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台灣AI實驗室

AI 應用之國際發展趨勢



A GLOSSARY OF ARTIFICIAL-INTELLIGENCE TERMS

▪ **ARTIFICIAL INTELLIGENCE**

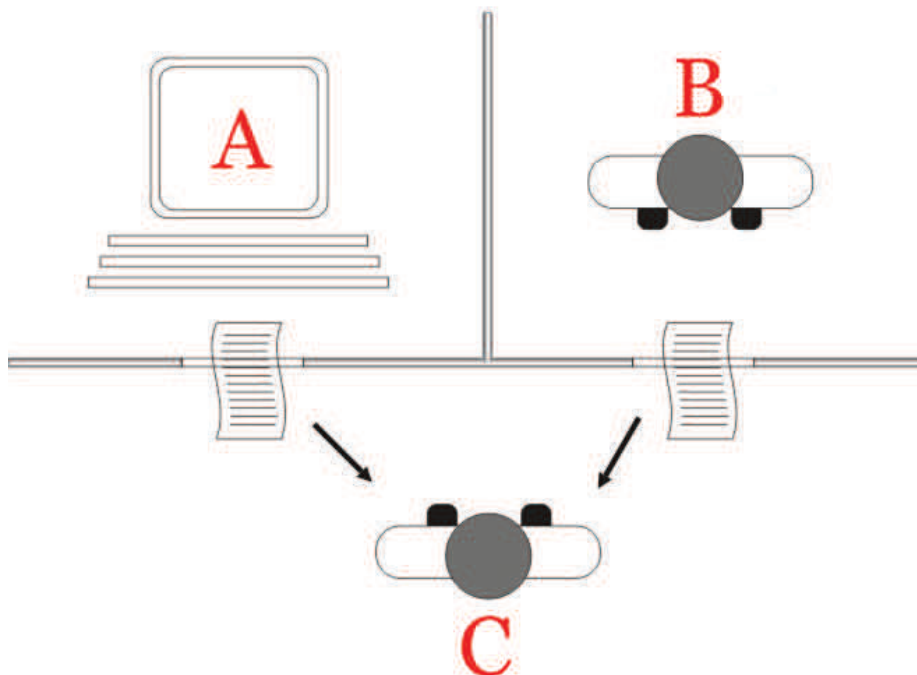
AI is the broadest term, applying to any technique that enables computers to mimic human intelligence, using logic, if-then rules, decision trees, and machine learning (including deep learning).

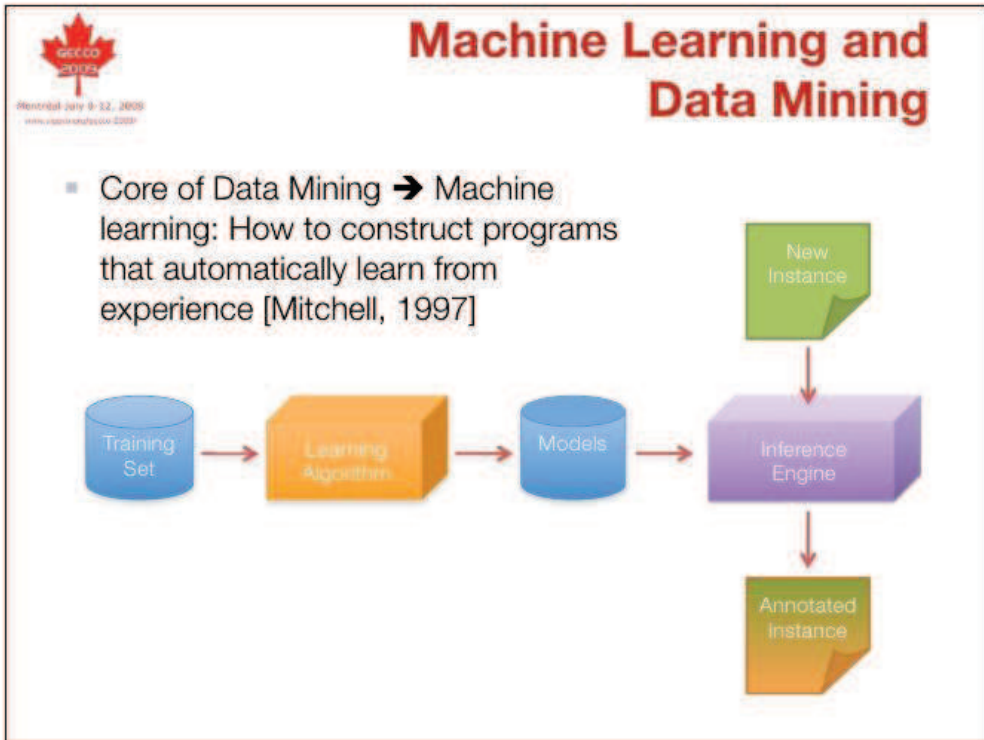
▪ **MACHINE LEARNING**

The subset of AI that includes abstruse statistical techniques that enable machines to improve at tasks with experience. The category includes deep learning.

▪ **DEEP LEARNING**

The subset of machine learning composed of algorithms that permit software to train itself to perform tasks, like speech and image recognition, by exposing multilayered neural networks to vast amounts of data.





