

손에 잡히는 Machine Learning

김명신 부장

Principal Technical Evangelist, Microsoft

Strong AI

Regression

axon

Prediction Model

Deep Learning

Neural Network

Synapse

Computationalism

Big Data

Superintelligence

Intelligence App

Technological Singularity

Clustering

Classification

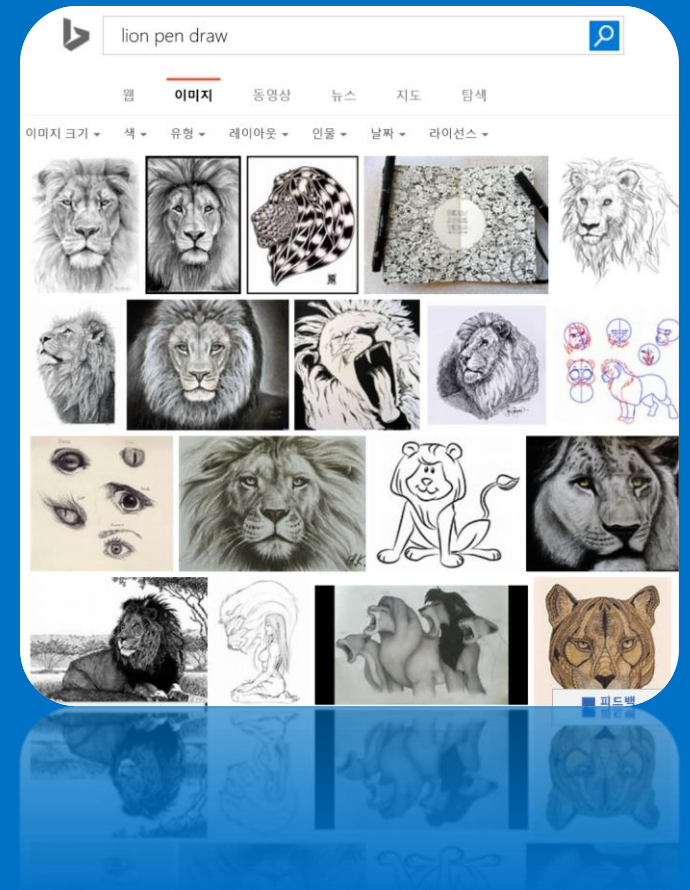
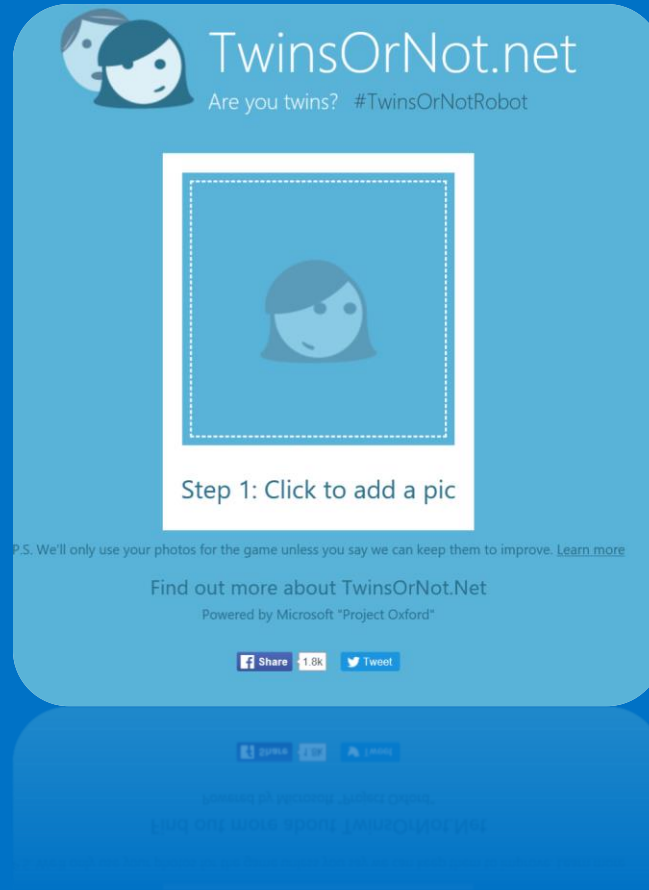
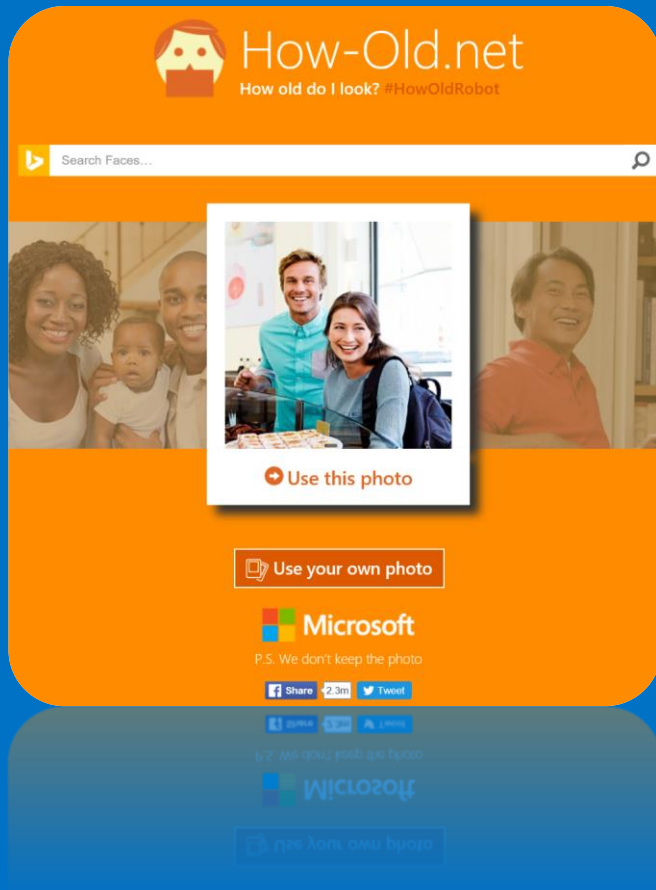
언론에 비친 인공지능

