

2017

The 4th Industrial Revolution and Our Strategy for a Better World

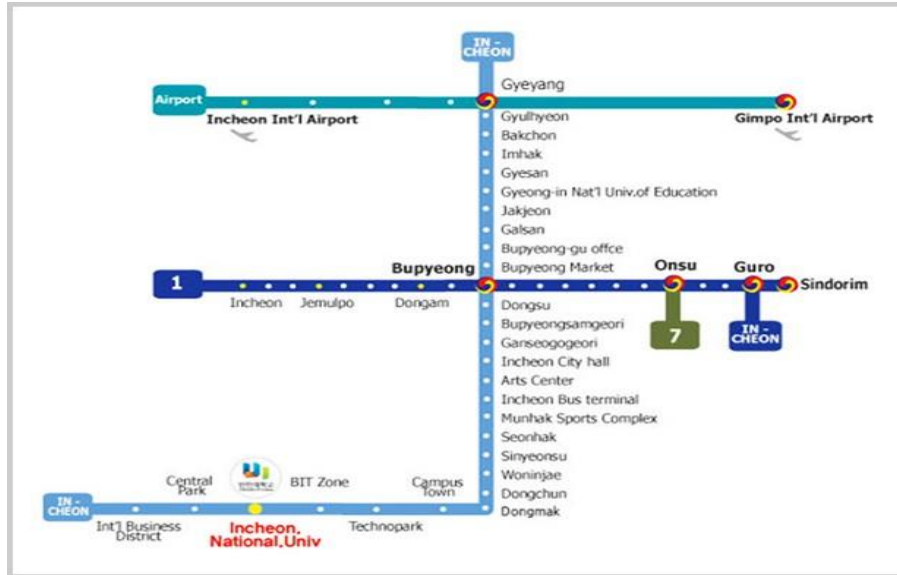
Director of GIST Institute Heung-No Lee



IEEE VTS APWCS 2017. 8. 24 Thursday Incheon National University
<http://apwcs2017.incheon.ac.kr/>

Venue

Subway



Convention Center



Incheon National University



Time	Program			
	<i>Room #103</i>	<i>Room #105</i>	<i>Room #107</i>	<i>Room #108</i>
08:30~09:20	Registration : Lobby, Convention Center (Building #12)			
09:20~10:10	Invited Speech : The 4th Industrial Revolution and Our Strategy for a Better World (Prof. Heung-No Lee, Gwangju Institute of Science and Technology, Korea)			
10:10~11:00	Invited Speech : Industrial Internet of Things (Dr. Sun Sumei, Institute for Infocomm Research (I2R), Singapore)			
11:00~11:30	Coffee Break			
11:30~12:30	A1 : 3 papers	A2 : 3 papers	A3 : 3 papers	A4 : 3 papers
12:30~14:00	Lunch			
14:00~15:40	B1 : 5 papers	B2 : 5 papers	B3 : 5 papers	B4 : 5 papers
15:40~16:10	Coffee Break			
16:10~17:50	C1 : 5 papers	C2 : 5 papers	C3 : 5 papers	C4 : 5 papers
18:00~20:00	Banquet : Room #106, Faculty Office Building (Building #2)			

Abstract

The 4th Industrial Revolution was the main topic of discussion at the World Economic Forum (WEF) in 2016. Dr. **Klaus Schwab**, the chairman of the WEF, **has named it** with an intention to describe **how fast the world is changing driven by the so called disruptive technological advances and how deeply the lives of people are forced to alteration.** These waves of changes will hit **every region** around the globe and **everyone** will be forced to change. Words of warning go viral such that an entity leading such changes will thrive while the others who are not prepared for them will perish. This has created a Tsunami of discussions at least within Korea where the winning performance of AlphaGo Spring 2016 has proven how powerful today's breakthrough technology could be. The impact is indisputable. Almost everyone agrees immediately. Even an ordinary people can grab the importance of preparedness right away. While some are awed by them, others perceive opening of enormously many new opportunities that advances of new technologies will take the human to the next level. As we study more, visions with concrete action plans are being realized within leading nations such as Germany and U.S.A. with revolutionary outcomes being sprung up. For example, we see how Germans has renovated its old manufacturing industry under the theme of Smart Factory, a revolutionary idea incubated carefully, and executed for the last decade, by Dr. Zulke who coined the term **Industry 4.0**. The storm of discussions to date is to provide us with a chance to carefully thought out our future and prepare us to make the world a better place to live in. When we work together to shape out a desirable future, such a future will come true as reality someday. In this talk, **I aim to discuss** the narrative of 4th industrial revolution, showcase a selected set of fundamental technologies and thoughts deriving the effort, and discuss **how** they can be utilized **to make a better future for all.**

Agenda

- **Brain and Intelligence**
- **Brain Research and Artificial Intelligence**
- **Spread of AI BM**
- **Our Future with AI**
- **Strategy of Nations**
- **Strategy for Individuals**
- **Conclusion**

Brain and Human Evolution

Brain and Human Evolution

Earth ~4.5 Million Years Old

Homo Sapiens ~ 200K

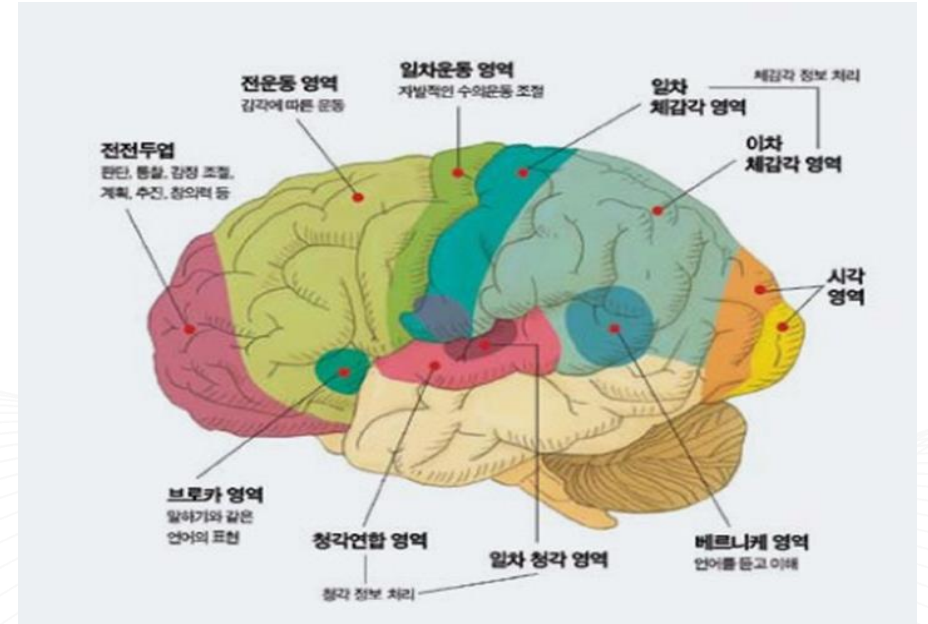
Civilization ~ BC 3,000

Population of 1st century ~ 100 million

Life expectancy ~ 20 years

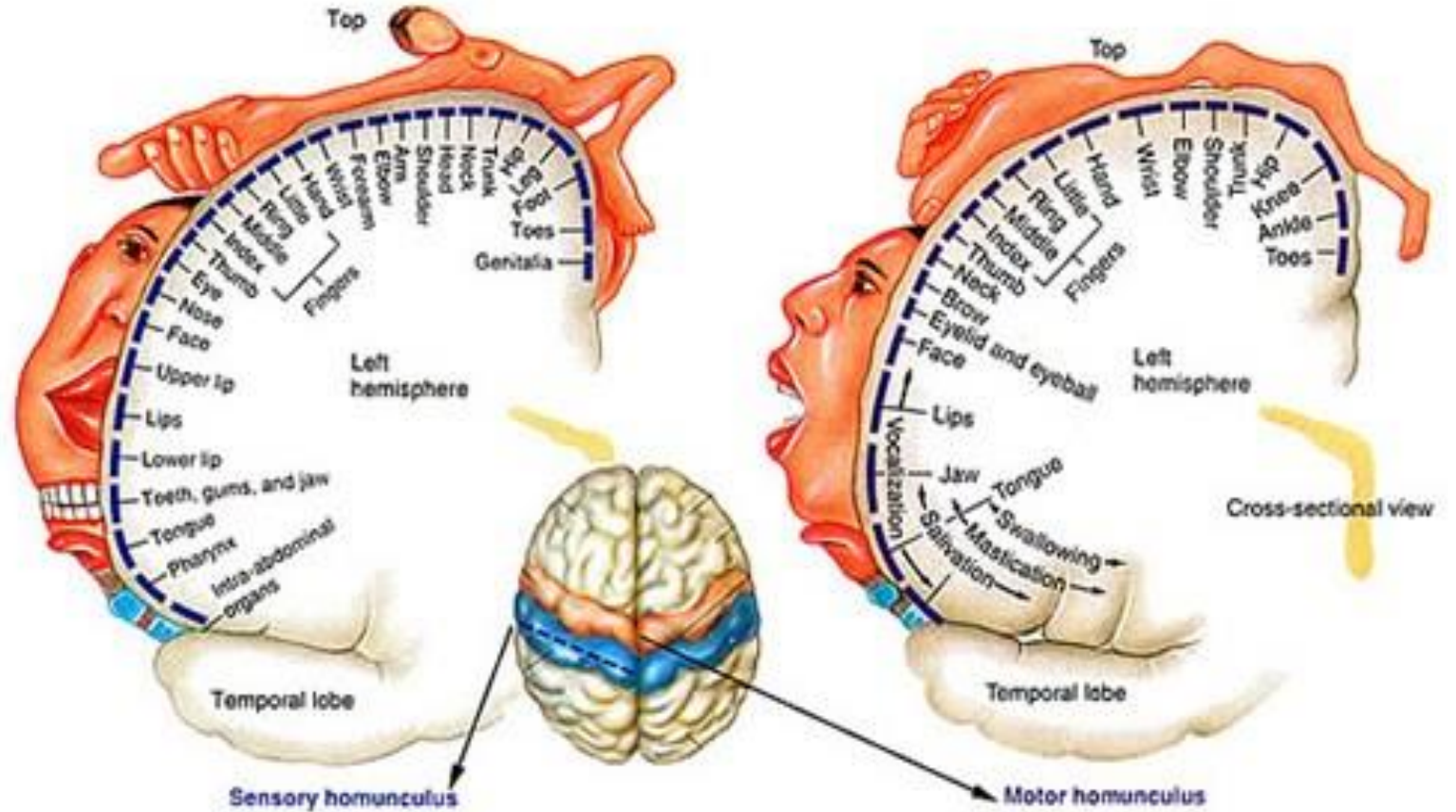
Humanity today?

A miracle, enabled by brain and cooperation!

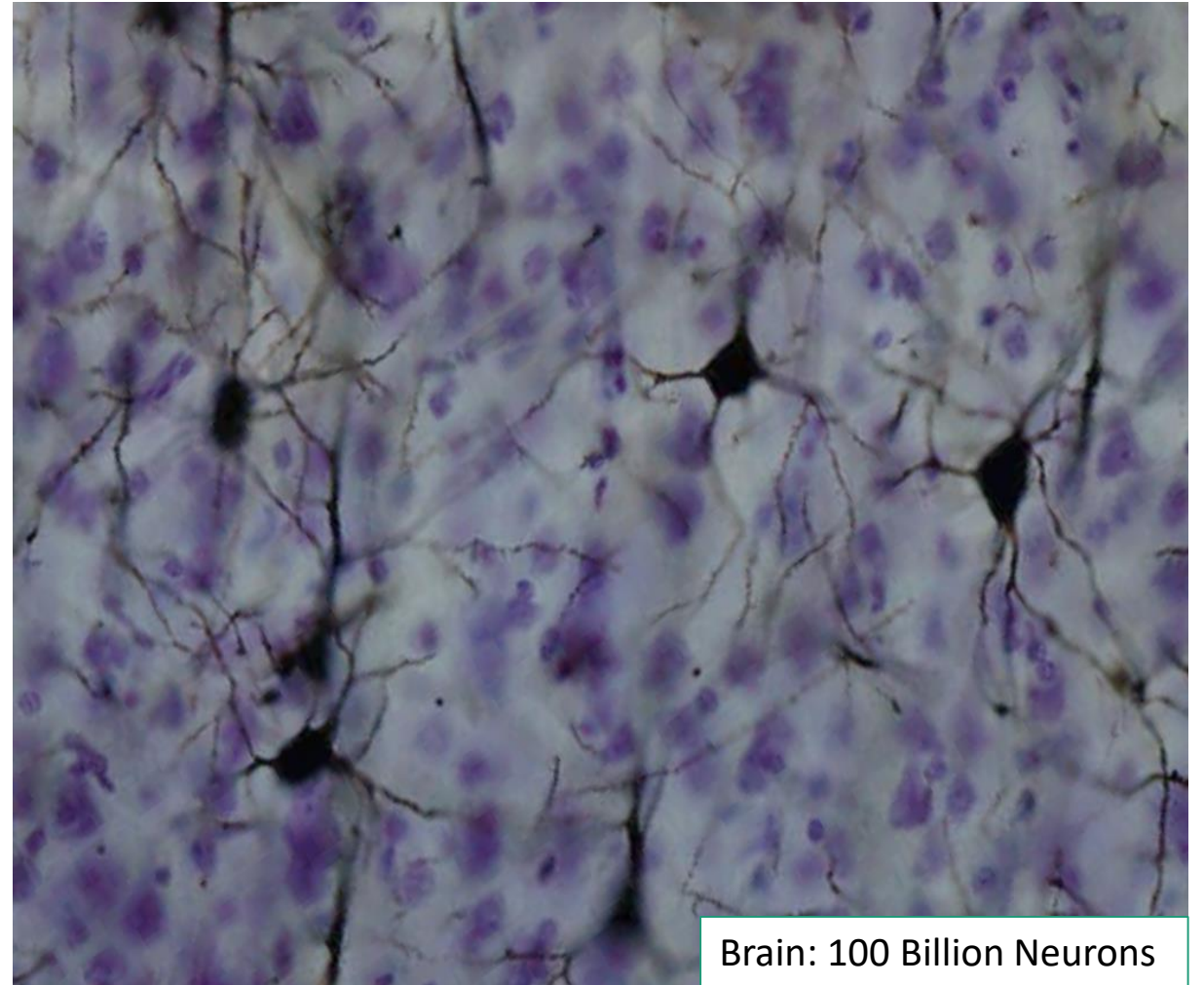
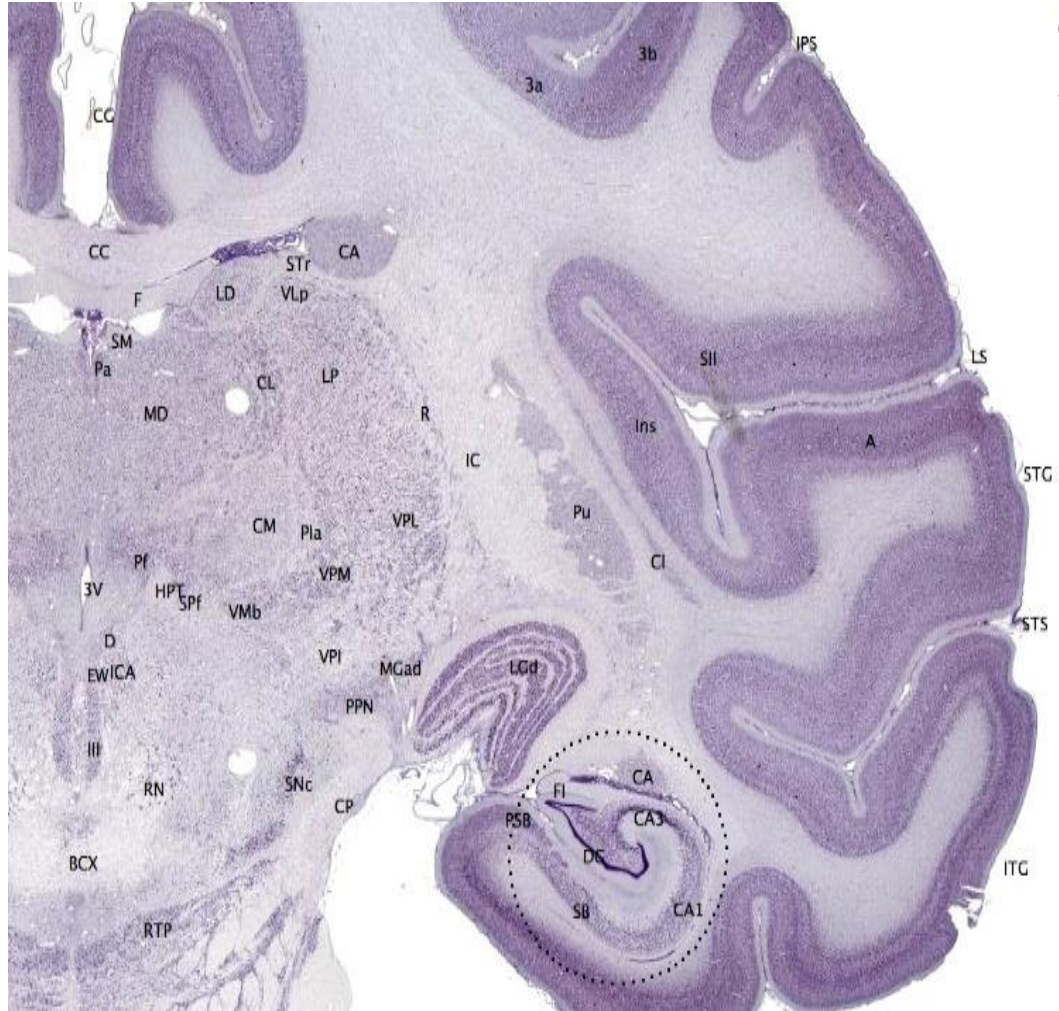


