting 'em right, setting 'em straight,• Data driven implementation, getting to know the properties of the data,• Picking the right model,• Coding half solutions, Showing the way forward to an app	<ul style="list-style-type: none">• Code code code• Problem solving and assistance	<p>Create and showcase your own device</p>

Set our goals, plan, team building



Play time

TIME TO MAKE ME A



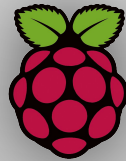
Tech to be used



Python



TensorFlow



Raspberry Pi



Python

<https://www.python.org>

A screenshot of the Python.org website. The top navigation bar includes links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a dark blue header with the Python logo and the word "python" in white. To the right of the logo is a search bar with a magnifying glass icon and the word "Search". Further right are links for "Menu", "A A", and "Social". The main content area has a dark blue background. On the left, there is a code block with a light blue background containing Python code for a Fibonacci series. On the right, there is a section titled "Functions Defined" with a brief description of Python's extensibility and a link to "More about defining functions in Python 3". At the bottom, a white text box contains the statement: "Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)".

```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

Functions Defined

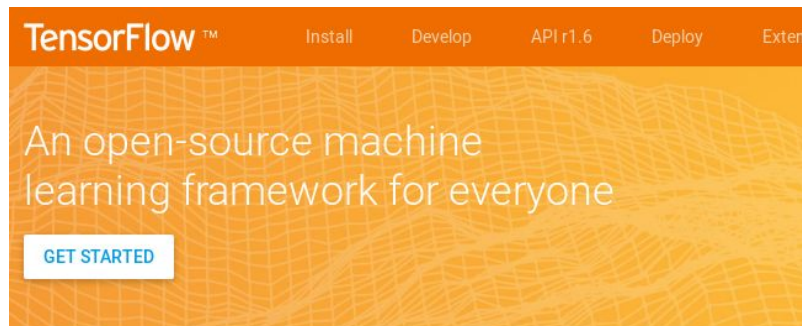
The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)



TensorFlow

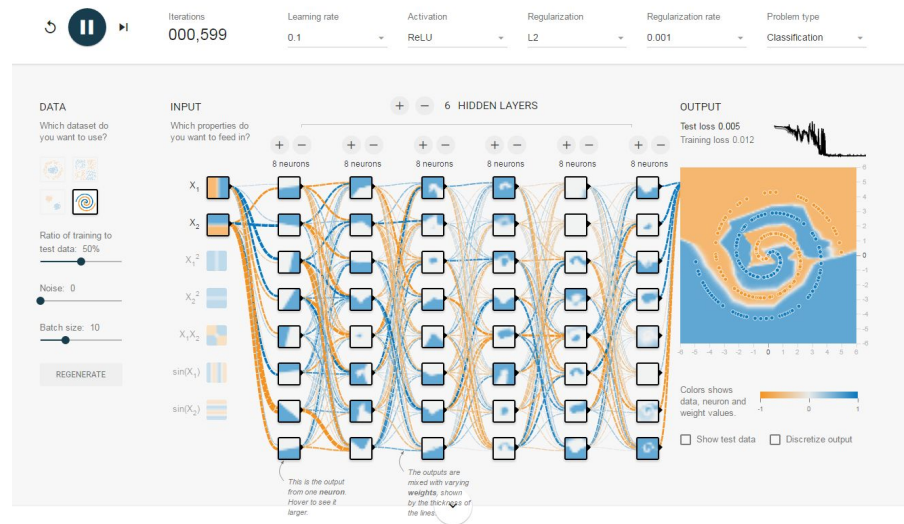
<https://www.tensorflow.org>





Online Neural Net play

<https://playground.tensorflow.org/>



<https://github.com/melidisc/Al-Lab>