'AI·머신러닝·우주' 미래산업에 공격적 투자
야후, 연구자를 위한 머신러닝 데이터 공개
바이두, AI기술 무료로 공개..."머신러닝 발전에 기여할 것"
[불 붙은 '인공지능' 개발 경쟁] 마음까지 읽는 로봇으로 진화
술술 새는 '정보', 지능형 탐지 기술로 막아야
영화처럼 '로봇이 재산관리'
스마트 카·자율주행차의 핵심, 사람처럼 배우는 '딥 러닝'
"국내 빅데이터 주요 이슈는 머신러닝 및 개인정보보호법"
금융권 머신러닝 바람분다
머신 러닝 접목한 산타토익 앱 출시
AI 법관의 도래
머신러닝으로 개인별 맞춤형 건강 식단 가능해진다
'머신러닝을 선점하라' 인터넷 강자들 총력전

머신러닝으로 메신저 답장 '알아서 척척'
"인공지능, 또 한번의 산업혁명 온다"...머신러닝, 딥러닝 '눈앞'
셀카도 머신러닝으로...MS, iOS용 셀카 앱 출시
머신러닝, 못 한다고 전해라
머신러닝 기반 빅데이터 분석 솔루션 구축 작업 돌입
'IBM 슈퍼컴 왓슨' 시장 이끌고 구글 딥러닝·애플 시리 '맹추격'
'클라우드·머신러닝...' 브로케이드 '2016년 8대 IT트렌드' 전망
페북, 머신러닝 하드웨어도 오픈소스로 공개
"머신러닝·인공지능 기술 혁신 집중 자율주행차로 교통사고 해결될 것"
오픈소스 머신러닝 기술 확산... IBM도 가세
구글 이어 MS도 머신러닝 기술 개방

제조, 유통, 국방, 보안, 금융, 의료, 법률, 교육, 스마트카, 전자상거래, ...