Sensing & Action

Hands, tongue, lips possess larger parts in the motor-sensory cortex in the brain!!

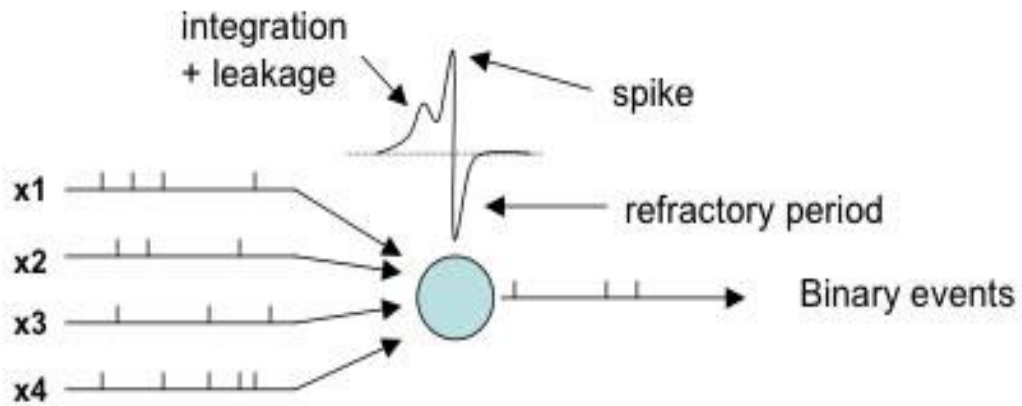


Brain, network of cells

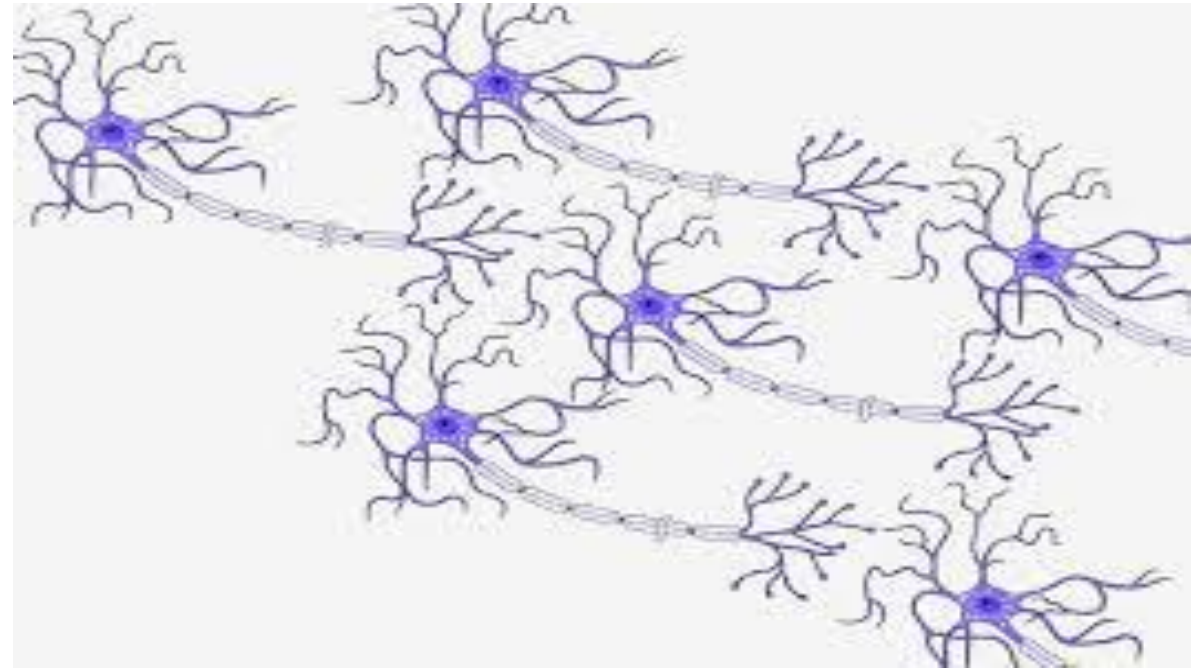
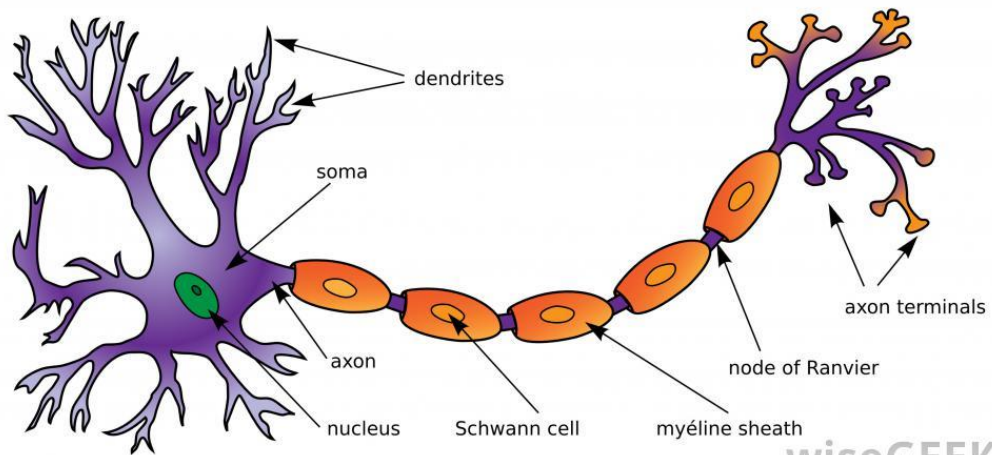


Brain: 100 Billion Neurons

Neuron : an input-output device



NEURON



Brain : Network of cells, Result of Endless Interactions

Sensors

Acquisition of signals

Situational Awareness
(signals + experience)

Actions

Making decisions

See, listen, smells,
touches, feels

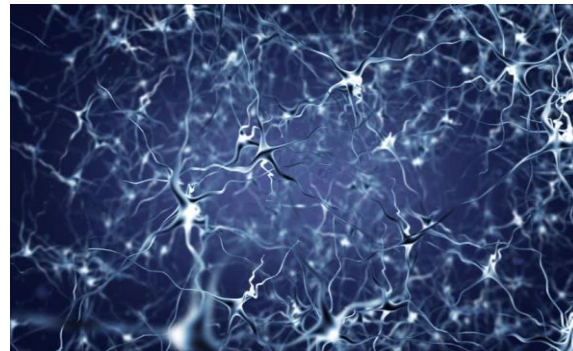
Ask mom, teachers

Read books

Watch TVs

Play SNS

With sensing,



Eat
Wear
Drink
Evade

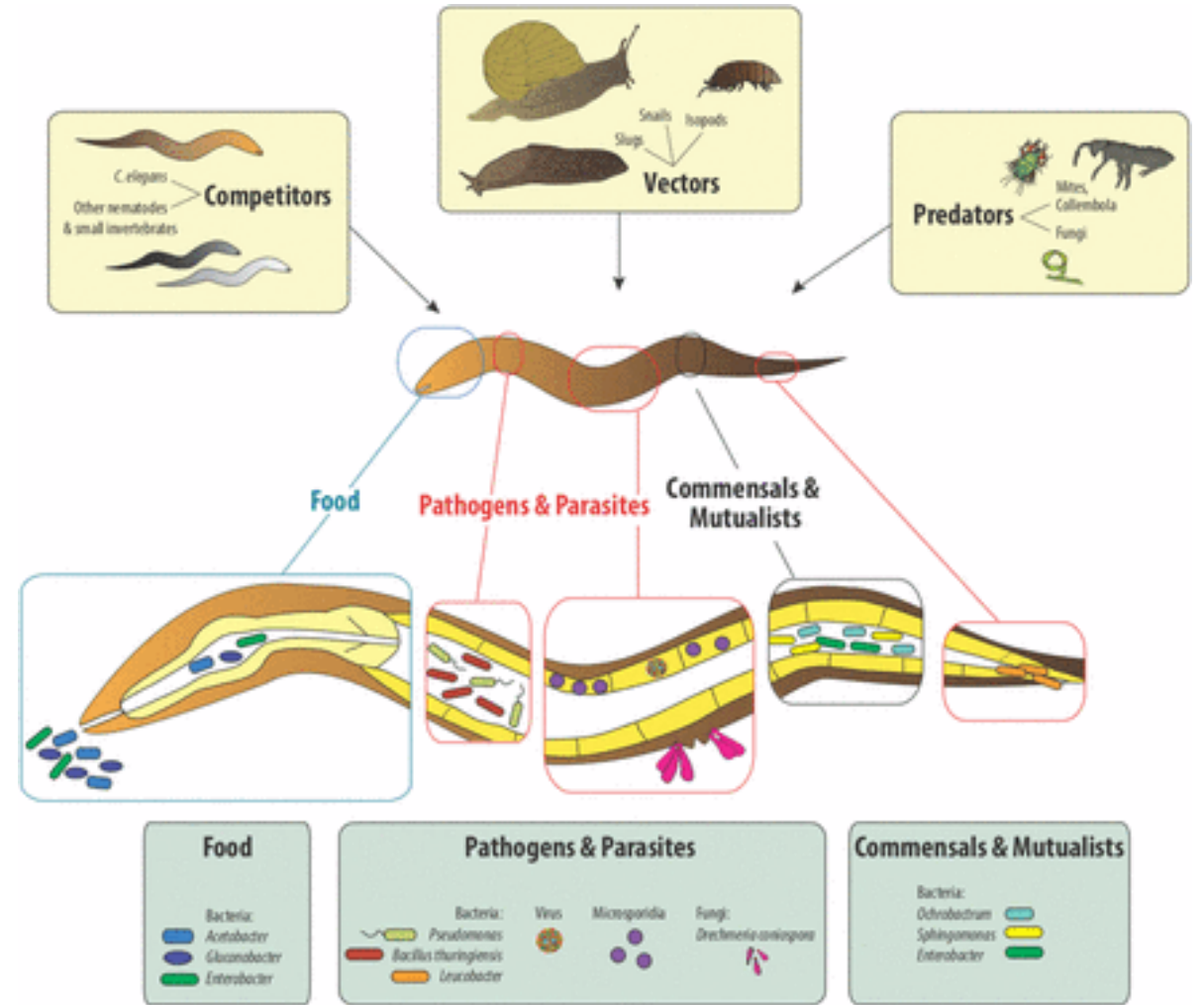
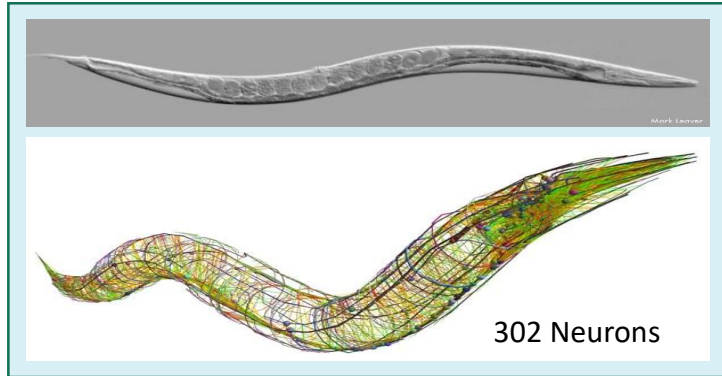
Study/Read/Play