DATA - IS THE BEGINNING

2B

of smart phones today

90%

% of data generated last 2 years

25B

of smart devices by 2020

ALGORITHM - MAKES HUMAN LEVEL DECISION

4.9%

2015
Microsoft achieved 4.9% ER
ImageNet Championship

Human 5.1% ER

5.9%

2016
Microsoft achieved
5.9% WER in SR

Human 6%

3:0

2017
AlphaGo beats Human
Champion

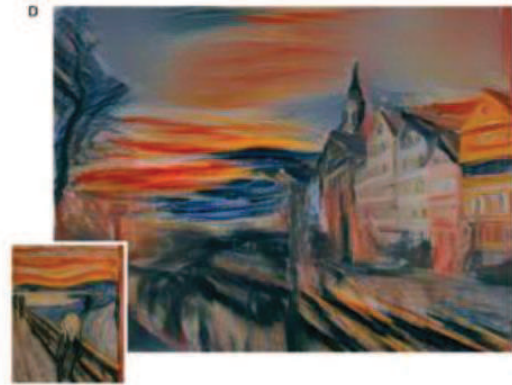


黃士傑（中）開發的圍棋程式「Erica」，於2010年「國際電腦奧林匹亞競賽」獲獎。圖 / 台師大提供



AI EXPERIENCE - IS KEY TO DEFINE





Latest in Gear



YW aims for an EV that goes 300 miles on a 15-minute charge



Baidu's all-electric self-driving car is a modified Chevy EQ



Level is a pair of glasses that doubles as an activity tracker

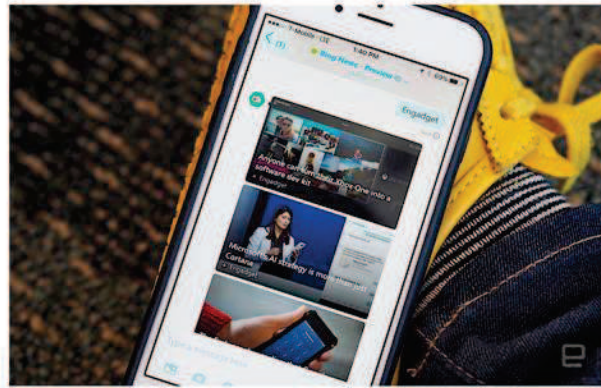


Microsoft's mobile OS isn't Windows -- it's Cortana

Bots are the new apps, if developers embrace them.

Ruthless Ingraham @ruthlessingraham
133,021 in Personal Computing

128



f t +

Cyanogen OS 12.1.1 update brings Cortana on the OnePlus One

COMMENTS (17) POST YOUR COMMENT

Prasad, 06 January, 2016

OnePlus Android

Cyanogen has started rolling out the 12.1.1 update for the OnePlus One, which includes the Microsoft Cortana app built-in.

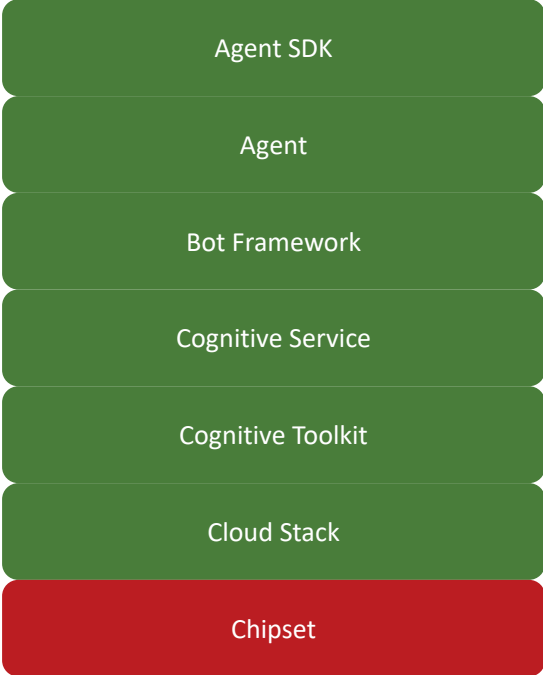
Hey Cortana, Meet Cyanogen

With the deepest integration available on any Android device, Cortana makes your life easier by intelligently handling tasks both big and small.

CYANOGEN Cortana

Now, as with Google Now, users will be able to say "Hey Cortana" and make use of the voice search features for their web searches as well as set alarms, set quiet mode, and change settings such as data or airplane mode, thanks to the deep integration of the feature into the