손에 잡히는 예

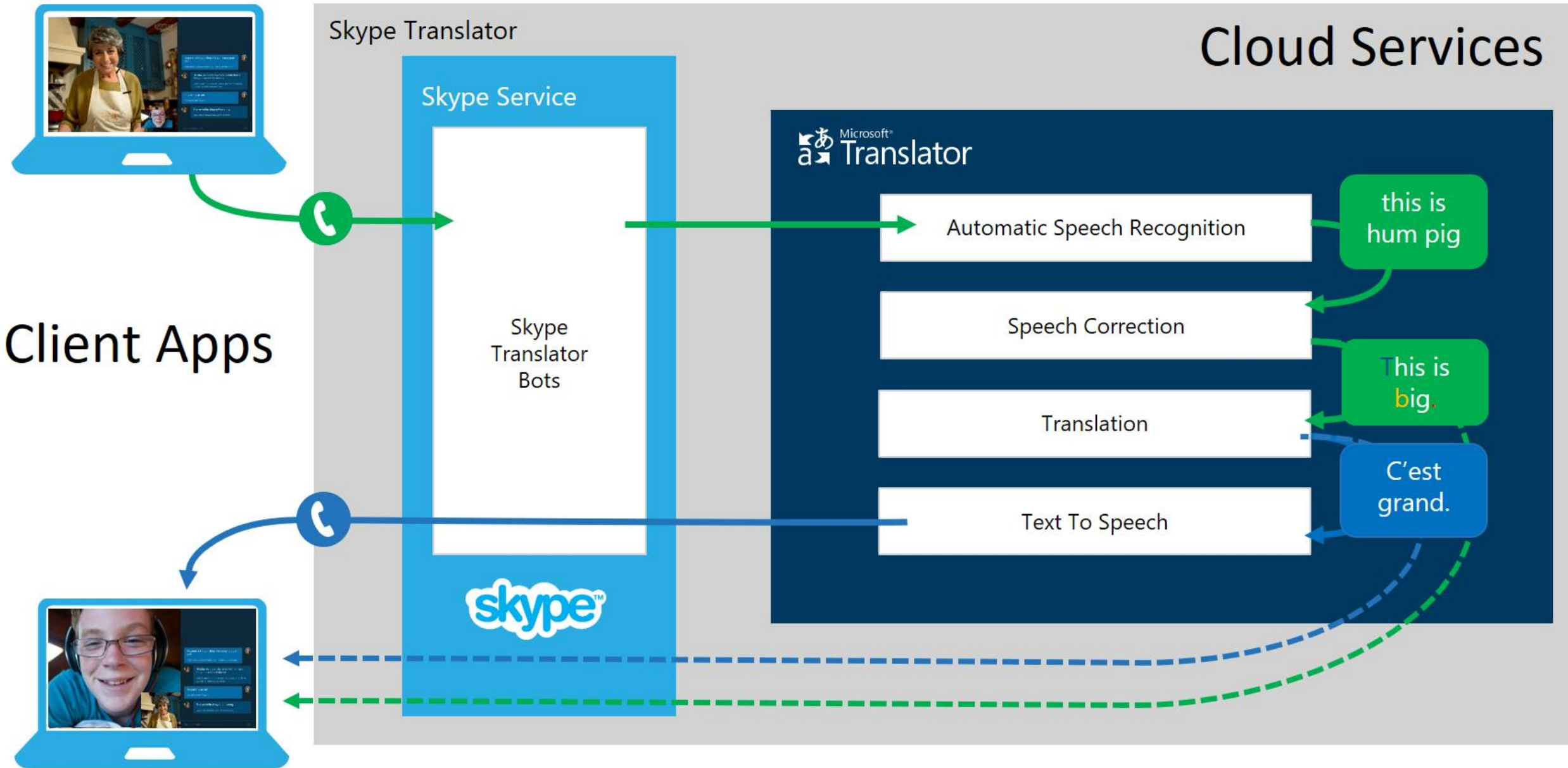


Demo



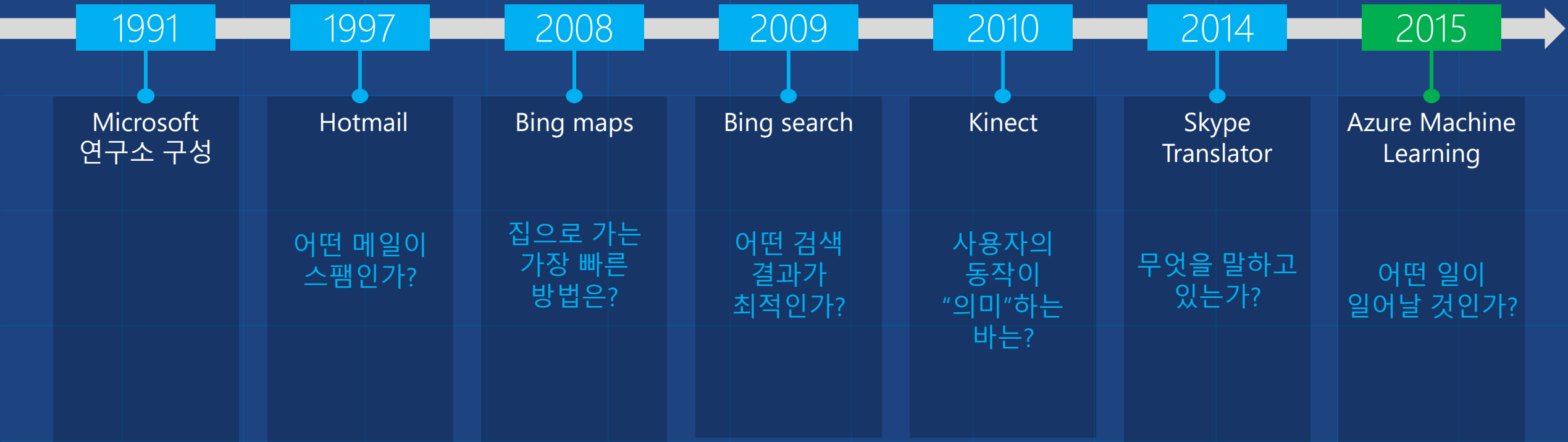
Skype Translator





Microsoft와 Machine Learning

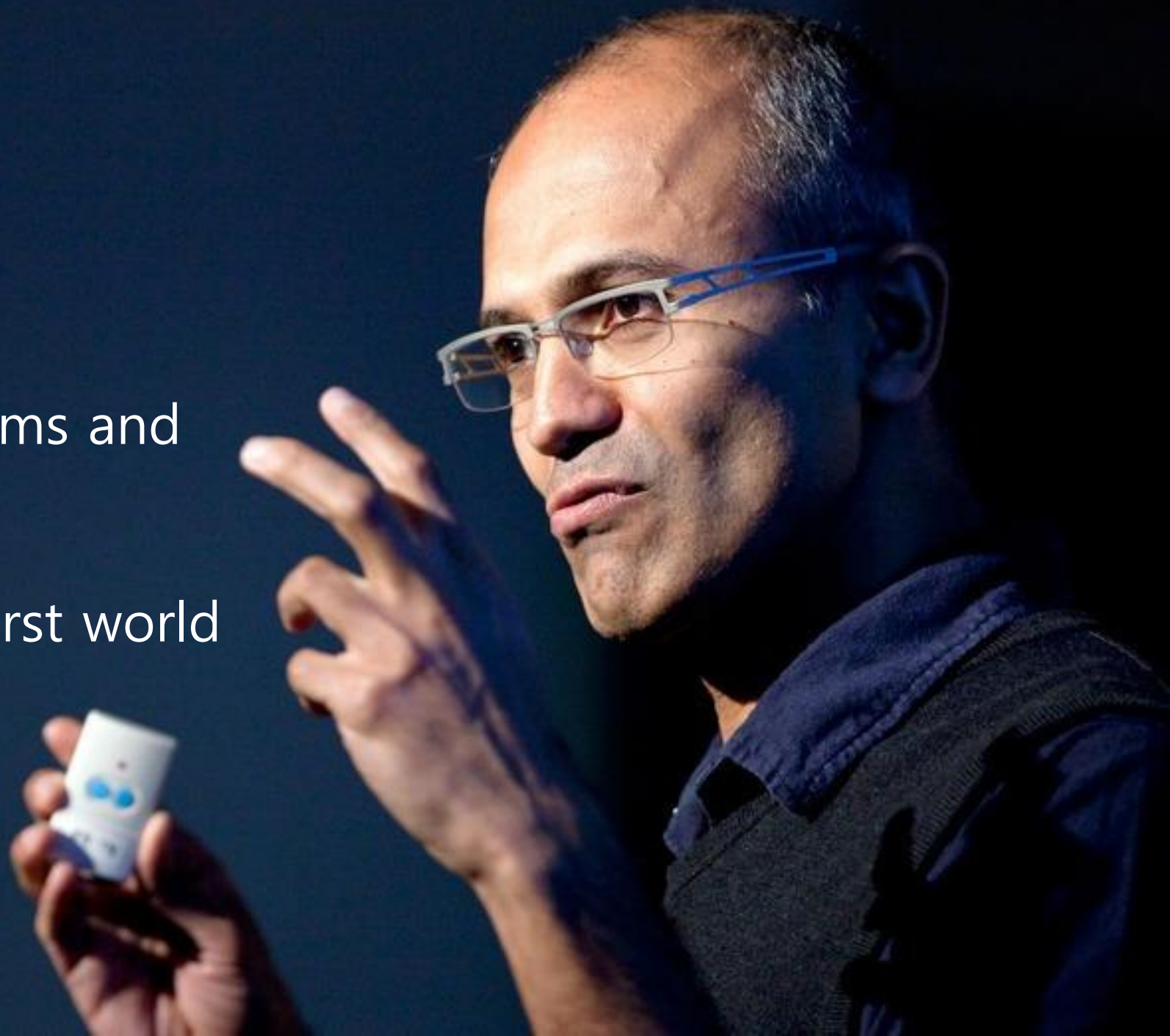
Answering questions with experience



Machine learning은 Microsoft 제품에 폭넓게 적용

Microsoft

Build best-in-class platforms and
productivity services
for a mobile-first, cloud first world