Politics/Economy/Society
Coop/Share/Trust
Responsible/Responsive

Make decisions

World

C elegans

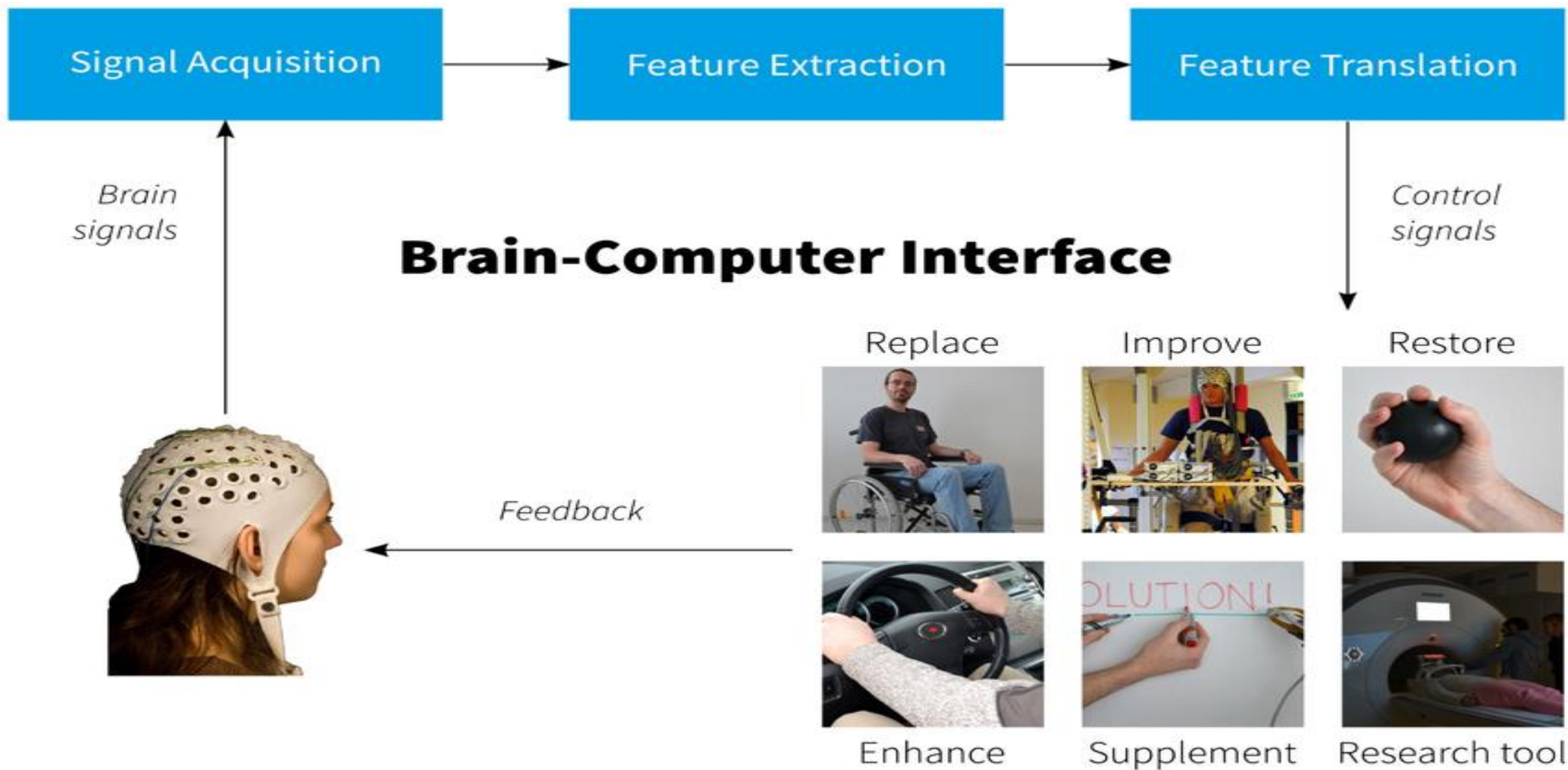


Brain and Intelligence?

- Brain by sensing, aware of world, make actions.
- World give back responses to brain's decisions.
- Human learns from reactions of world and enhances decision making ability.
- Ability to make good timely decisions is Intelligence.

Rehabilitation Engineering





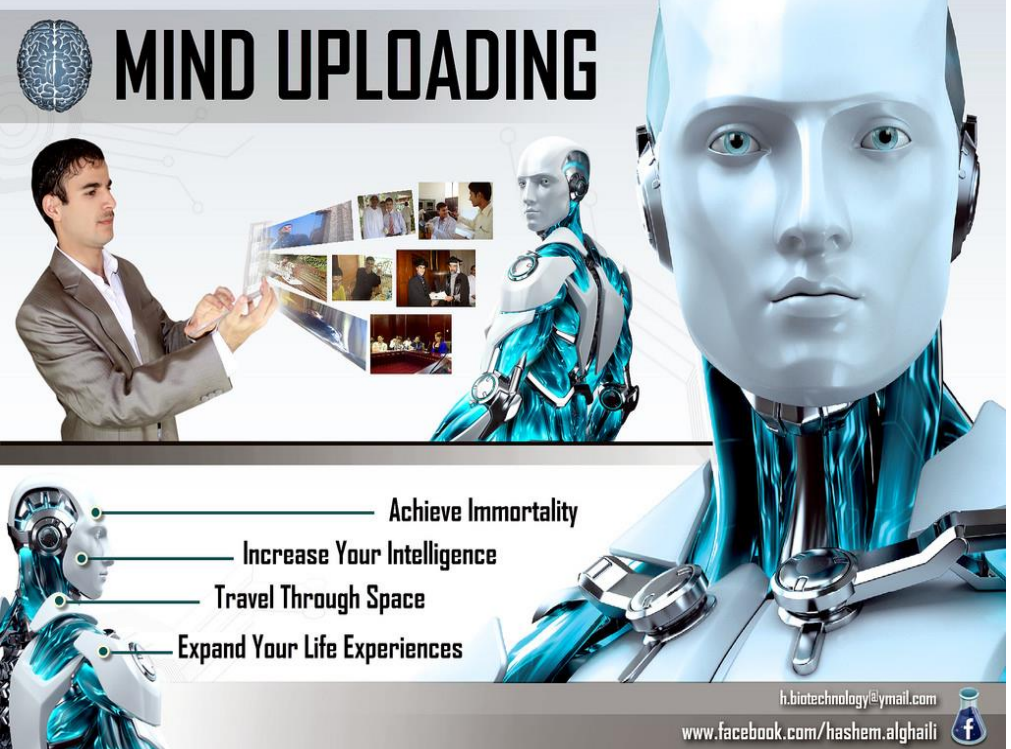
Futuristic Brain Researches

Dream Recording

Presented clip



Clip reconstructed from brain activity



MIND UPLOADING

- Achieve Immortality
- Increase Your Intelligence
- Travel Through Space
- Expand Your Life Experiences

h.biotechnology@gmail.com
www.facebook.com/hashem.alghaili

The advertisement features a man in a suit interacting with a digital interface, a blue robot, and a large blue robot head. The text 'MIND UPLOADING' is prominently displayed at the top. Below it, a list of benefits is shown: 'Achieve Immortality', 'Increase Your Intelligence', 'Travel Through Space', and 'Expand Your Life Experiences'. At the bottom, contact information is provided: 'h.biotechnology@gmail.com' and 'www.facebook.com/hashem.alghaili'.

Advances in Artificial Intelligence

QUIZ

What is the name of this computer?



Developed by IBM

A chess-playing computer capable of calculating one billion ways in a second

Wins against Garry Kasparov
1997 World Championships

GIST

Artificial intelligence

The four big figures

Artificial Intelligence Machine Learning Method 'Deep Learning' Research Nerd

Yan LeKun

- Professor, New York University
- Facebook Artificial Intelligence Research Director

Jeffrey Hinton

- Professor, University of
Canterbury, Canada
- Google Scholar



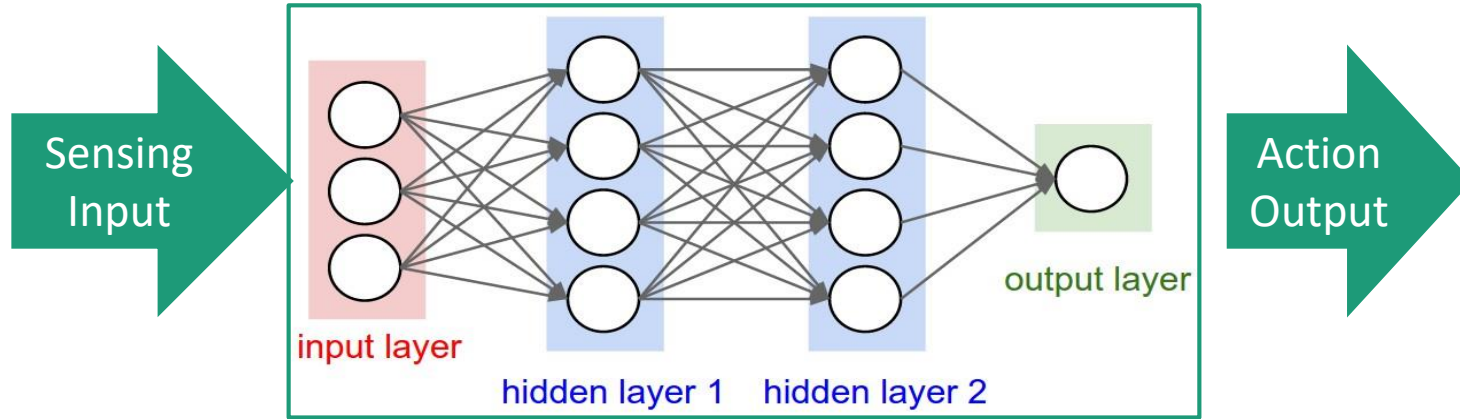
Joshua Benjio

- Professor, University of
Montreal, Canada
- Collaboration with IBM

Andrew Ng

- Professor at Stanford University
- Silicon Valley Baidu Artificial
Intelligence
Research Fellow

Deep Artificial Neural Network

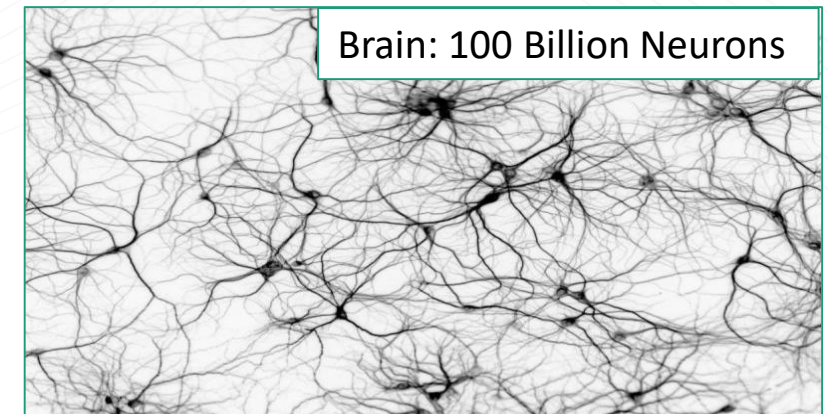
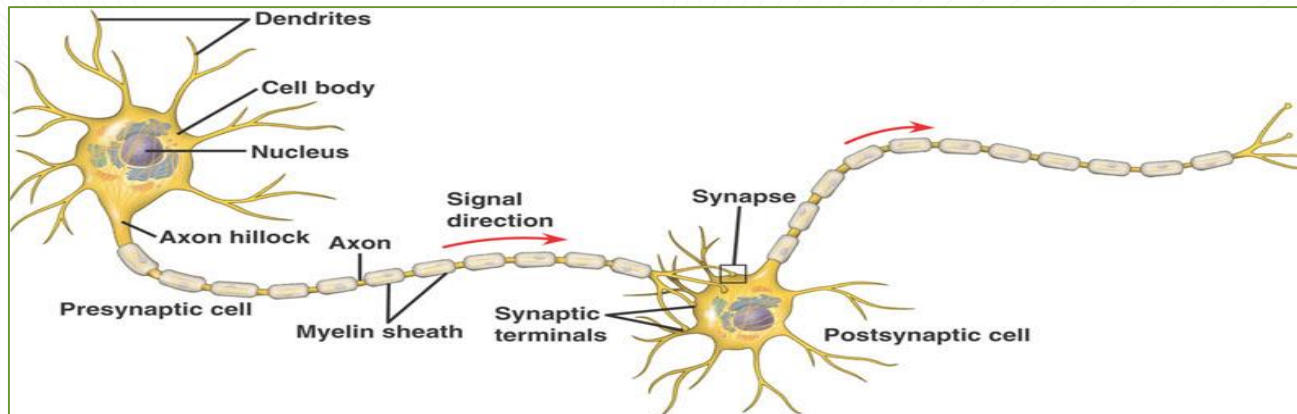


Dog vs. Cat

Training : Using a large number of sensing inputs, determine network connections

Classification : Sensing Input, judgment of situation , Result Out

Network grows and reconfigures itself via self-learning procedures.