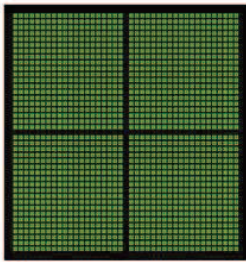




GPU Computing

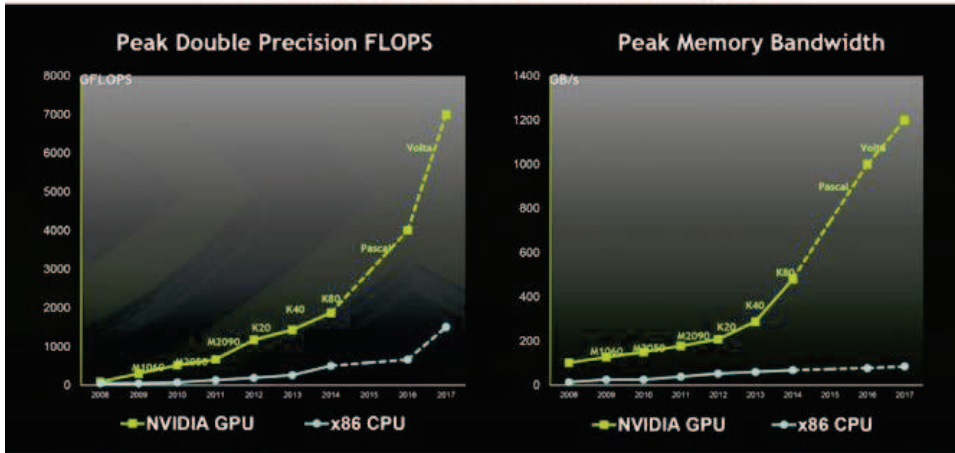


CPU
MULTIPLE CORES



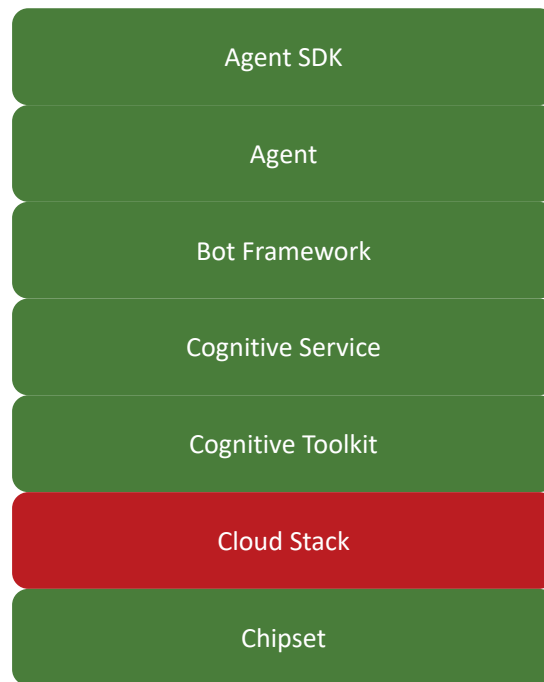
GPU
THOUSANDS OF CORES

Nvidia's GPU Accelerates x86 CPUs Processing Speed



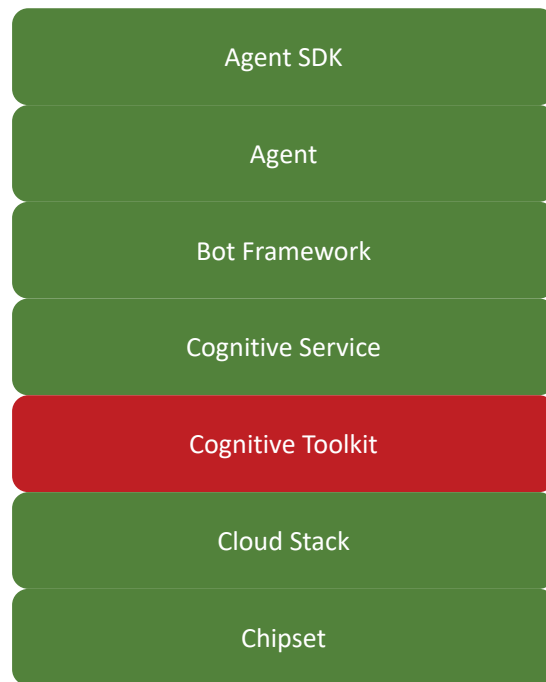
Market Realist

Source: Nvidia's Presentation

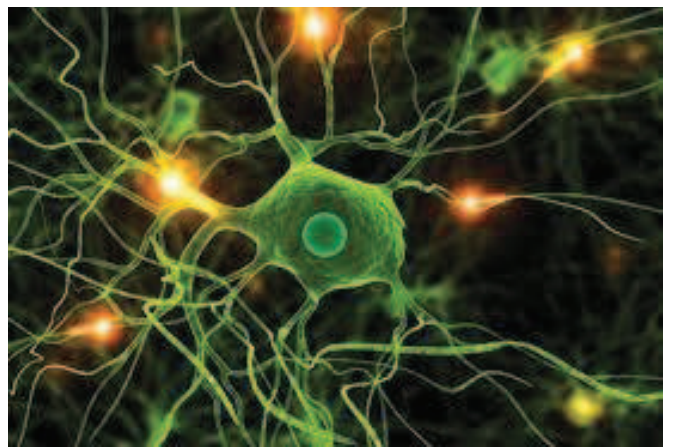
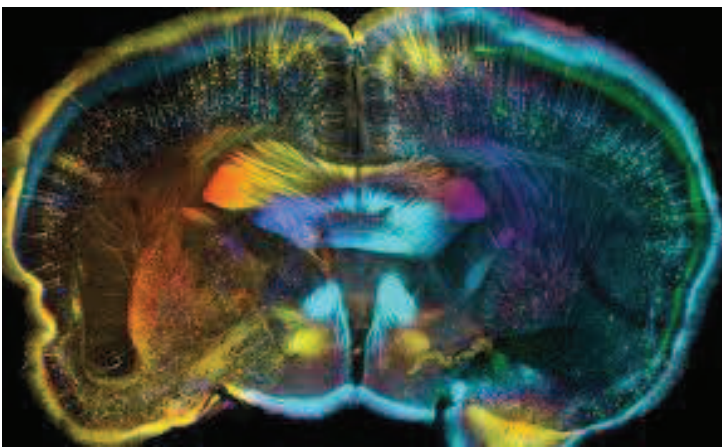