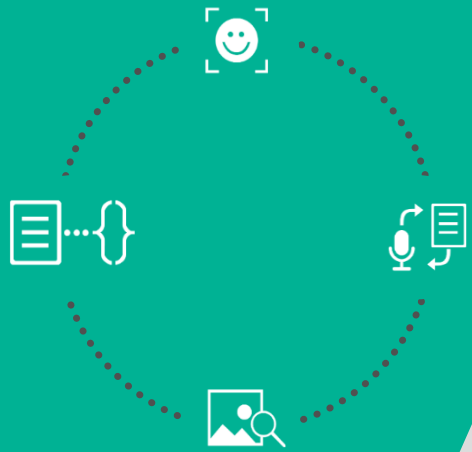


Project Oxford

<https://www.projectoxford.ai/>



What is Project Oxford?



빠르게 성장하는

멀티미디어 콘텐츠를 이해하는

응용프로그램을 개발하기 위한

REST API와 SDK의 집합

Vision



Computer Vision APIs



Face APIs



Emotion APIs



Video APIs

Speech



Speech APIs



Speaker Recognition APIs



Custom Recognition Intelligent Service

Language



Spell Check APIs



Language Understanding Intelligent Service



Web Language Model APIs

Optical Character Recognition



Please try vision optical character recognition demo by uploading a local image, or providing an image URL.

Vision Feature Analysis



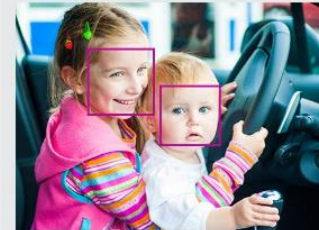
Try vision feature analysis demo by uploading a local image, or providing an image URL.

Vision Thumbnail



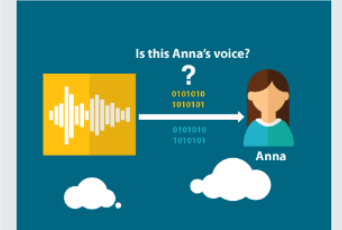
Try vision thumbnail demo by uploading a local image, or providing an image URL.

Face Detection



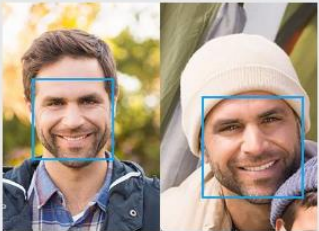
Try face detection demo by uploading a local image, or providing an image URL.

Speaker Verification



Try the speaker verification demo using your voice.

Face Verification



Upload two local images with different illumination or different face view angles, or provide the image URLs, you can get the comparing and identifying results.

Emotion Recognition



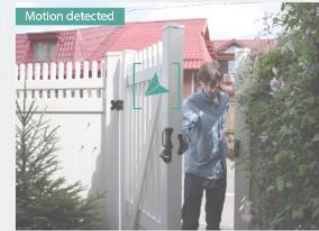
Try the emotion recognition demo by uploading a local image, or providing an image URL.

Face Tracking



See the face detection and tracking demo on a sample of videos

Motion Detection



View motion detection in action on a sample of videos

Spell Check



Check your text to provide suggestions for misspelled words.

Stabilization



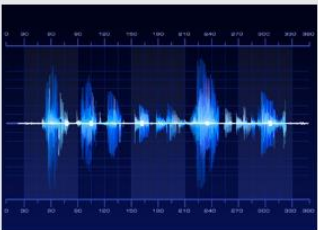
See videos that have been stabilized and smoothed

Speech to Text



Transcribe speeches from sample audio files or streaming audio into the written word.

Text to Speech



Use an existing file or enter your text to try the demo to convert written text into spoken words.

Speaker Identification



Try the speaker identification demo using the pre-enrolled US presidents' speeches.

Word Breaking



Try word breaking demo by inputting a string of words lacking spaces.