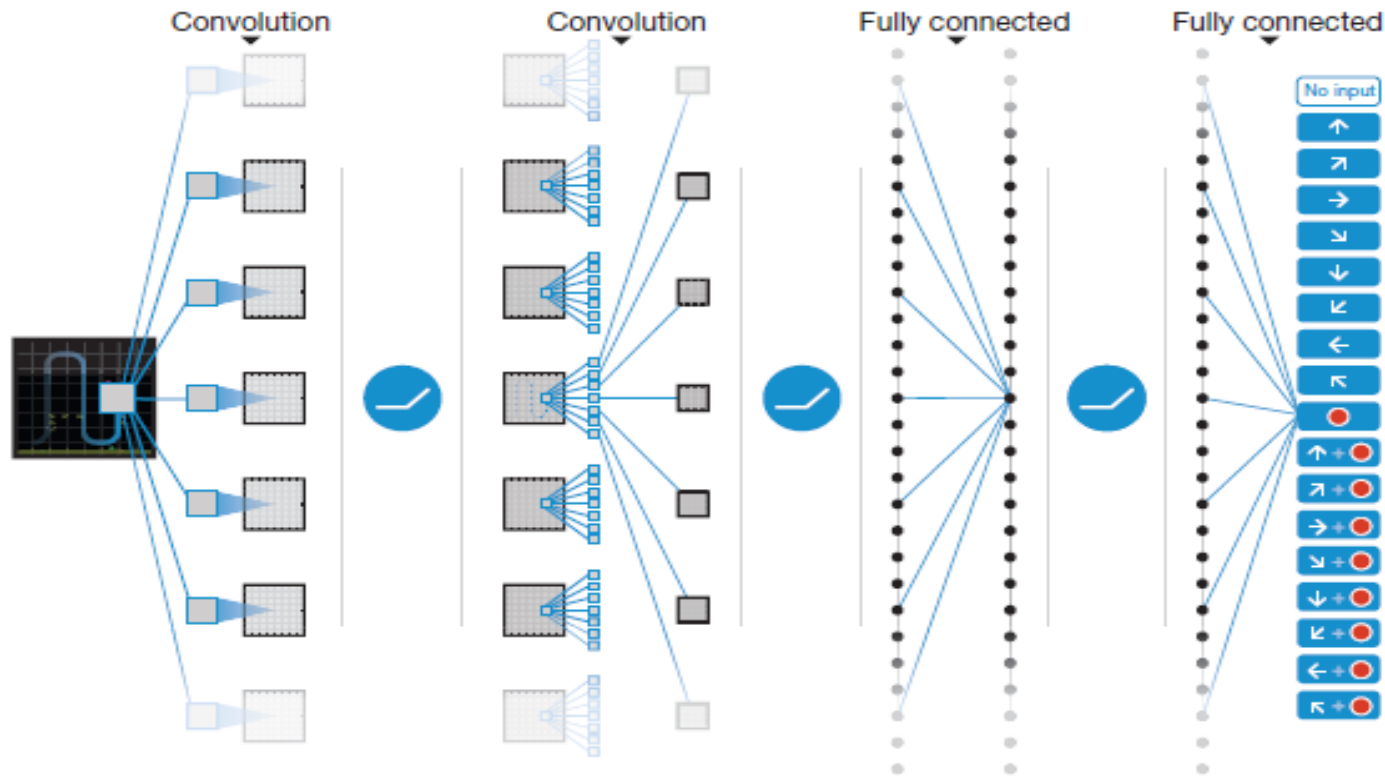
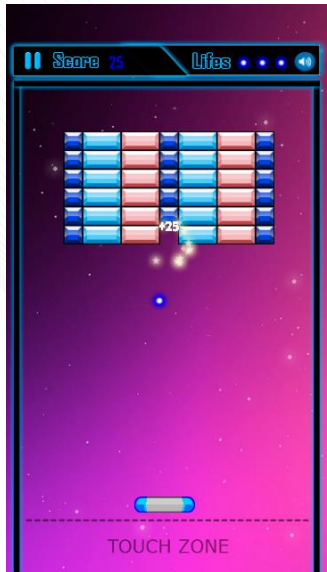
Deep Neural Network of AlphaGo

Sensing

Situation Aware

Action

Input : Screen



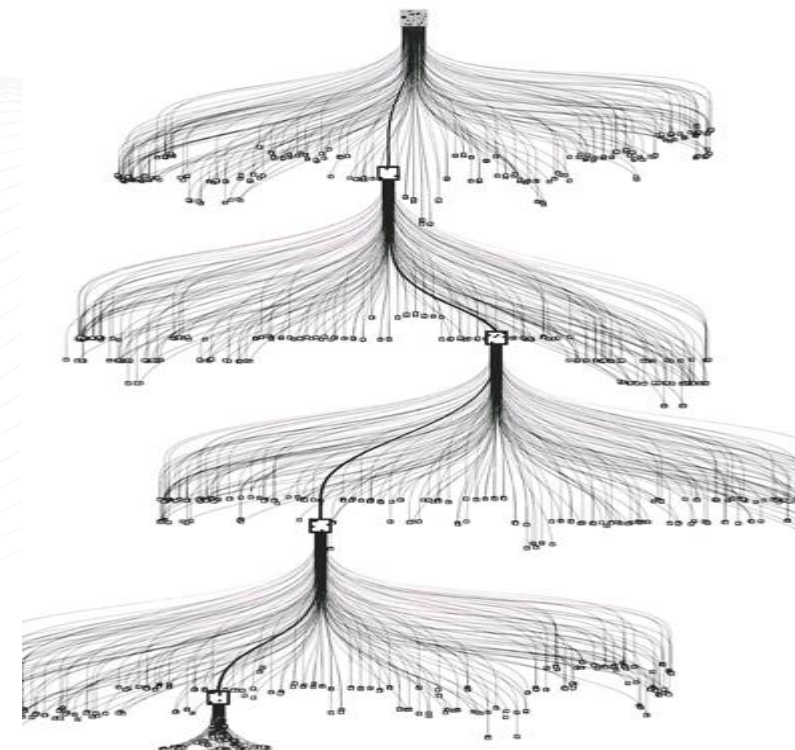
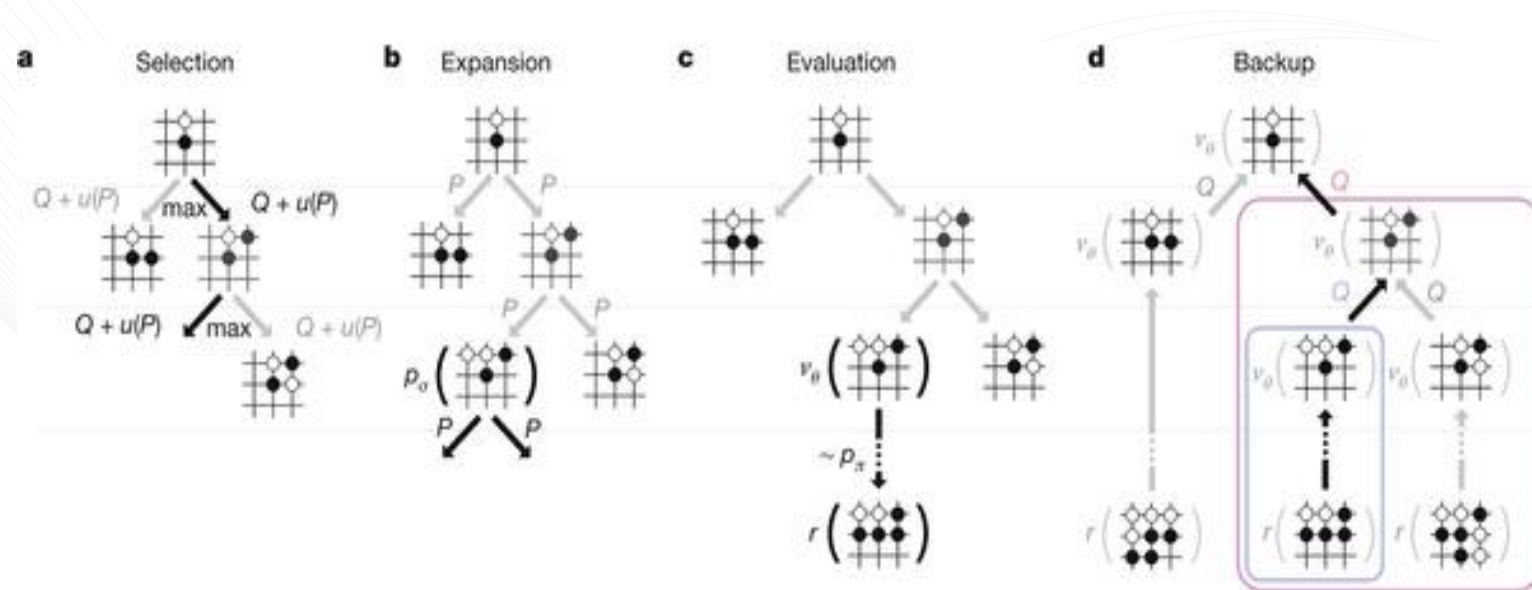
Output :
Joystick Action



Artificial Intelligence

AlphaGo, a tree search algorithm,

finds a winning play via wide and deep search, instantaneously using a cloud of computers



QUIZ

What is the name of this computer?



Developed by IBM

Can answer questions in natural language format
Artificial Intelligence Computer System

2011 Won the **Jeopardy** Game

GIST

Technology and Capabilities of Watson

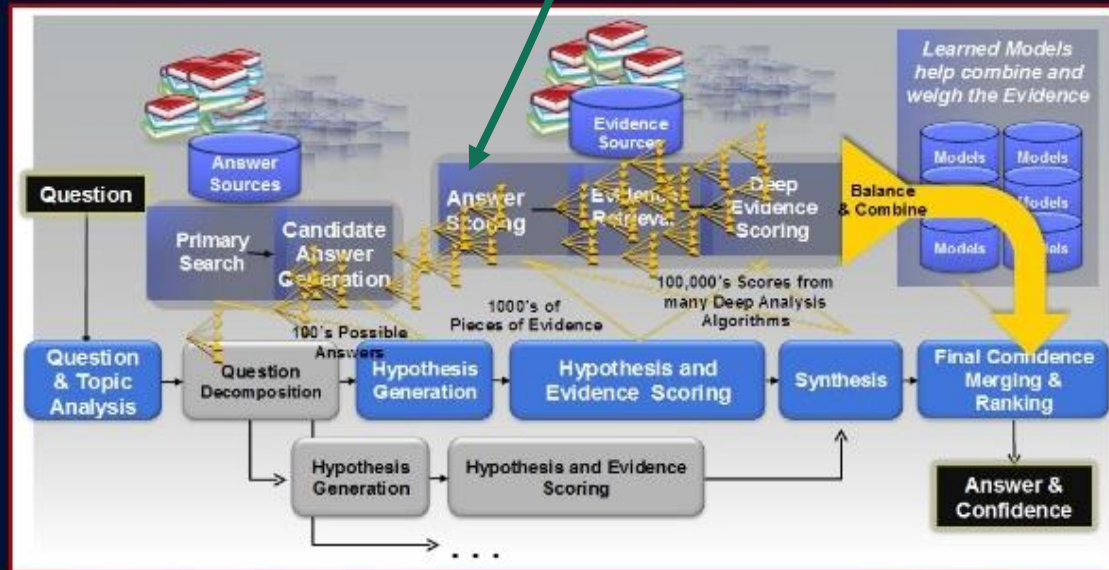
Watson is also a tree-search algorithm, exploring a tree of deep QAs with high likelihoods and priors!

IBM Watson

IBM

The Technology behind Watson

DeepQA: Massively Parallel Probabilistic Evidence-Based Architecture



© 2015 International Business Machines Corporation

CONFIDENTIAL

7

SPEECH
TO TEXT



Employs low latency speech recognition capabilities to convert English speech to text

TEXT TO
SPEECH



Synthesizes natural-sounding speech from text in English and Spanish

VISUAL
RECOGNITION



Analyzes the visual content of images and videos to understand their content

CONCEPT
INSIGHTS



Explores the concepts behind your input, identifying associations beyond traditional text matching

TRADEOFF
ANALYTICS



Helps users make better choices by weighing multiple and often conflicting goals

Watson for Oncology

Bios of 200M People, 3 T Medical Images, 1.2 M journals papers

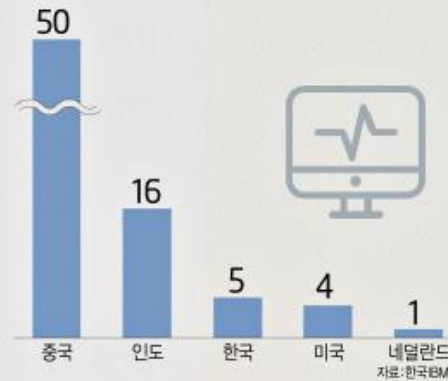
Electronic Journal, April 11, 2017

2017년 04월 11일 화요일 004면 종합

전자신문



주요 국가별 IBM 왓슨 포 온콜로지 도입 현황
단위:개



국내 병원 IBM 왓슨 도입 현황



왓슨이 학습한 데이터 양



국내 주요 병원별 AI 기술 개발 현황

병원	AI 역량 확보 현황
서울대·분당서울대병원	AI 기반 차세대 병원정보시스템 개발
연세의료원	빅데이터 기반 질병예측 서비스 개발, 심혈관질환 예측 솔루션 개발
서울아산병원	암, 심혈관질환 예측 및 치료법 제시 솔루션 개발, 인공지능 의료영상 사업단 개소
서울성모병원	미국 스탠퍼드 대학과 시가민 방사선 암 치료기술 개발, 스마트 이미징 바이오뱅크 개소
아주대병원	AI 기반 중환자실 응급환자 예측 솔루션 개발
서울대치과병원	치과용 영상정보 분석 및 질병 예측 솔루션 개발
분당차병원	한컴그룹과 공동으로 AI 기반 재활 프로그램 개발
국군의무사령부	빅데이터 기반 임상 의사결정지원 시스템 개발

◇세계 톱3 'AI 도입국', 의료 혁신 시작했다

알파고와 불러온 AI 신드롬은 병원에서 IBM '왓슨'이 바통을 이어 받았다. 코그니티브(인지) 컴퓨팅 솔루션 왓슨은 빅데이터를 분석해서 자연어로 된 질문을 이해하고 답을 제시한다. 매일 쏟아지는 300여종의 의학저널, 200여종의 의학교과서, 1500만쪽에 달하는 의료 정보를 학습해서 최적의 치료법을 제시한다. 암 진단·치료에 도움을 주는 '온콜로지' △유전자 분석에 초점을 맞춘 '지노믹스' △임상 시험을 돕는 '클리니컬 트라이얼 매칭' △연구개발(R&D)용 '라이프 사이언스' 등이 대표 솔루션이다.

2015년 국내에 첫선을 보인 왓슨 포 온콜로지는 지난해 9월 가천대 길병원을 시작으로 부산대병원, 건양대병원, 계명대 동산의료원, 대구 가톨릭대학병원, 중앙보훈병원 등 6개 병원이 도입했거나 도입할 예정이다. 세계 각국과 비교해서 도입 비율이 높다. 왓슨 포 온콜로지를 도입한 병원은 중국이 50곳으로 가장 많다. 인도가 마니팔 병원 그룹 내 16곳이 도입해 뒤를 이었다. 우리나라(5곳)는 3위다. 미국이 4개 병원, 태국·네팔·네덜란드가 각 1곳이다.

AI 주치의 등장...의료혁신 脈 제대로 짚을까

IBM Watson Capabilities

Customized Education

15 IN

In five years, the classroom will learn you.

TODAY, NEARLY 2 IN 3 ADULTS WORLDWIDE HAVEN'T ACHIEVED THE EQUIVALENT OF A HIGH SCHOOL EDUCATION.



"IN FIVE YEARS, THE CLASSROOM WILL LEARN ABOUT EACH INDIVIDUAL STUDENT, AND PROVIDE A TAILORED CURRICULUM FROM KINDERGARTEN THROUGH HIGH SCHOOL AND TOWARD EMPLOYMENT."

DR. KATHARINE FRASE
CTO OF EDUCATION, IBM

THE CLASSROOM WILL CREATE A SYLLABUS BASED ON INDIVIDUAL LEARNING STYLE AND PACE, NOT ON AN ARBITRARY TEACHING SCHEDULE.

THIS SYSTEM WILL LEVEL THE PLAYING FIELD BY ENSURING THAT BARRIERS TO EDUCATION BECOME LESS OF A FACTOR FOR SUCCESS.

A SYSTEM FUELED BY SOPHISTICATED ANALYTICS OVER THE CLOUD WILL HELP TEACHERS IDENTIFY STUDENTS WHO ARE MOST AT RISK, PREDICT THEIR ROADBLOCKS AND THEN SUGGEST MEASURES TO HELP THEM OVERCOME THEIR CHALLENGES.