Global Azure Cloud

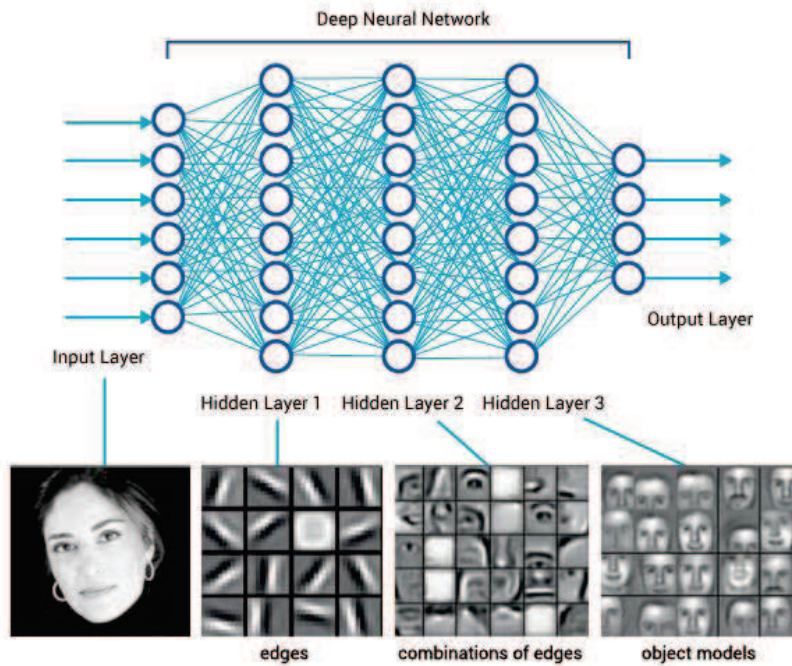




Neural Netowrk

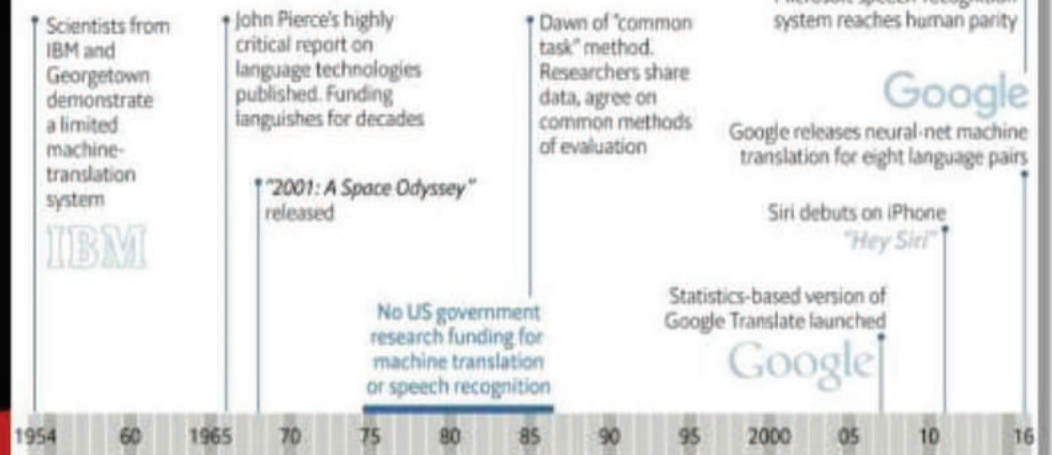


Deep Learning

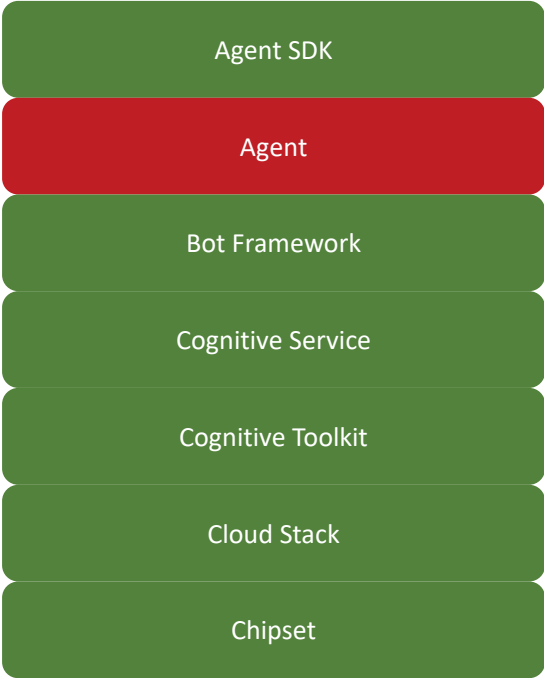