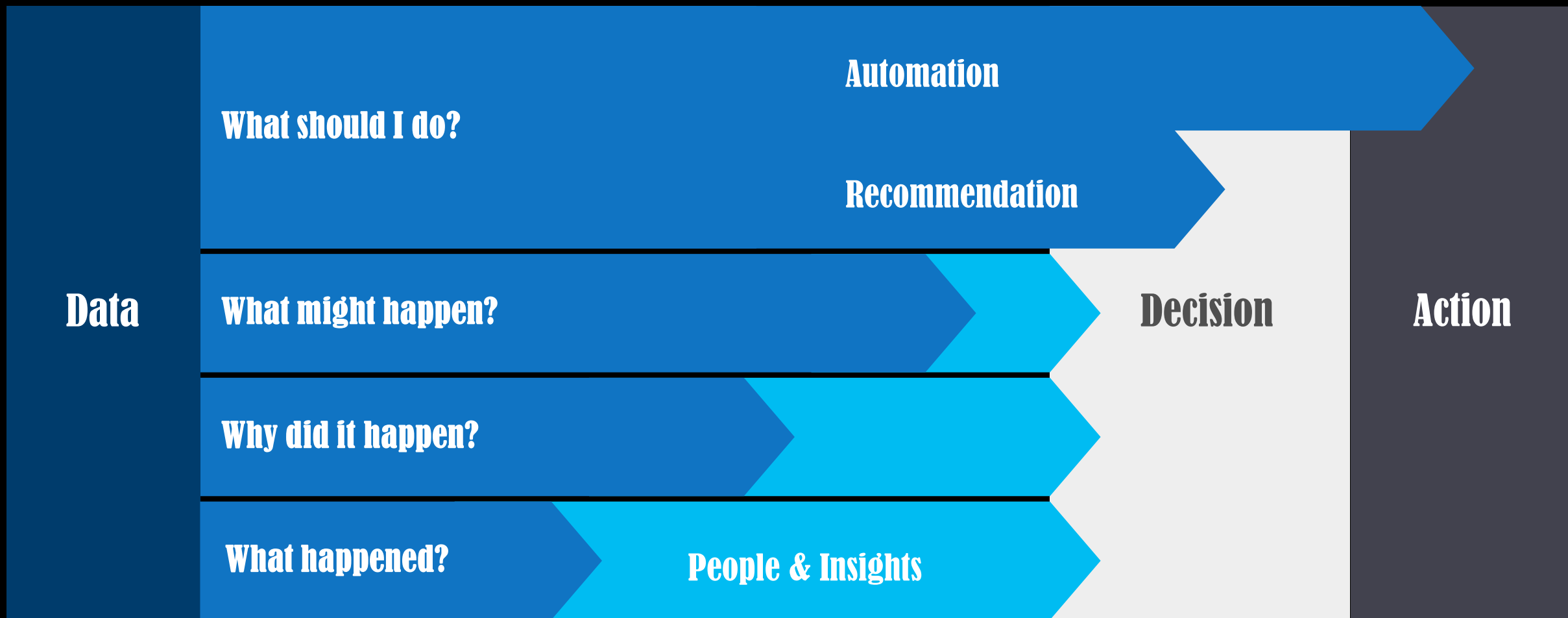
Demo



Machine Learning

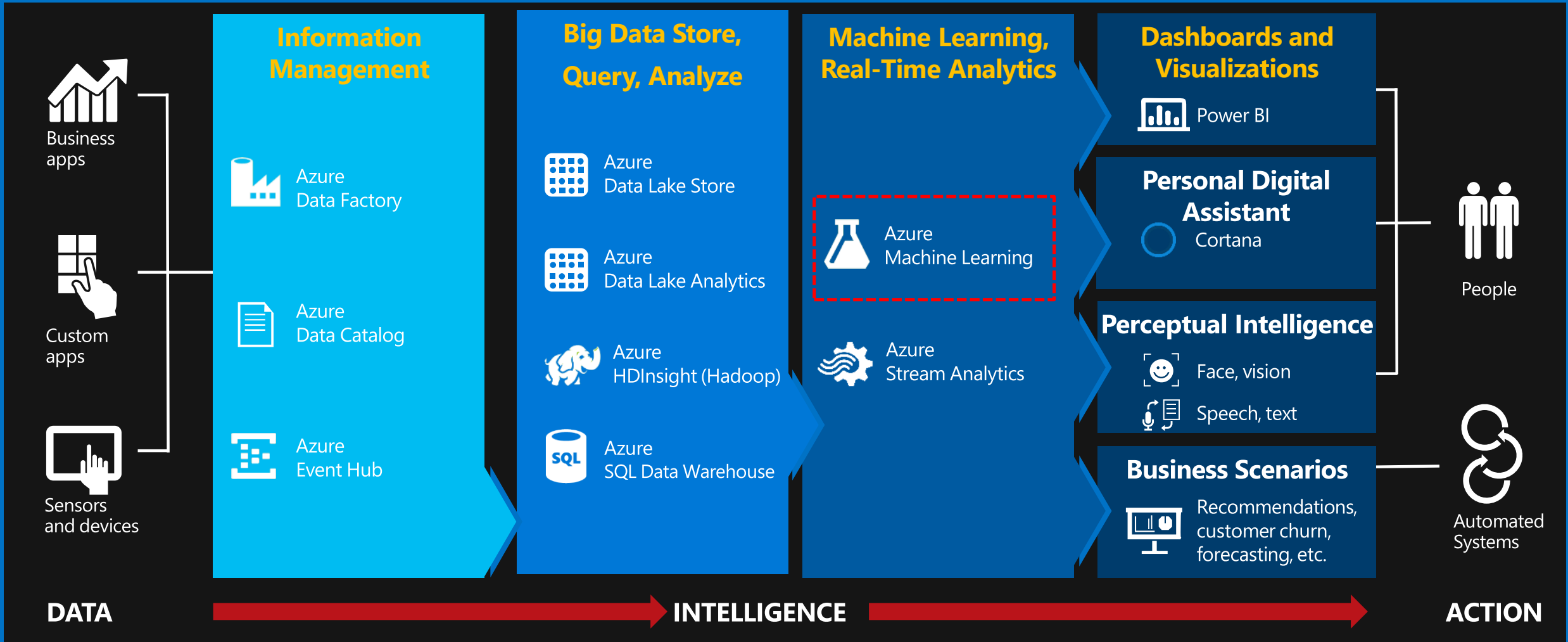
데이터로부터 미래를 예측하는 통찰을 발견하기
위한 분석 기법

컴퓨터 과학과 기술 & 통계학을 기초로 함



Cortana Analytics Suite

Transform data into intelligent action



Azure ML

<http://azureml.com>

Microsoft Azure Machine Learning | Home Studio Gallery

Search experiment items

- ▶ Saved Datasets
- ▶ Data Format Conversions
- ▶ Data Input and Output
- ▶ Data Transformation
- ▶ Feature Selection
- ▶ Machine Learning
- ▶ OpenCV Library Modules
- ▶ Python Language Modules
- ▶ R Language Modules
- ▶ Statistical Functions
- ▶ Text Analytics
- ▶ Web Service
- ▶ Deprecated

Binary Classification: Direct marketing

Reader

Metadata Editor

Project Column remove column of the label

Split

Two-Class Boosted Decision T...