THE CLASSROOM OF THE FUTURE WILL LEARN ABOUT INDIVIDUAL STUDENTS OVER THE COURSE OF THEIR EDUCATION AND HELP THEM MASTER THE SKILLS CRITICAL TO MEETING THEIR GOALS.

IBM Watson Health How It Works

IBM Watson Health is improving health by bringing the world's data to our daily lives.

The future of health is all about the individual and having a complete picture of the many factors that affect people's health. But we need better ways to tap into and analyze health information in real-time.

How do I reduce my risk for heart disease?



You, your community, and individuals everywhere contribute a vast amount of health-related data, from exercise activity to genetics. And doctors and researchers contribute their expertise, clinical trial data and other trusted sources. However, it is difficult to make use of these growing pools of fragmented data.



A Radiologist I met at IEEE EMBS 2017

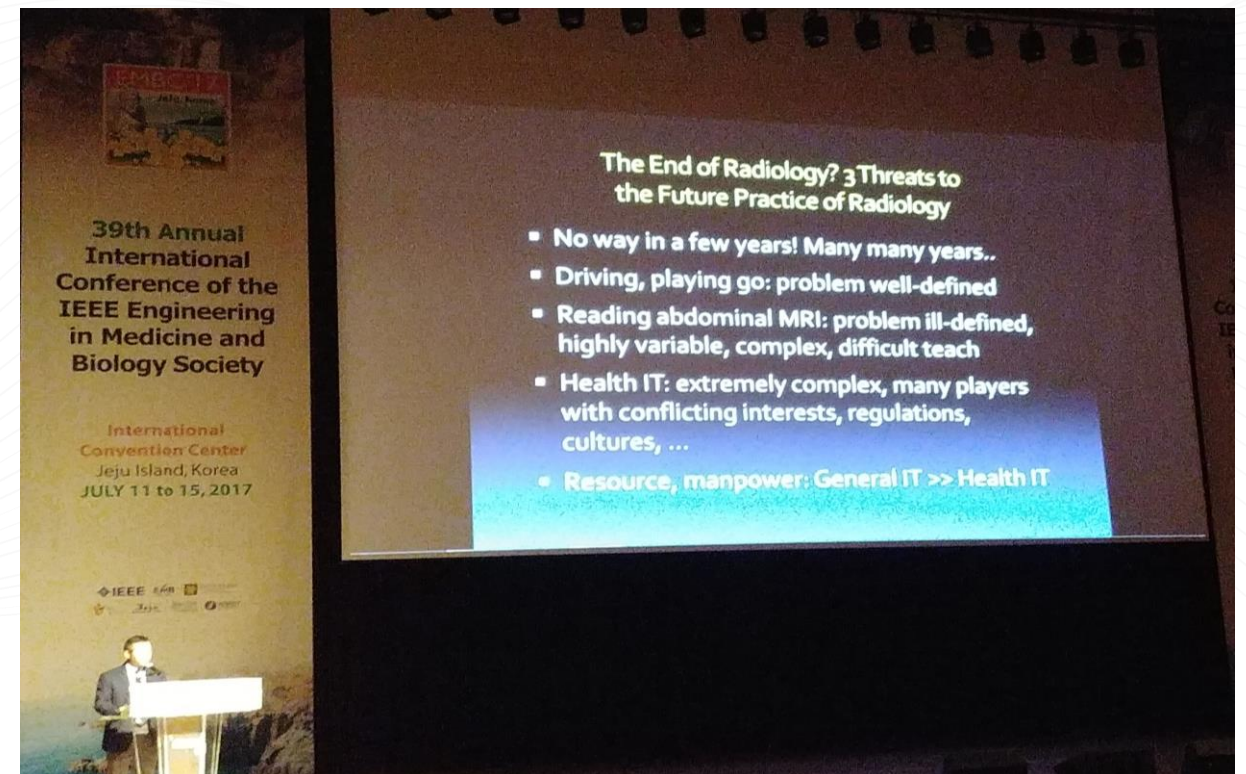
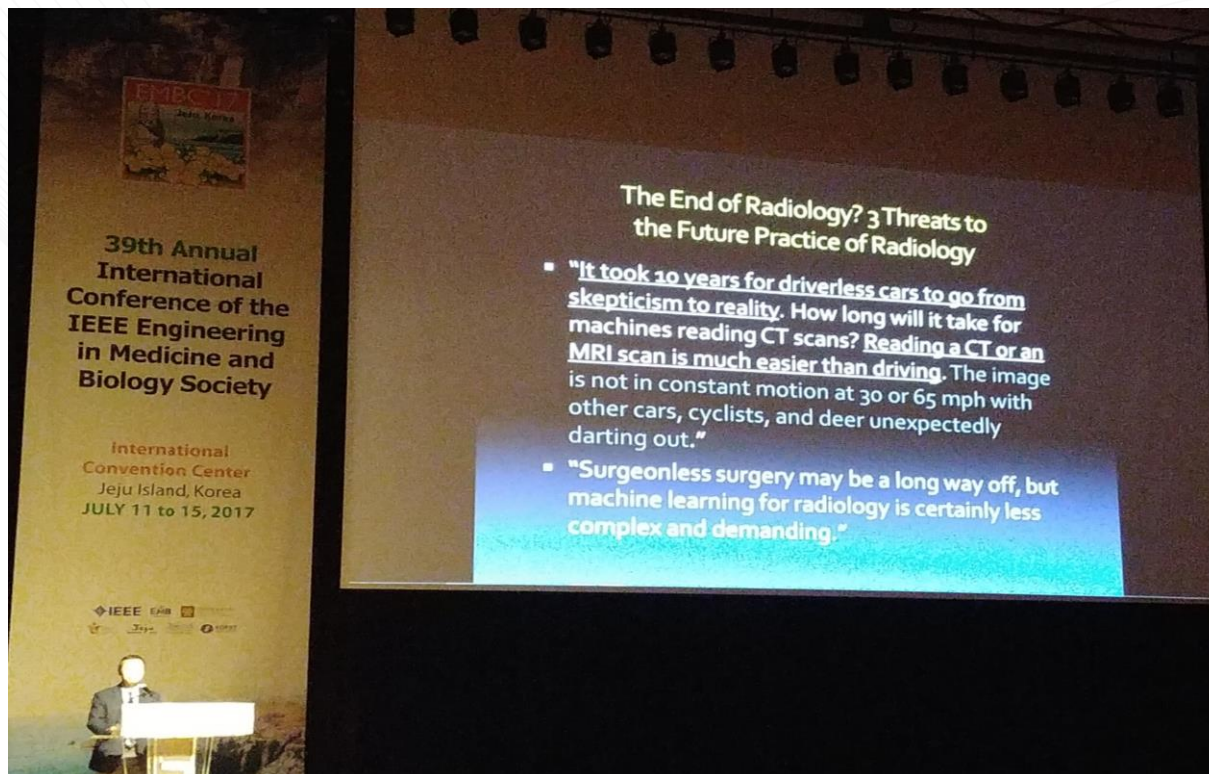
The end of Radiology?

He says No!

Why?

Because the job is very complex for AI to take over.

He says there are lots of hypes about AI.



Artificial Intelligence and Robots

Today, artificial intelligence can

Compute, (1997)

Hear, (2010)

See, (2013)

Make complex judgement (2016)

Understand Context, (2011)

Robot can Speak,

Walk,

Run,

Ride,

Fly.

without human intervention,

gain experience via seeing, reading & hearing,

accumulate knowledge, and

make comprehensive judgments.

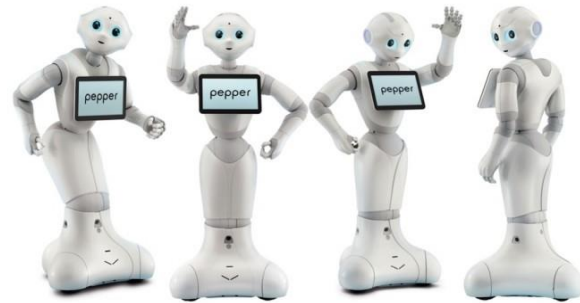
Appearance of Super AI soon?

The end of humanity, or
an unlimited opportunity?

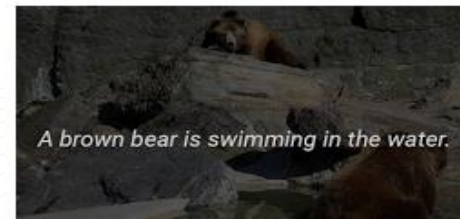
A.I.

The current of A.I., Robot : Listen · See · Speak · Cognitively Think · Understand Context

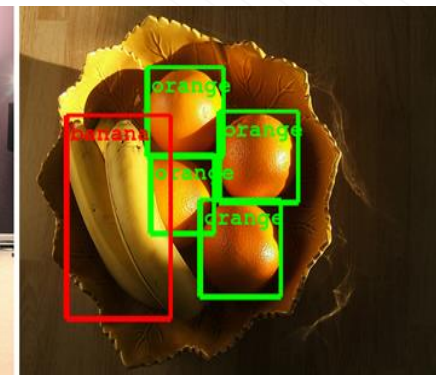
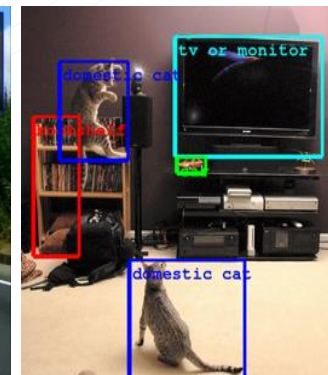
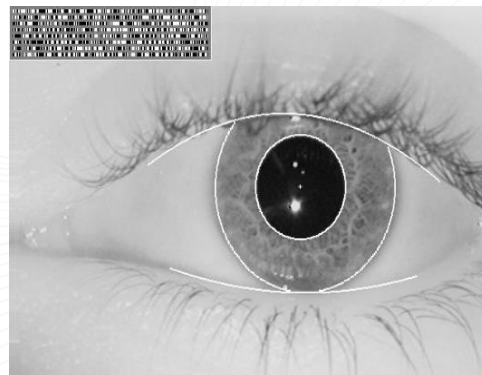
Interaction



Understand Context (Google Captioning AI)



Recognition



A.I.

The current of A.I. and Robot : Walk · Run · Ride · Fly

Handle Robot
(Boston Dynamics)



Swarm Robotics



Driverless Car



Drones



New technologies that intelligent IT brings forth.

Smart logistics - Robotics, automation, self-driving technology

Service, health care, education, logistics, factory automation

Amazon's Warehouse



Driverless Truck Platoon



* 자료: "시속 1,000Km 하이퍼튜브(HTX) - 한국철도기술연구원

Wall street, competing ground for quant trading algorithms

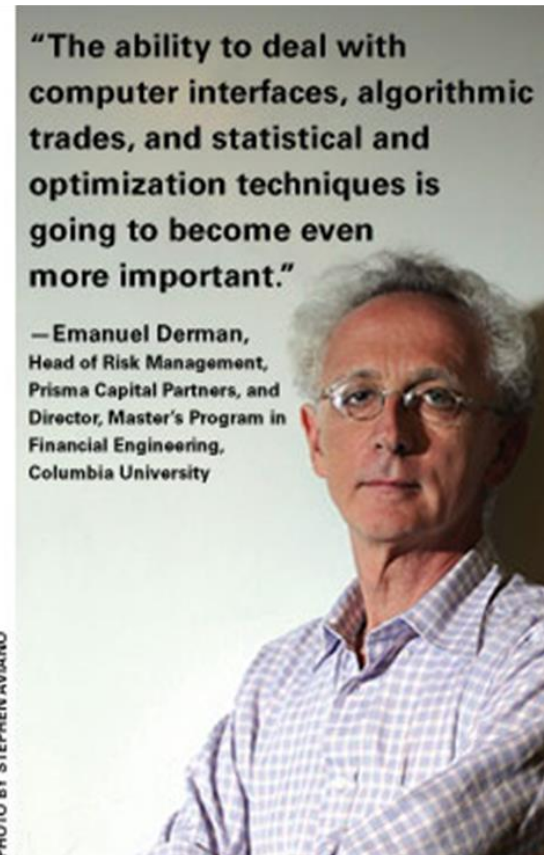


Quant trading: How mathematicians rule the markets

By Richard Anderson
Business reporter, BBC News



Mathematicians and their trading programs are increasingly taking the place of professional investors in financial centres across the world



"The ability to deal with computer interfaces, algorithmic trades, and statistical and optimization techniques is going to become even more important."

— Emanuel Derman,
Head of Risk Management,
Prisma Capital Partners, and
Director, Master's Program in
Financial Engineering,
Columbia University

GIST

AI In Healthcare: Machine Learning and Deep Learning Startups To Watch

Patient Monitoring/ Health Management



Welltok.



Ginger.io

physIQ

Nutrition



Medical Imaging



Created By



Virtual Assistants



Drug Discovery



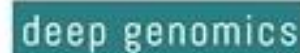
Medical Research



Health Insights/Risk Analytics



Diagnostics



100 STARTUPS USING ARTIFICIAL INTELLIGENCE TO TRANSFORM INDUSTRIES

CONVERSATIONAL AI/ BOTS



VISION



AUTO



ROBOTICS



CYBERSECURITY



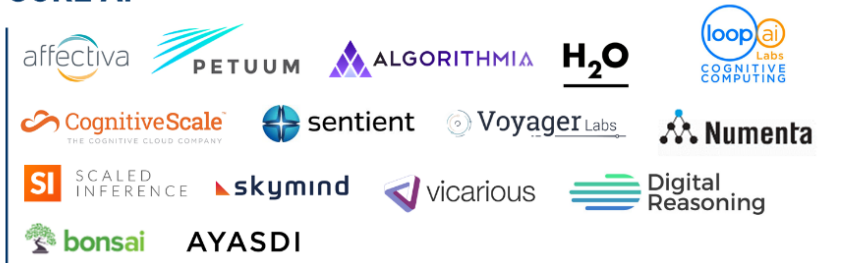
BUSINESS INTELLIGENCE & ANALYTICS



AD, SALES, CRM



CORE AI



HEALTHCARE



TEXT ANALYSIS/ GENERATION



IOT/IIOT



COMMERCE



FINTECH & INSURANCE



OTHER



4th Industrial Revolution

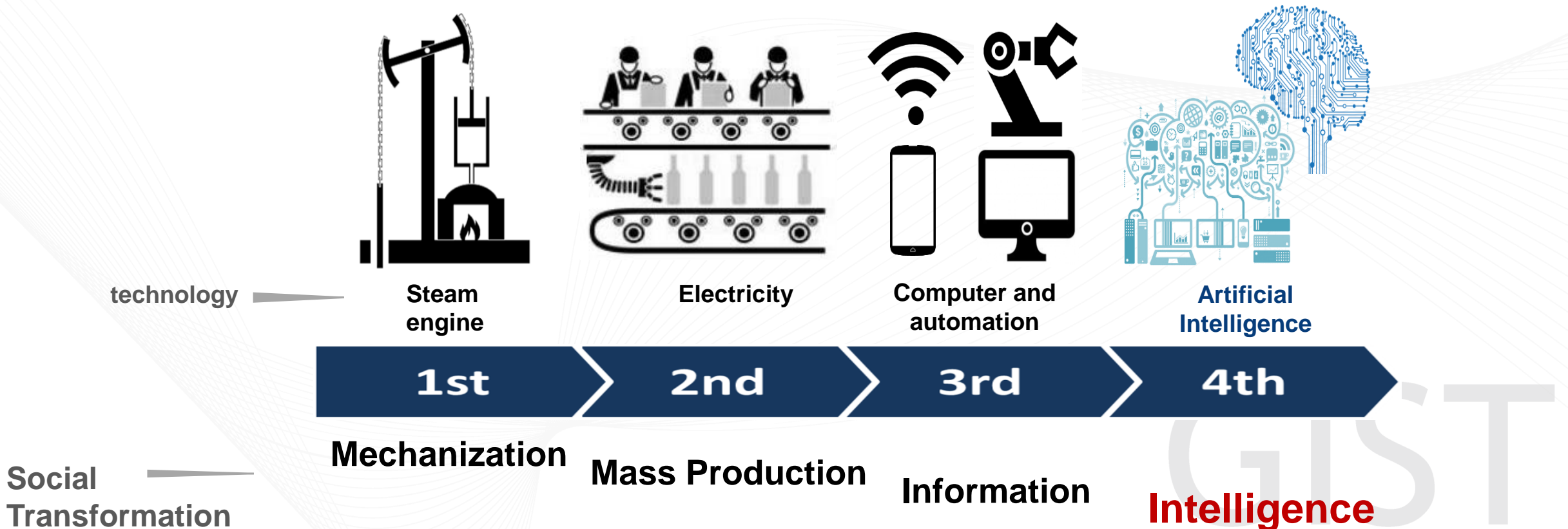
The 4th Industrial Revolution

The advent of intelligence society

Advances in technology lead the transformation of society to the next level!