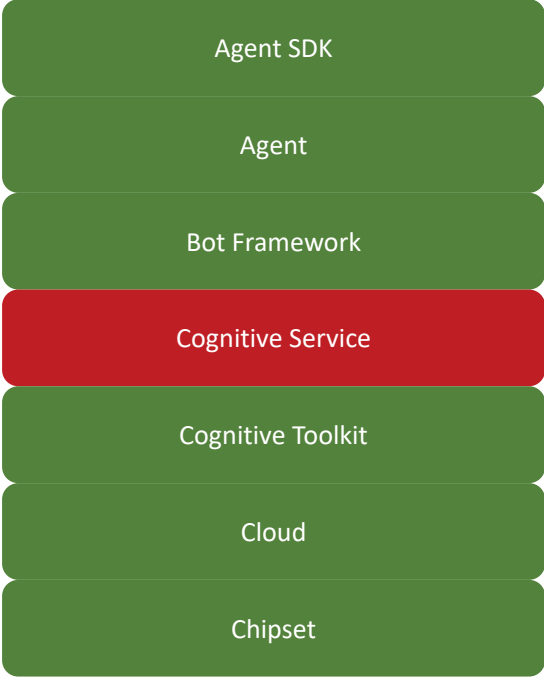


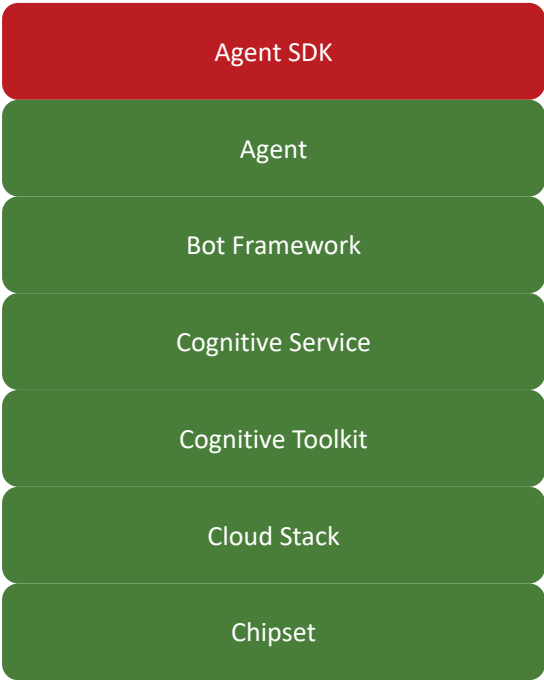
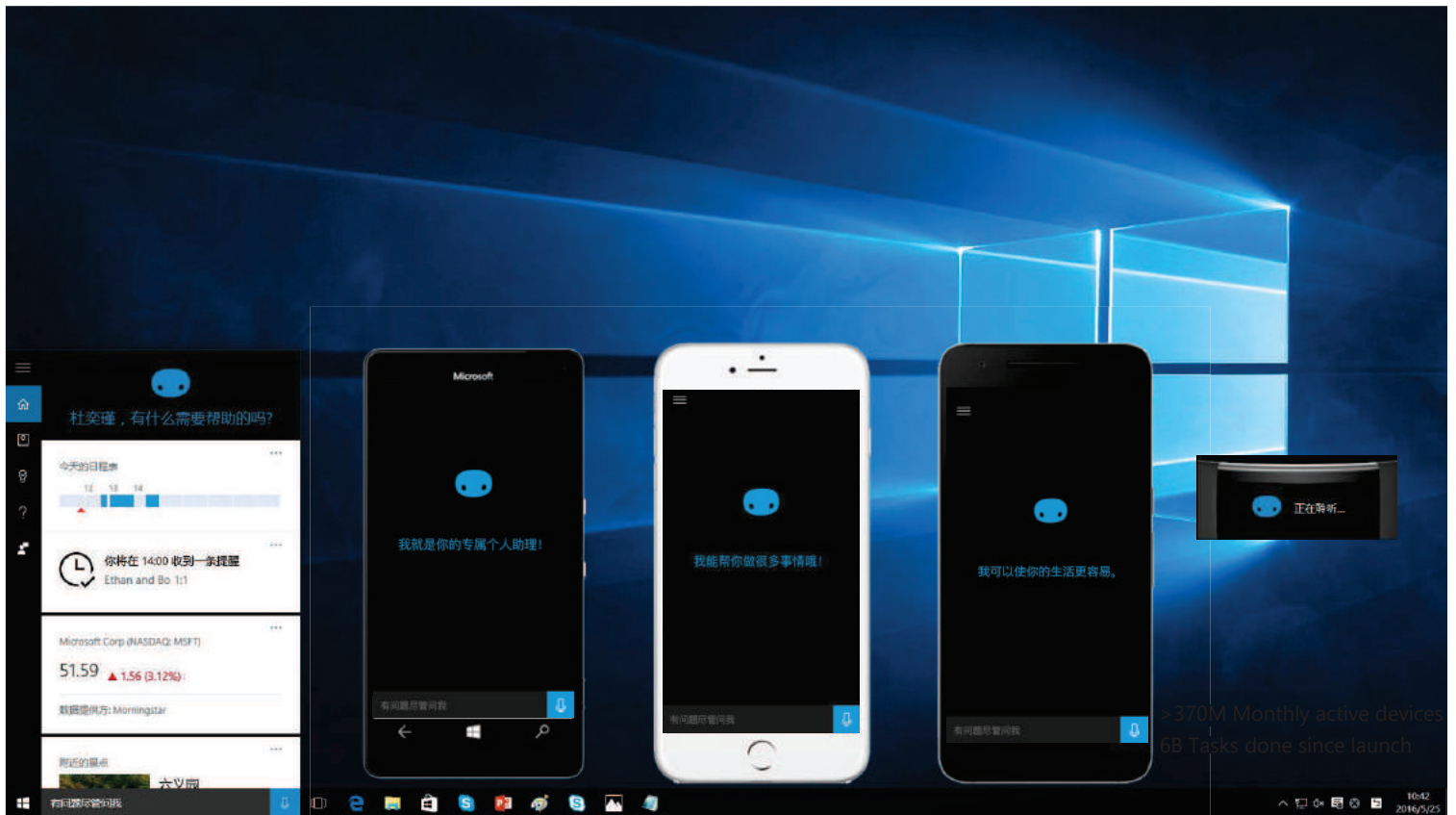
Now I understand