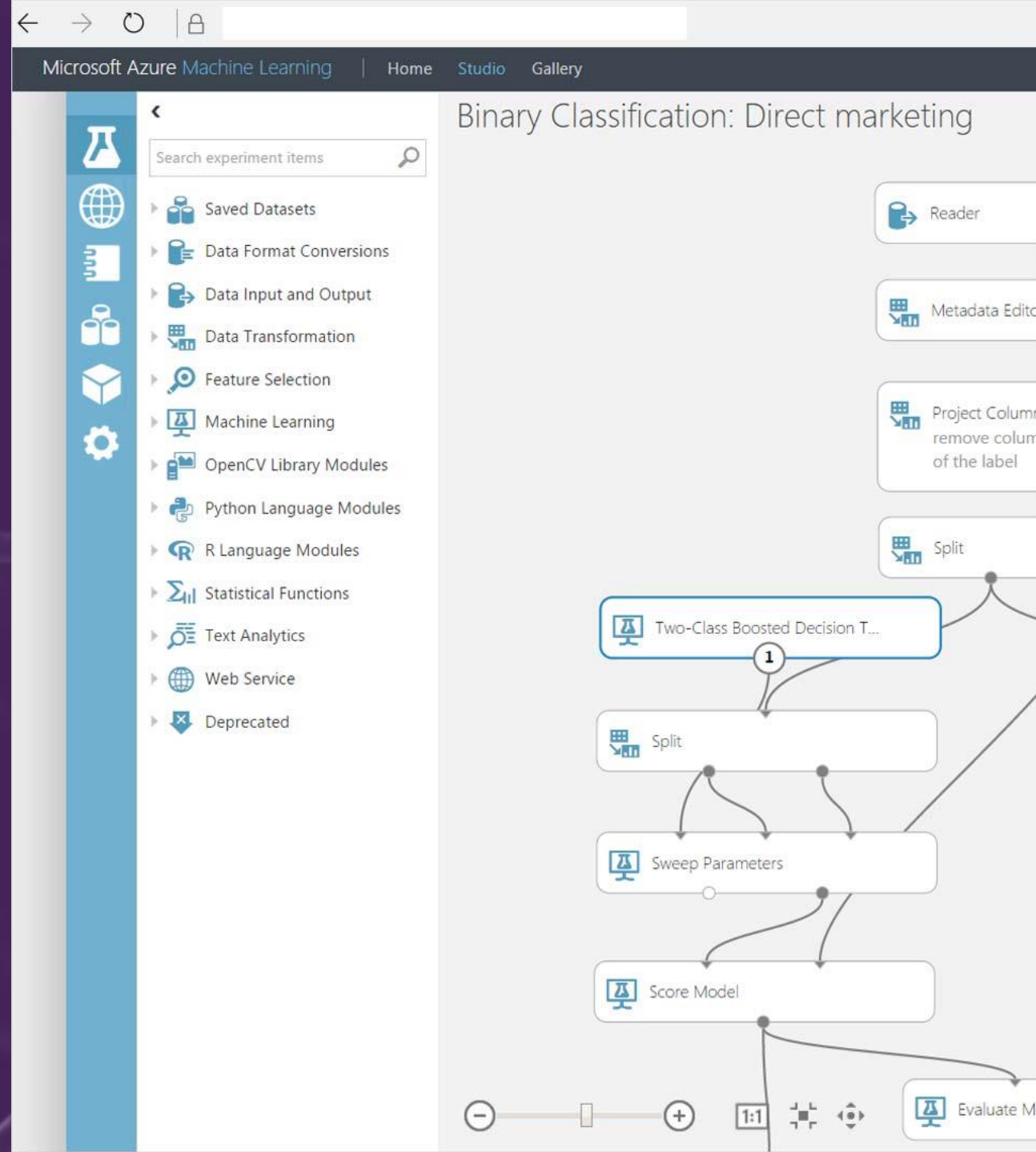
1

Split

Sweep Parameters

Score Model

Evaluate M



Demo





DMTK

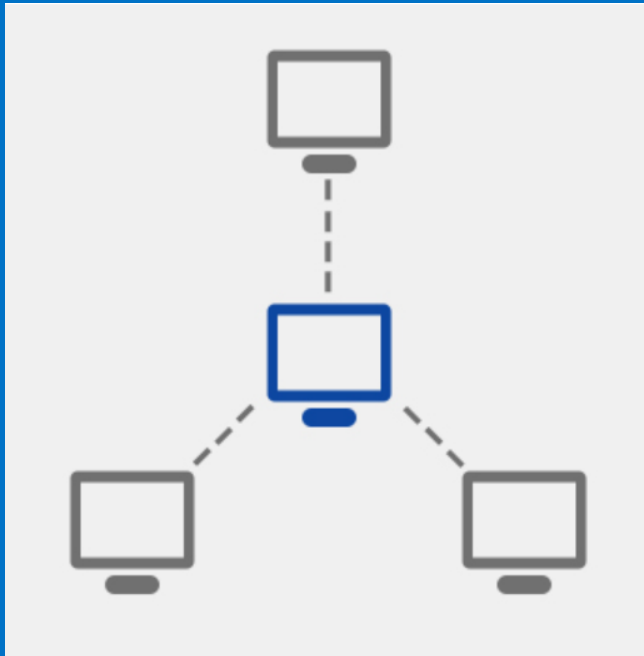
(Distributed Machine Learning Toolkit)