Why has the 4th IR story made a big hit in Korea?

AlphaGo or a fear of losing jobs?





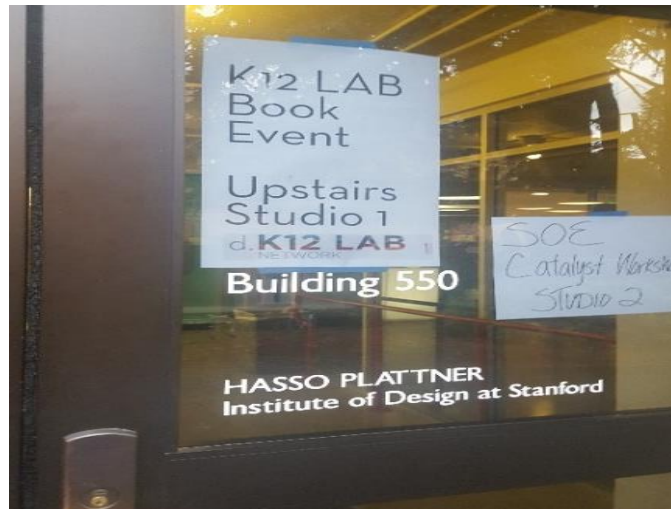
2017.01.30.
@Singularity Univ.



2017.01.31.
@Google Inc.



2017.01.27.
@Institute of Design at Stanford



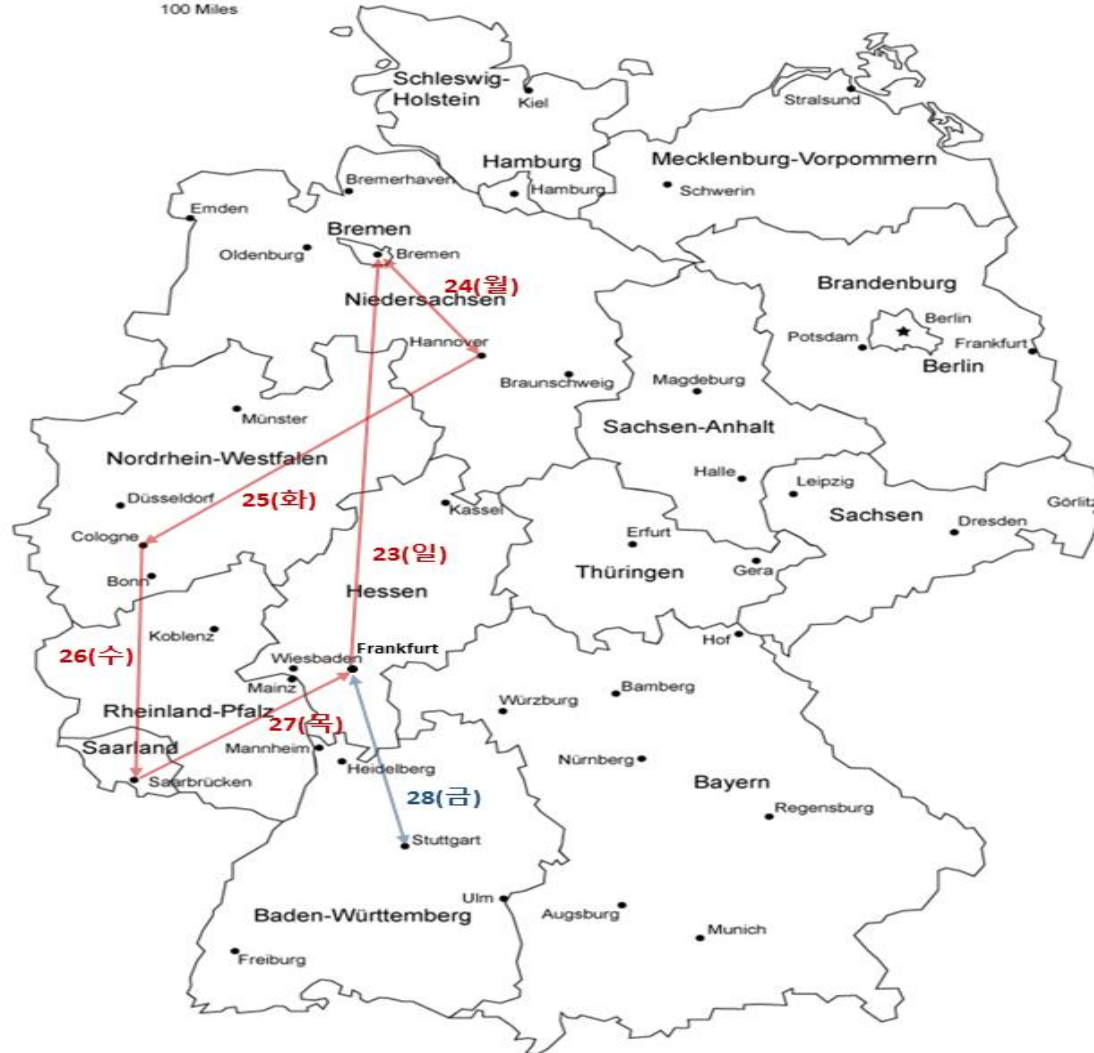
2017.01.27.
@K-12 Lab 세미나

혁신의 상징
Silicon Valley
Stanford
Berkeley

Visit to Hannover Messe 2017

Germany

0 100 Kilometers
0 100 Miles



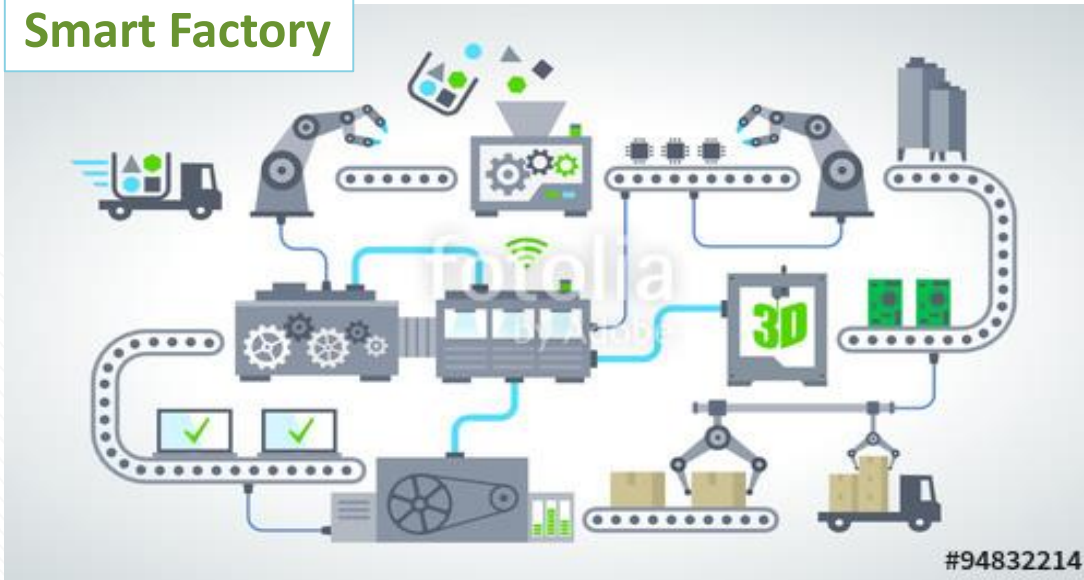
Völklingen Ironworks
UNESCO World Cultural Heritage Site
Once largest steel prod. site, closed at 1986

“Change or Disappear”

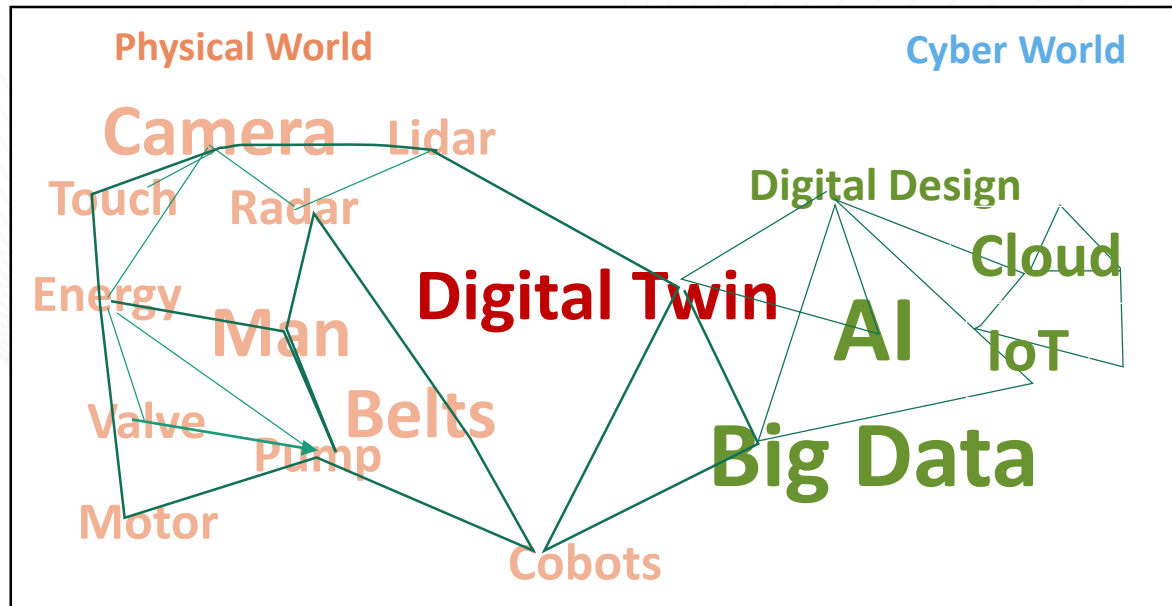


Hannover Messe 2017

Smart Factory



Production on Demand

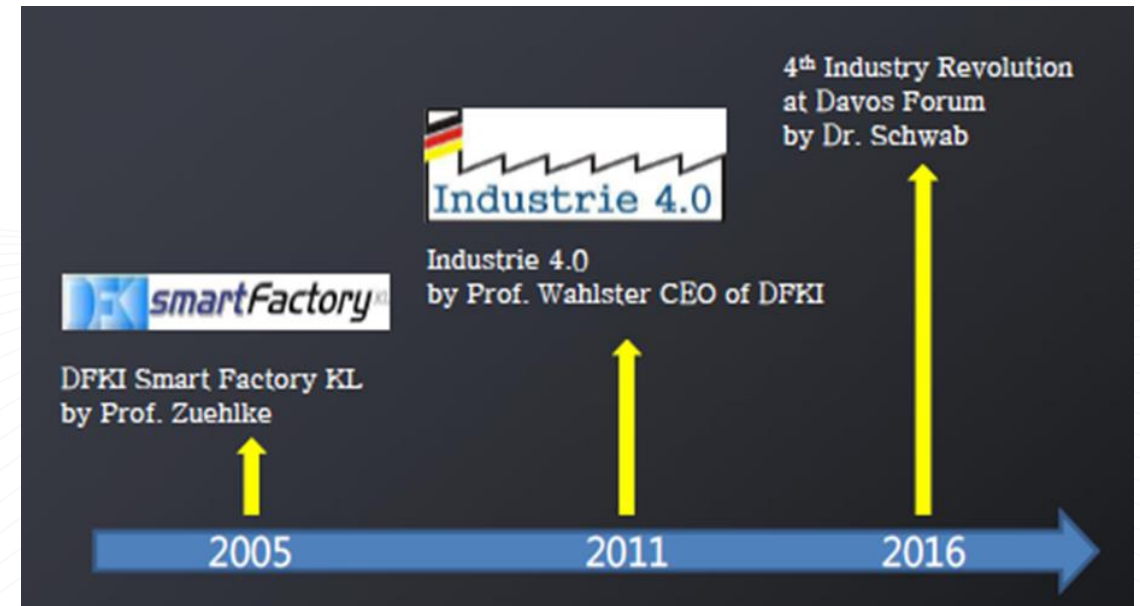


- Digital Factory
- R.T. Surveillance
- Prediction
- Value creation
- On demand
- Precision
- Productivity up

GIST

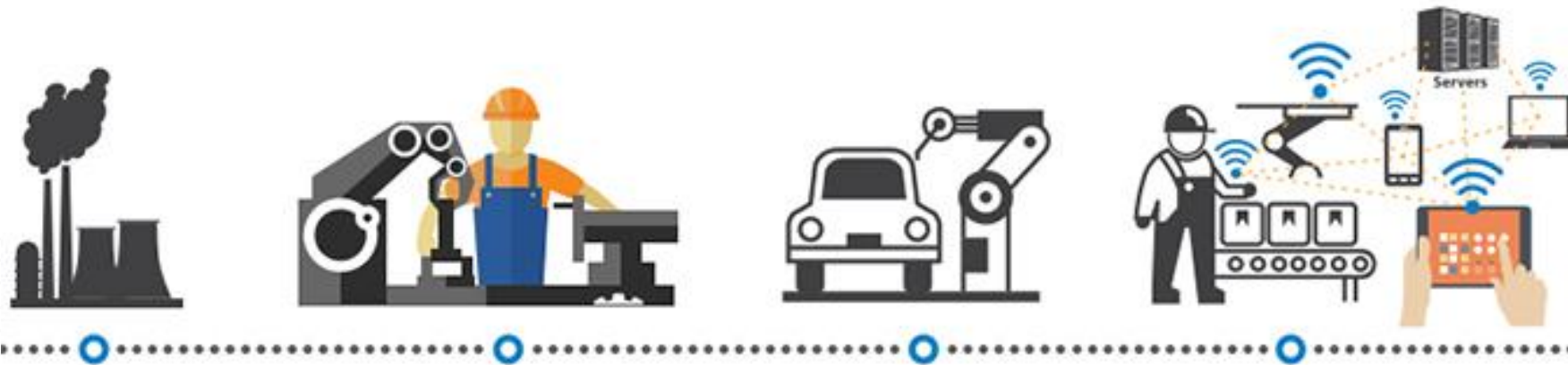
Industry 4.0 of Germany

- 2005, **DFKI Smart Factory** by Prof. Zuehlke
- 2011, Industry 4.0 termed at Hannover Fair
- 2012, in Gov. 10 Strategic High Techs
- 2013, 200M E Funding on CPS & IoT R&D
- 2015, Platform Industry 4.0



- Germany ~ the world leader in manufacturing industry
- **GFG, aims to upgrade manuf. ind. with ICT, cloud computing, Robots & AI**
- Able to keep manufacturing sites in Germany, revolutionizing the manufacturing ind.