A history of language technologies



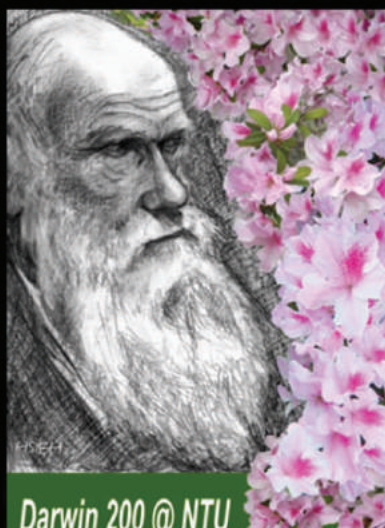
Source: The Economist





Does population matter to AI's revolution?

- DeepMind started in UK with population 65 million.
- Rovio Entertainment started in Finland with population 5 million.
- Vector Institute founded in Canada with population 35 million.
- Line started in South Korea with population 55 million.
- Apple, Google, Microsoft, FB and Amazon started in US with population 321 million.
- India has population of 1,311 million.



Question to Answer

Given the whole genome ($2 \times 3 \times 10^9$ letters) of a person, can we answer why he or she is sick?

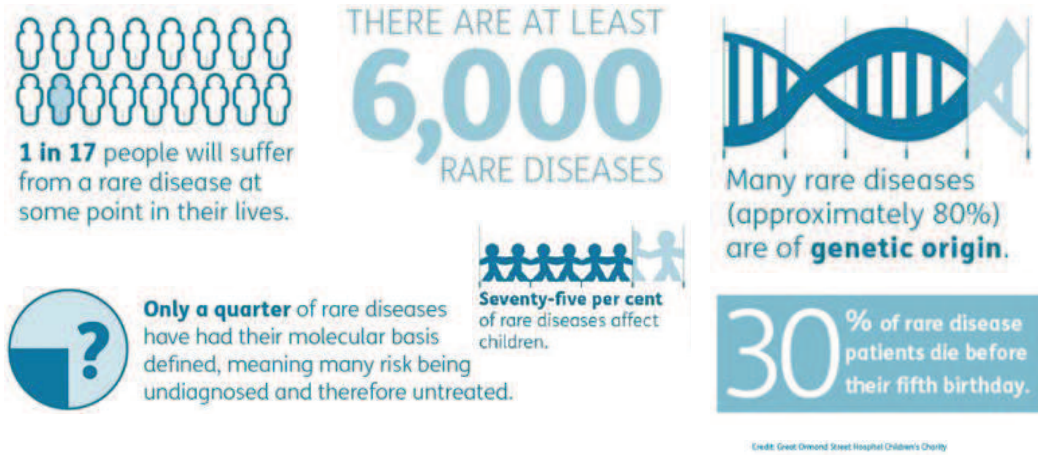
Assumption: the disorder is due to genetic variations.