CNTK

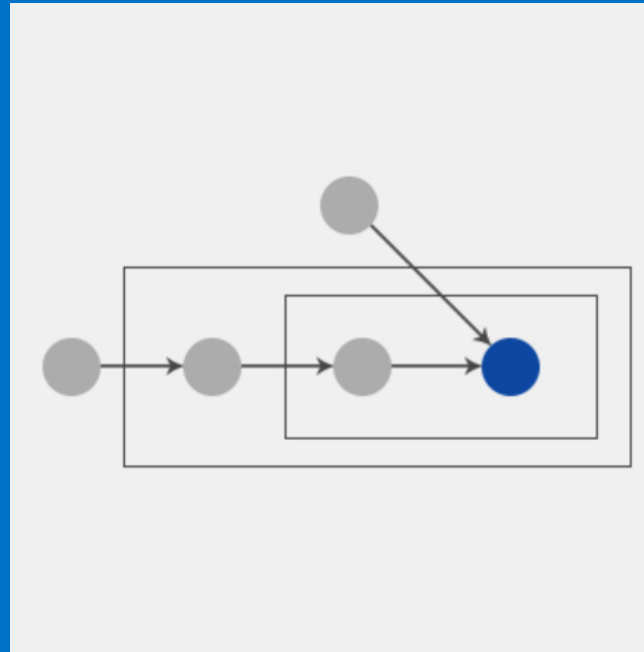
(Computational Network Toolkit)

DMTK(Distributed Machine Learning Toolkit)

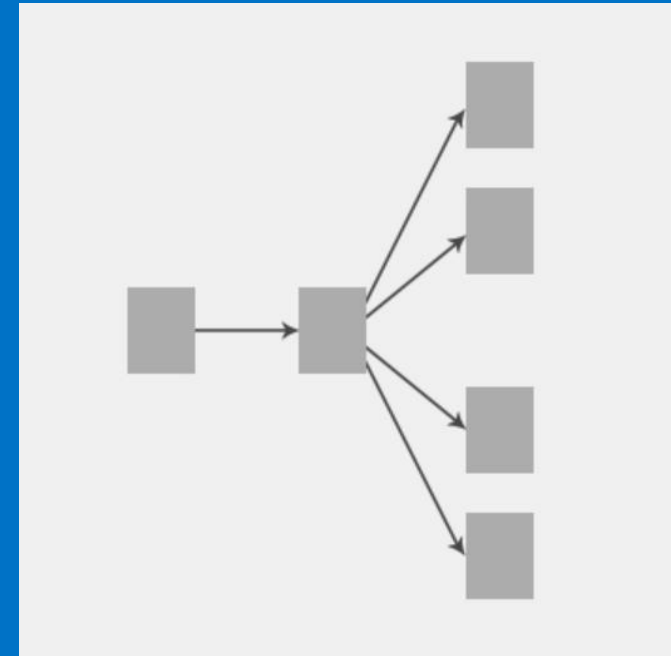
빅데이터를 다수의 컴퓨터들을 이용하여 ML을 트레이닝 시키기 위한 프레임워크와 라이브러리



DMTK Framework



LightLDA



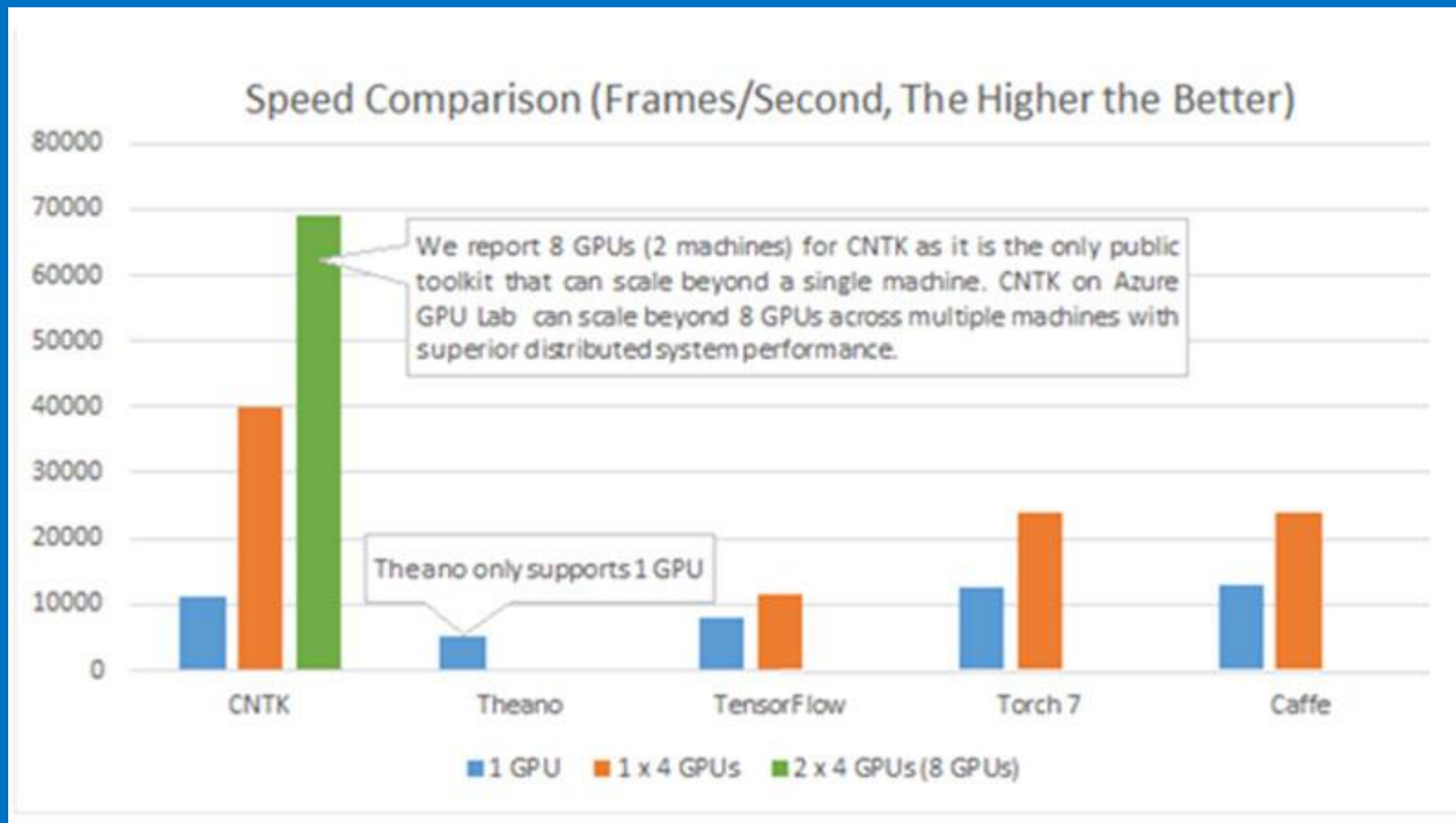
Distributed World Embedding

<http://www.dmtk.io/>

<https://github.com/microsoft/dmtk/>

CNTK(Computation Network Toolkit)