Industry 4.0



18th Century

Industry 1.0

Mechanical production.
Equipment powered by
steam and water

19th Century

Industry 2.0

Mass production assembly
lines requiring labor and
electrical energy

20th Century

Industry 3.0

Automated production
using electronics and IT

Today

Industry 4.0

Intelligent production
incorporated with IoT, cloud
technology and big data



Cloud Technology

Internet of Things (IoT)

Intelligent Machines

Big Data

Industry 4.0 Factory

Industry 4.0 and 4th Industrial Revolution

What's the difference?

4th IR was named by Klaus Schwab as the theme of WEF 2016.

Schwab aims to describe rapid **techno-socio-economic changes** erupting in the industrialized world.

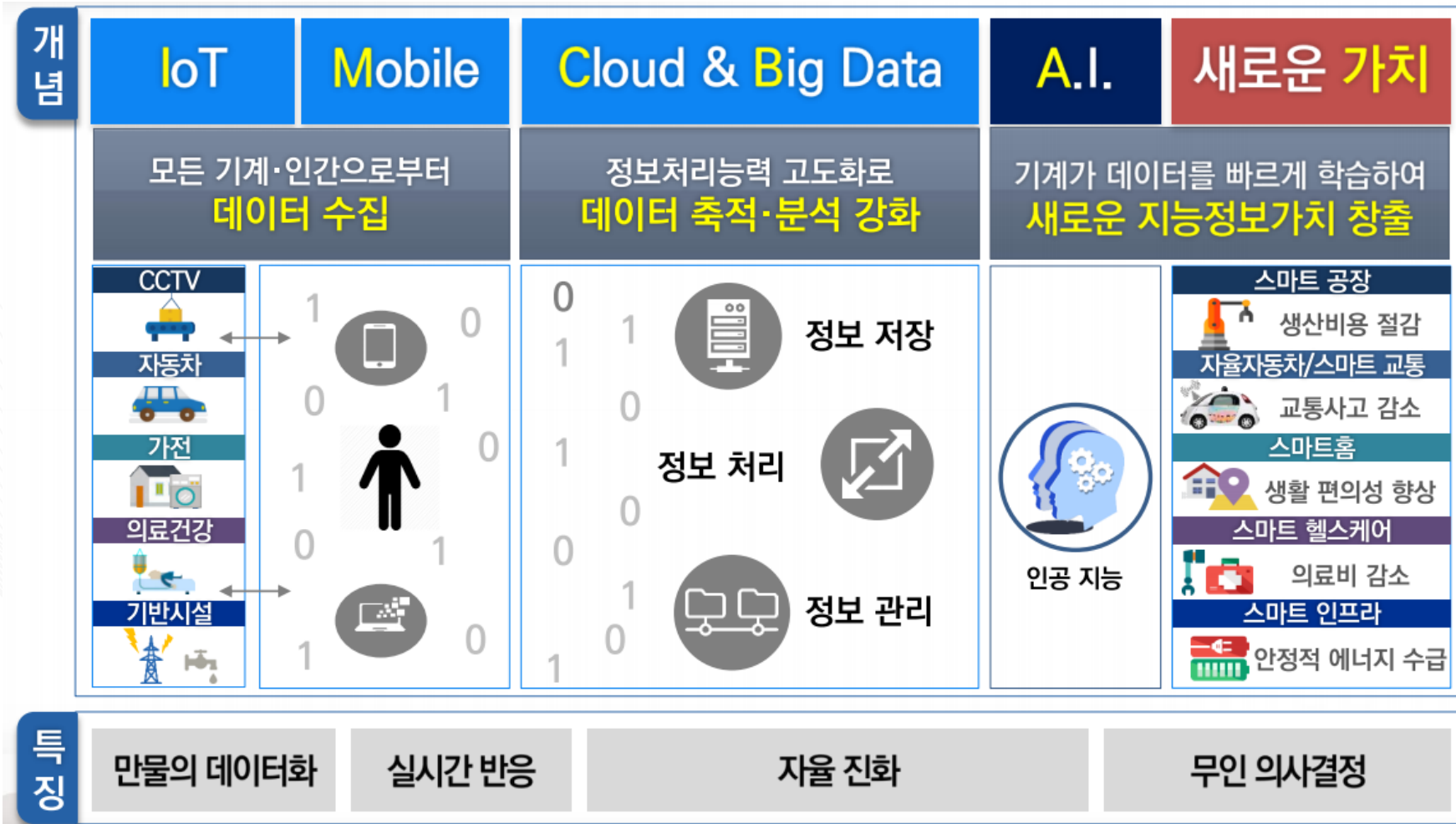
Definition: Making Modern System Intelligent. I will explain in the following several sentences:

- In a factory, motors, valves, belts, controllers, energy sources, mechanical robots, and etc.
- (**IoT**) These things can be digitalized by attaching a digital sensor to each of them.
- (**Digital twin**) A digital twin is created for each thing.
- (**Optimization**) A factory with digital twin can be optimized in a computer design.
- (**Big Data**) Digital data can be gathered, stored, and used to monitor the status of factory.
- (**Prediction**) Data stored up to present can be used to figure out a trend or predict the future.
- (**Value creation**) New value-chains, BMs, created by discovering new patterns cultivated from the stored data.
- (Extending "factory" to other items is **4th IR**) The *smart factory* here can be extended to **smart home, smart school, smart city, smart energy, smart farm, smart hospital**, and etc.

Big Data is New Oil!

AI is New Electricity!

Creating new values through intelligent system of things



Prospects of 4th Industrial Revolution

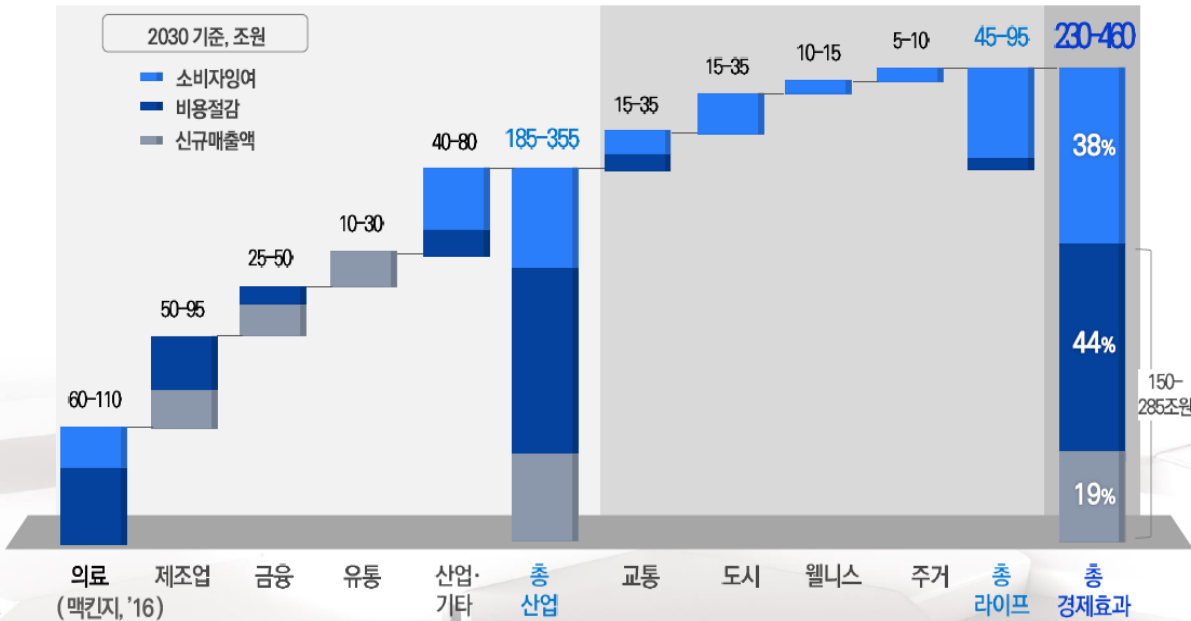
Prospects for Changes in Domestic Economy and Employment Effectiveness

경제효과



- » 2030년 기준, 최대 **460조원**의 총 경제효과 발생
- » 신규매출 **85조원**, 비용절감 **199조원**, 소비자후생 **175조원** (최대치 기준)

경제적 영향분석



고용효과

기존 일자리 변화

- » 총 노동시간 중 **최대 49.7%** 자동화 예상
- » 100% 대체되는 직업은 **0.3%**, 20% 이상 자동화 가능한 직업은 **86%**

신규 일자리 창출

- » 2030년까지 SW엔지니어 등 지능정보기술 분야에서 약 **80만명** 일자리 창출

구분	고용창출 효과
해외시 관련산업 종사자 예측 기반	10-45만명
외부기관 예측자료	60-80만명

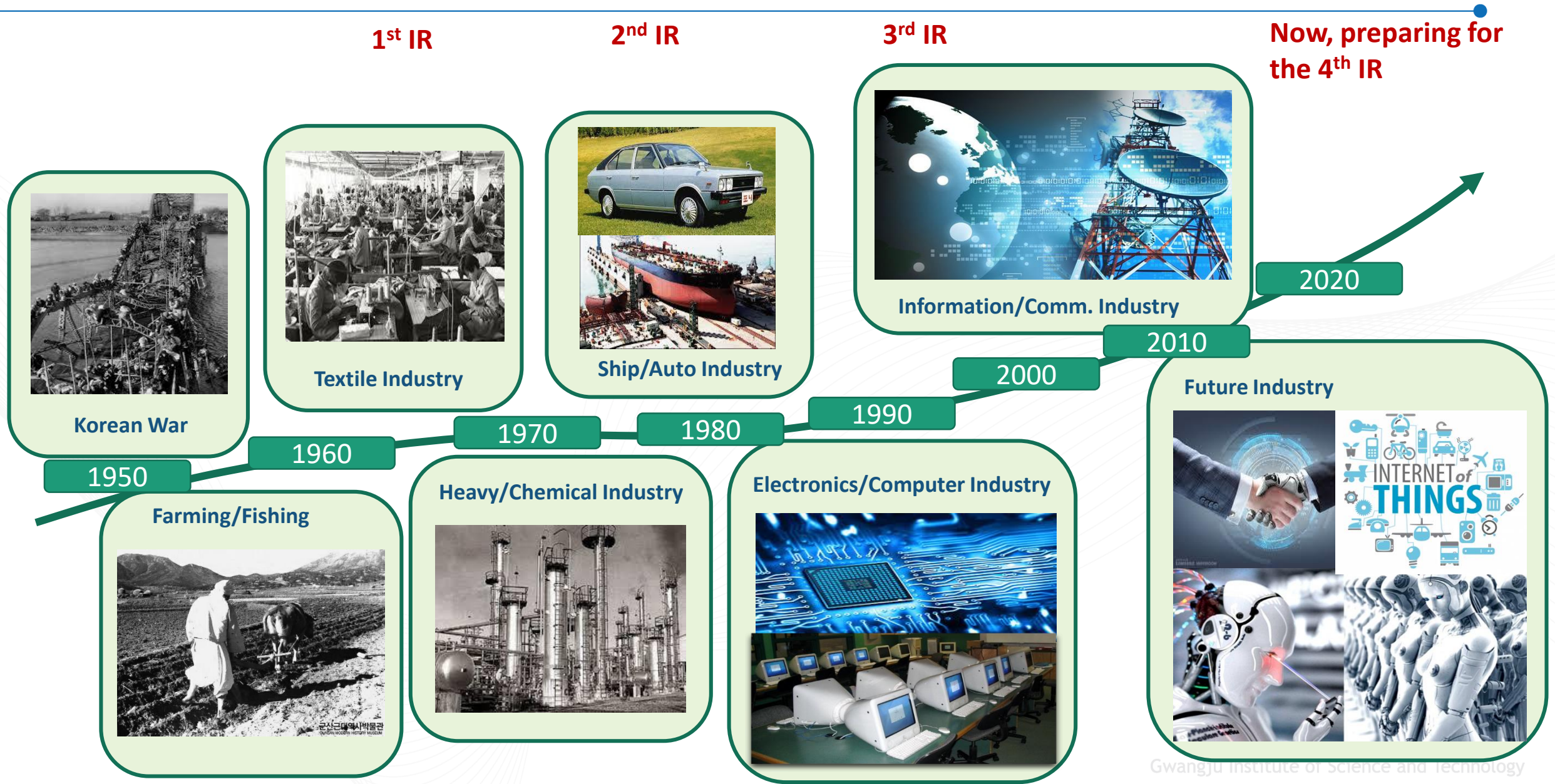
일자리 영향 분석

직업군	자동화 가능률(%)	종사자 비중(%)
섬유 및 의복관련직	91	2%
음식서비스관련직	82	7%
운전 및 운송관련직	63	6%
경영, 회계, 사무관련직	59	16%
건설관련직	48	5%
영업 및 판매관련직	42	13%
농림어업관련직	40	7%
경비 및 청소관련직	27	5%
교육 및 자연사회과학연구직	18	5%
사회복지 및 종교관련직	16	3%
← 전체 평균: 49.7%		

※ 국내 총 2,500만명 일자리 (414개 직종) 분석(맥킨지, '16)

Change or Disappear?

Korea's Impressive Growth!