HUMAN GENOME LAB @ AILABS.TW

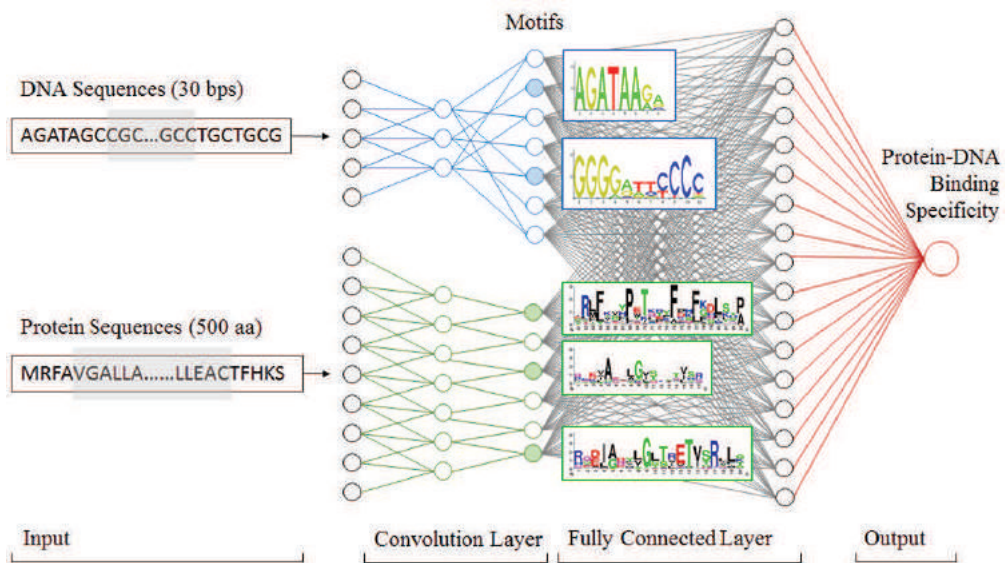
人類基因體實驗室 @ 台灣人工智慧實驗室



The scale of rare diseases



Predicting protein-DNA binding specificity



Research interests of c4Lab

Data Collection starts here



Build AI Algorithm – Make Human Decision



Create World Challenge

COCO Common Objects in Context

Home People Explore Dataset External

Overview Challenges Download Evaluate Leaderboard

Last updated: 11/28/2016 (results migrated weekly from CodaLab). For information about each test split please see the [upload page](#). **Hints:** use the buttons below to select the dataset split, click on column headers to sort the data, use the search bar to filter results, use the buttons to export the current table view, and click on method names to show *per-category* results.

BBOX: Standard Dev Challenge2015 Challenge2016
 SEGM: Standard Dev Challenge2015 Challenge2016

Copy to Clipboard Export to CSV

	AP	AP ⁵⁰	AP ⁷⁵	AP ^S	AP ^M	AP ^L	AR ^S	AR ^M	AR ^L	AR ⁵⁰	AR ⁷⁵	AR ^S	AR ^M	AR ^L	date
G-RLM ¹²	0.413	0.62	0.45	0.231	0.436	0.547	0.34	0.548	0.604	0.424	0.641	0.748	0.641	0.748	2016-09-19
MSRA ¹⁶	0.394	0.613	0.424	0.216	0.431	0.521	0.322	0.483	0.502	0.314	0.565	0.65	0.565	0.65	2016-11-24
Deformable R-FCN ⁸	0.373	0.58	0.407	0.185	0.402	0.518	0.317	0.473	0.488	0.277	0.541	0.673	0.541	0.673	2017-03-25
MSRA_2015 ¹⁷	0.371	0.588	0.398	0.173	0.415	0.525	0.319	0.475	0.489	0.267	0.552	0.679	0.552	0.679	2015-11-26
Trimps-Souhen ²⁴	0.359	0.58	0.383	0.158	0.407	0.509	0.312	0.479	0.497	0.269	0.557	0.683	0.557	0.683	2016-09-16
FPN (single model) ¹¹	0.358	0.585	0.386	0.175	0.387	0.478	0.309	0.463	0.479	0.264	0.524	0.63	0.524	0.63	2016-11-04
Imagine Lab ¹⁴	0.353	0.529	0.39	0.147	0.376	0.519	0.316	0.489	0.509	0.273	0.563	0.705	0.563	0.705	2016-12-24
Wal ²¹	0.345	0.559	0.369	0.165	0.389	0.478	0.303	0.47	0.493	0.266	0.565	0.668	0.565	0.668	2016-09-19
FAIRCNN ¹⁸	0.332	0.519	0.363	0.136	0.372	0.478	0.299	0.46	0.483	0.234	0.56	0.664	0.56	0.664	2015-11-26
CMU_A2_VGG16 ⁴	0.323	0.528	0.341	0.144	0.355	0.452	0.295	0.462	0.471	0.246	0.522	0.65	0.522	0.65	2016-09-19

COCO Common Objects in Context

Home People Explore Dataset External

Overview Challenges Download Evaluate Leaderboard

Challenges: Detections | Captions | Keypoints

Begin by learning about the individual challenges. Compete to earn prizes and opportunities to present your work. Come to the workshops to learn about the state of the art!

Download

Download the dataset, including the dataset tools, images, and annotations. Learn about the annotation format. See [cocoDemo](#) in either the Matlab or Python code.

Results Format

Develop your algorithm. Run your algorithm on COCO and save the results using the format described on this page. See [evalDemo](#) in either the Matlab or Python code.

Evaluate: Detections | Captions

Evaluate results of your system on the validation set. The same code will run on the evaluation server when you upload your results. See [evalDemo](#) in either the Matlab or Python code and [evalCapDemo](#) in the Python code for detection and caption demo code, respectively.