다이렉트 그래프로 구성된 다계층 뉴럴 네트워크를 구성할 수 있는
딥러닝 툴킷

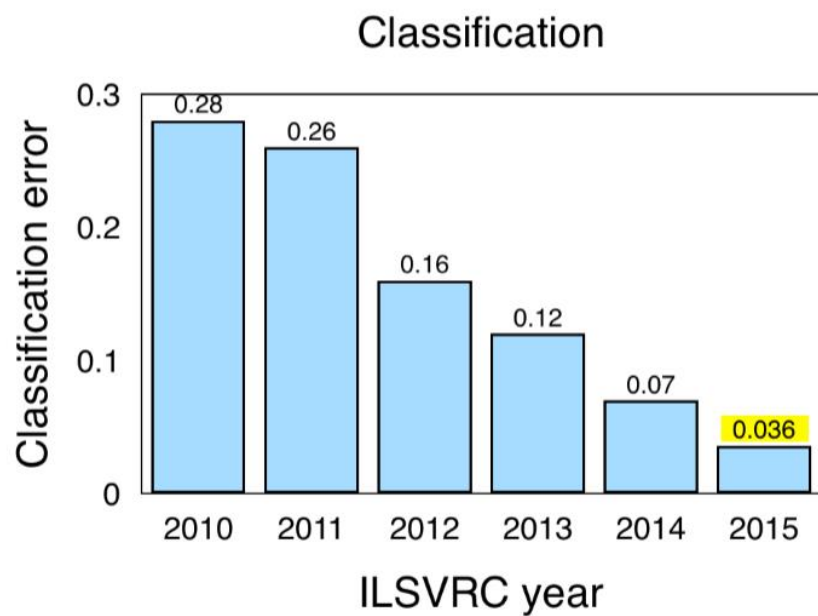


<https://cntk.ai/>

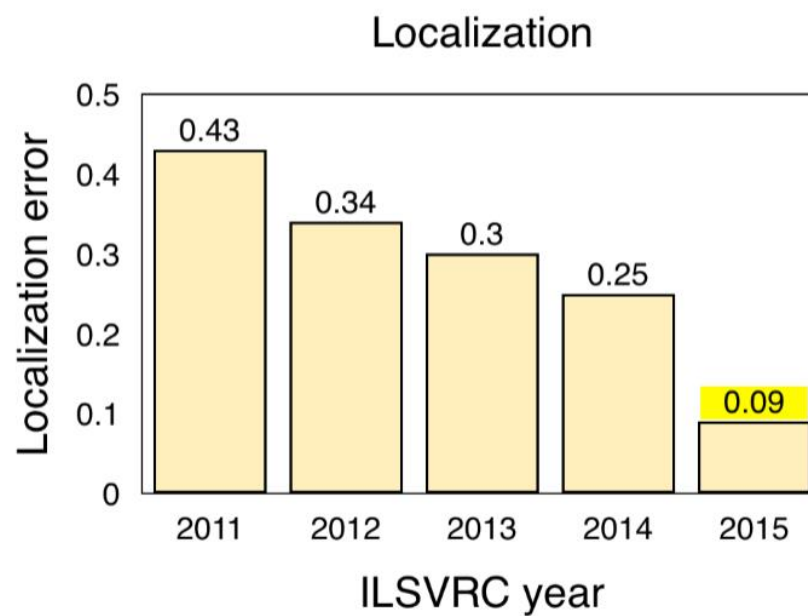
<https://cntk.codeplex.com/>



2015.12.10 Large Scale Visual Recognition Challenge 2015(ILSVRC2015)



1.9x



2.8x



<http://image-net.org/>

<http://image-net.org/challenges/LSVRC/2015/results>

이날 마이크로소프트 연구소는 사진과 동영상에서 객체를 식별하는 기술의 발전으로 인식의 정확도는 인간의 수준과 비슷하거나 때로는 인간의 수준을 능가한다고 밝혔다.

Ordered by number of categories won

| Team name | Entry description |
|-------------------|--|
| MSRA | An ensemble for detection. |
| Qualcomm Research | NeoNet ensemble with bounding box regression. Validation mAP is 54.6 |
| CUIImage | Combined multiple models with the region proposals of cascaded RPN, 57.3% mAP on Val2. |

Ordered by mean average precision

| Team name | Entry description | mean AP | Number of object categories won |
|-------------------|---|----------|---------------------------------|
| MSRA | An ensemble for detection. | 0.620741 | 194 |
| MSRA | A single model for detection. | 0.588451 | --- |
| Qualcomm Research | NeoNet ensemble with bounding box regression. Validation mAP is 54.6 | 0.535745 | 4 |
| Qualcomm Research | NeoNet ensemble without bounding box regression. Validation mAP is 53.6 | 0.531957 | --- |

Ordered by classification

| Team name | Entry description |
|-----------|-------------------------------|
| MSRA | Ensemble A for classification |
| MSRA | Ensemble B for classification |
| MSRA | Ensemble C for classification |

| Team name | Entry description | Classification error | Localization error |
|-----------|---|----------------------|--------------------|
| MSRA | Ensemble A for classification and localization. | 0.03567 | 0.090178 |
| MSRA | Ensemble B for classification and localization. | 0.03567 | 0.090801 |
| ReCeption | --- | 0.03581 | 0.195792 |