Upload: Detections | Captions

Upload your results to the evaluation server.

Artificial Intelligence Science & Technology Future Technology Gadgets Latest News Robots

South Korean Government to invest 1 trillion won in artificial intelligence

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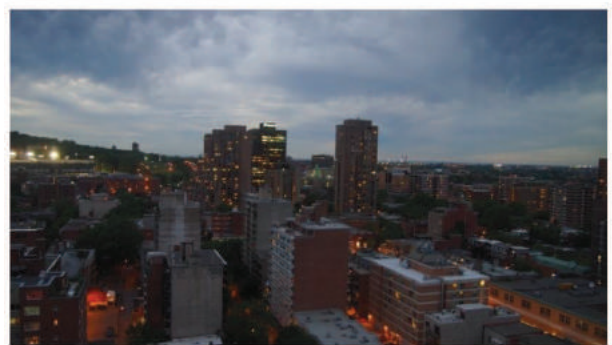
The South Korean government announced Thursday it would spend 1 trillion won by 2020 to boost the artificial intelligence industry.

Canada Investing \$91.5M to Grow Its AI Expertise, Development

Todd R. Weiss May 2, 2017

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The money is being used to retain and increase the number of AI researchers as the country seeks a leadership role in the AI marketplace.



RELATED MEDIA



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Using Azure Machine Learning for Predictive Maintenance - December 8th

Azure Machine Learning for the Enterprise

Canada is betting on the promise of artificial intelligence to expand its tech economy by investing \$91.5 million to bolster its leadership in AI development and to attract and retain more academic researchers and experts who will further contribute to the country's work in the field.

The initiative, which is being funded by the Canadian government, aims to promote collaboration on AI in three of the nation's high-tech hubs in Montreal, Toronto-Waterloo and Edmonton. The program, called the Pan-Canadian Artificial Intelligence Strategy, is being administered by the Canadian Institute for Advanced Research (CIFAR).

Singapore

Singapore's artificial intelligence capabilities to get S\$150m boost



The National Research Foundation (NRF) will be investing up to S\$150 million into a new national programme aimed at boosting Singapore's artificial intelligence (AI) capabilities over the next five years.

SINGAPORE: The National Research Foundation (NRF) will be investing up to S\$150 million into a new national programme aimed at boosting Singapore's artificial intelligence (AI) capabilities over the next five years.

Press release

£17 million boost for the UK's booming artificial intelligence sector

From: Department for Culture, Media & Sport and The Rt Hon Karen Bradley
Published: 26 February 2017

Leading experts to carry out major review on the development of artificial intelligence in a sector which could add an additional £654 billion to the UK economy



New measures to support Britain's world-leading AI sector are announced as part of a bold Digital Strategy to boost growth and a thriving, outward-looking digital economy that works for everyone.

Accenture has estimated AI could add in the region of £654 billion to the UK economy by 2035. So the Strategy, due to be published by Culture Secretary Karen Bradley MP on Wednesday (March 1), builds on the plan set out in the Government's Industrial Strategy to capitalise on existing strengths and back new technologies where the UK can lead.

Britain already has a competitive advantage in Artificial Intelligence with some of the world's most innovative AI companies based here and an ecosystem of investors, employers, developers and clients. It is a growing area for research and commercial investment, including global digital companies, and was identified as one of the technologies that could be supported through the Government's new Industrial Strategy Challenge Fund and the Challenger Business Programme.

AI is already making a huge positive difference in people's lives - from the obvious uses, such as smartphone voice and image recognition technology and virtual digital assistants like Siri, to less known benefits such as online customer services which make it easier to help when things go wrong and fraud detection tools used by banks.

sina 新浪财经

苏州设立百亿元产业基金欲打造人工智能硅谷

2017年03月23日 17:20 中国新闻网

中新网南京3月23日电 (记者 钟升)苏州工业园区科技和信息化局副局长许文清23日表示，园区财政将设立200亿至300亿元人民币的产业基金推动人工智能产业的发展。

人工智能是对人的意识、思维的信息过程进行模拟的一门科学。近年来，随着技术的突破，人工智能的发展速度正急速加快。在刚刚闭幕的全国两会上，“加快人工智能等技术研发和转化，做大做强产业集群”首次出现在政府工作报告中。近日，苏州工业园区发布了《苏州工业园区人工智能产业发展行动计划(2017-2020)》，提出加快发展以大数据和云计算为支撑的人工智能相关产业。

据许文清介绍，目前“苏州工业园区在人工智能等领域已聚集企业600余家，从业人员超过6万人。2016年实现产值350亿元，增长25%。”中国科技大学、西交利物浦等15所高校都在园区设立了人工智能相关的专业或实验室。

此外，微软、西门子、华为等名企也不约而同地把人工智能的相关研究机构放在园区。“微软苏州研发中心已成为微软人工智能研发的大本营，世界知名的微软人工智能小娜(Cortana)2.0版本就是完全由苏州微软团队研发完成的”

专栏推荐



王先知

ABOVE
TAIWAN
Above Taiwan & Beyond, Inc.

Taiwan AI LABs

你曾經用這樣的高度 看見台灣的美麗與哀愁嗎？
齊柏林