1st IR

2nd IR

3rd IR

Now, preparing for the 4th IR



Korean War



Textile Industry



Ship/Auto Industry



Information/Comm. Industry

2020

2010

2000

Future Industry



1950

1960

1970

1980

1990

Farming/Fishing



Heavy/Chemical Industry



Electronics/Computer Industry



Again, it's not tech adv. that is bad.

1950



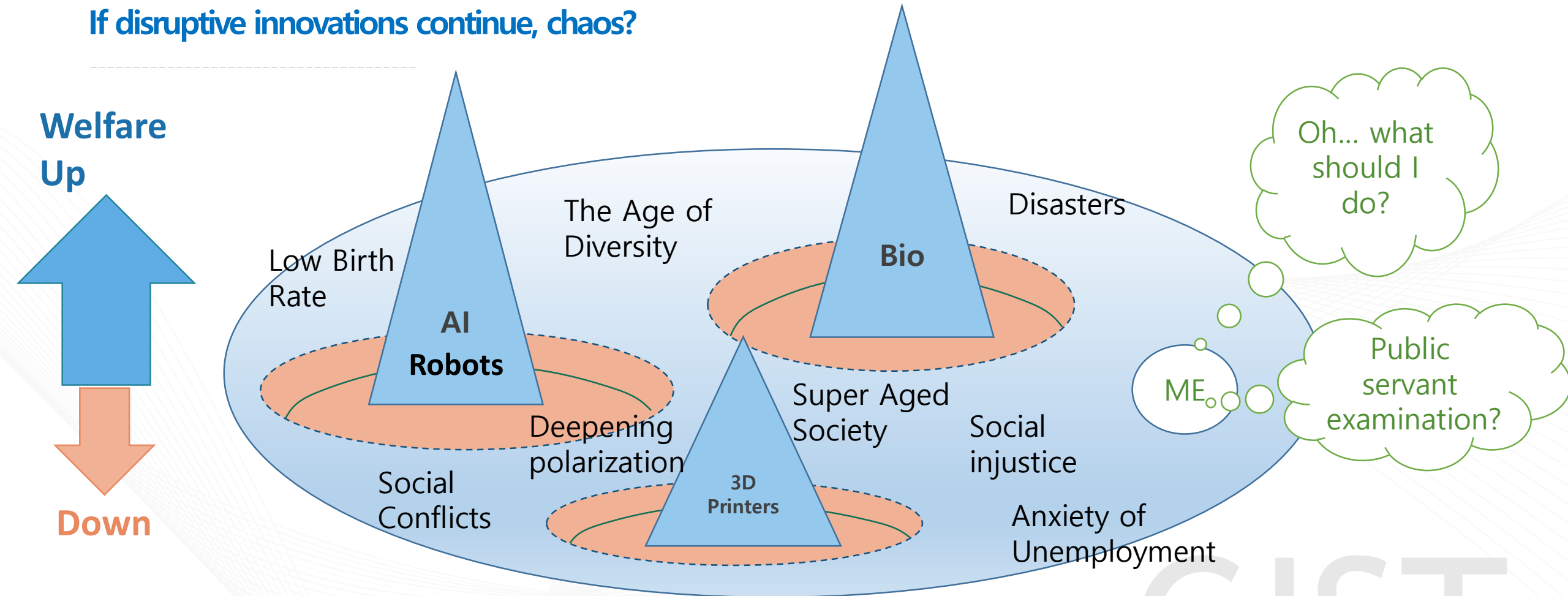
2010



What is bad then?

Nature of Disruptive Innovations

If disruptive innovations continue, chaos?



Huge gain for few elite groups, gain for people at large, loss for displaced workers!

What to do?

- 1. Sharing, Giving Society**
- 2. Growth with continued Innovation**

Leap to Nation of Welfare via ST Development

Amendment of the Constitution?

- The South Korean people built a national defense to defend the nation and live peacefully.
- The nation protects the people from war, disaster and shouting, and guarantees the **basic rights of people, such as dignity, pursuit, freedom, freedom, and education.**
- **The state supports the pursuit of scientific discovery and technology development aiming to foster the basic rights of all people.**
- **The state timely and fairly distribute the outcome of economic growth made via scie-tech advances throughout the nation.**
- **Better, in Act 1 or the manifesto of amendment.**



Making New Jobs and Digital Governance, Korea National Assembly, Feb. 13th, 2017.

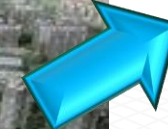
GIST

Leap to Innovation Driven Society!

- **Government** builds open innovation platforms.
- **University** makes original research outcomes and opens up research outcomes/equipment/facilities.
- **Citizens** be ready for lifelong study, use open platforms, challenge entrepreneurs.
- **Companies** should participate in a win-win ecosystem, make money by spreading innovations into the world.

Open Platform

Human resource training/
Establishment of production platform



- Fostering the 4th industrial technology ecosystem (win-win corporate culture)
- Internationalization Center, start-up support center education/law/VC.
- One-stop start-up support center
- Establishment of R & BD infrastructure

Makers Movement



Garage Culture



Production of prototype 21 days, Seed Studio(中)



Maker Faire



Spread of maker spaces (Korea) of Science and Technology

What are abilities in needs?

Ability we need, in the era of the 4th IR

Mathematics

Creativity

Soft Power

"Low-level language or mathematical abilities
can be replaced by artificial intelligence"

"With **our more creative thinking**,

Find the direction

Hidden in the ocean of data.

We must focus on **developing higher human
intelligence** "

- KAIST Jung JS

GIST

Ability we need, in the era of the 4th IR

Creativity ~ Positive Thinking, Responsive, Research, Passion

Positive Thinking

Research

Read, Think, Write

How to do research

“AI is human made SW programs,
the prepared can use them.”

“Innovation comes from research”

“Innovative ideas are made from reading, thinking,
and writing.”

“Research gives solutions to human problems such
as politics/economy/climate change.”

GIST HN Lee

What to Change in Education

Solve a difficult problem which is known to have an answer!

VS.

Find a problem and solve in your own ways!

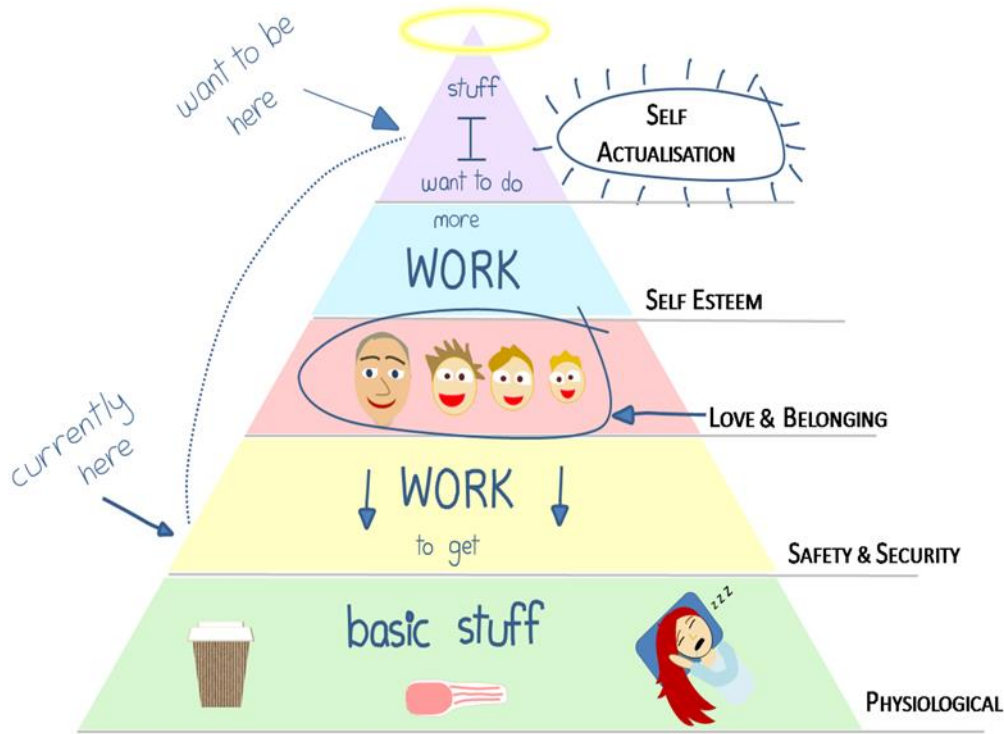
GIST

Gwangju Institute of Science and Technology

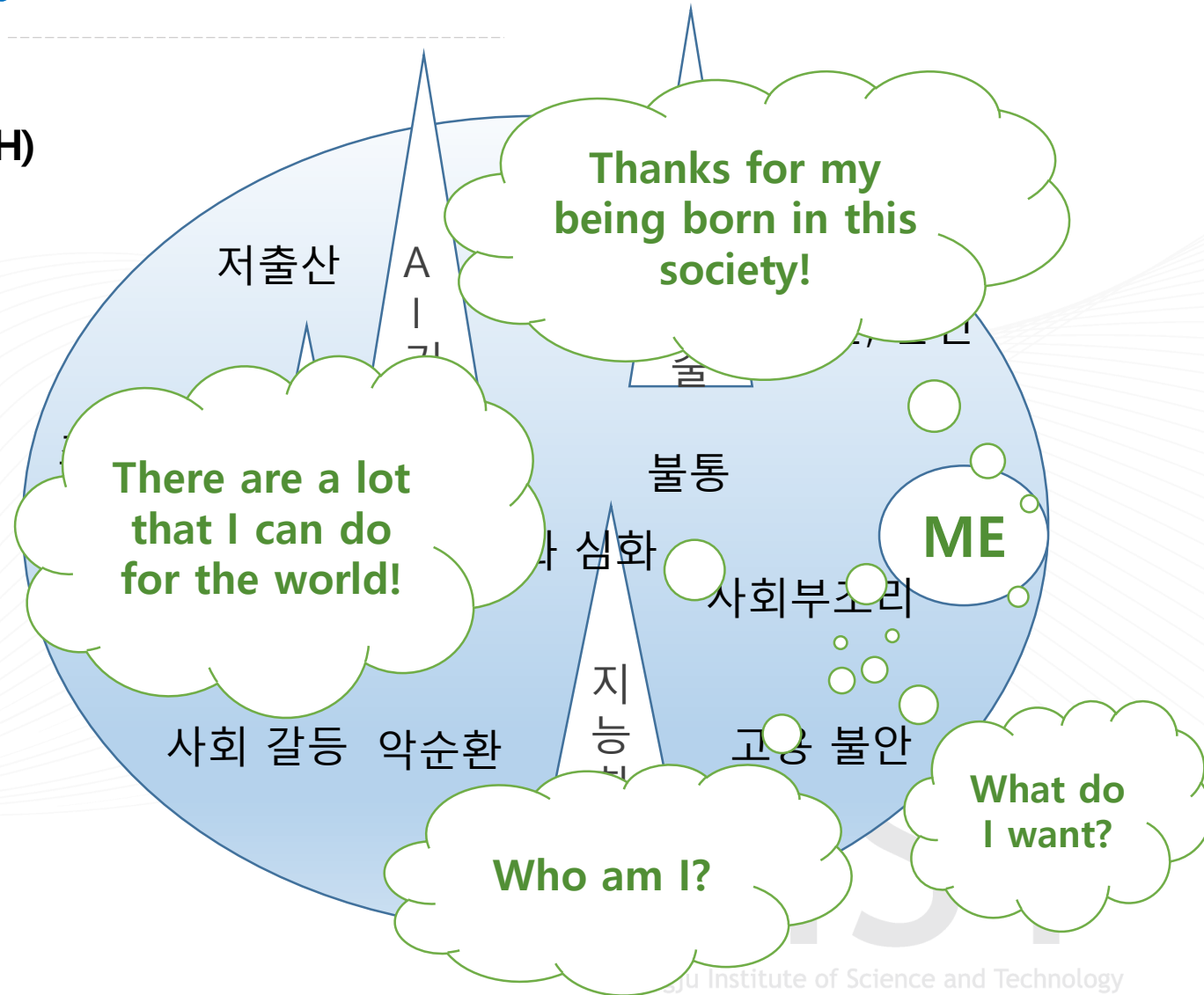
Creation of Jobs

Do not worry! Know what you want and who you are!

Human desire, Source of Job Creation (KAIST Lee MH)



Maslow's Hierarchy of Needs



Open Education Platforms

Be responsive to problems

Use open platforms

- Hundreds of On-line Lectures
- University Resources
- Public patents

Start your venture



courseera

edX

OPEN EDUCATION
free education for all

UDACITY

Massive Open Online Course

Heathy, happier Korea with innovation driven growth

The Image of healthy organization · local society · nation · human Kind

PAST

Few Elite

Closed

Unipolar

Separation

Single Line

Ownership

Distrust



Future

Equality

Open

Fair Distribution

Diversified

Sharing

Responsive

Cooperative

Trust

GIST

Conclusion

Goal: to make a creative nation in which innovative creations continue and help enhance human level!

Strategy :

- Open innovation platforms
- Safe net

There is no destined way for future.
We set the desirable future and bring it forth.

GIST

Policy Direction for Job Creation in Korea

- **Establishment of new industries**
 - Most effective way for job creation
- **Collective start-ups based on scenario for Business Ecosystem**
 - (As-is) Single Start-up with a core technology for commercialization
 - (To-be) Collective start-ups cultivated as a mutually linked package.
- **Government as a facilitator for Business Ecosystem**
 - Design of business structure
 - Define participants and their roles

<Source> Park Chul Woo(2017), Job Creation Strategy and Tasks (2017.05.10.)
<http://pulsenews.co.kr/view.php?year=2017&no=312984>

S. Korea's Key Policy Measures for 4th IR

- Launch **Presidential Committee on 4th Industrial Revolution** in 2018
- Introduce **negative-type regulation** for new industries
- Install public big data center
- Build world's first high-speed IoT network and commercialized 5G Communication

<Source> Pulse News (2017.05.10.) <http://pulsenews.co.kr/view.php?year=2017&no=312984>

Discussion Items

- What is the growth strategy for Inst. of Sci & Tech schools?
- Education strategy for future?
- **How to create new jobs?**
- How to promote cooperation among ventures and big companies?
- Big data gathering vs. privacy law.
- **AI, is it really a revolutionary technology?**
- How to go to the society of trust?
- **Sustainable growth, how to achieve it?**

Comments

- Purpose of a nation is to develop Science and Technology? **Does it make any sense?** You cannot change the identity of a nation.
- You promotes a **rosy future**; but it must have a limit. Science and Tech has drawbacks. Direction and speed must be controlled. Talking only about rosy future makes the proposition rather unstable and incomplete.
- It seems that **opportunity for innovation is left only to the big companies** such as Google, Facebook, Samsung, etc. Would it be possible for small ones to make significant contribution? Should we tax the big companies for innovation taxes?
- There has been **many troubles and drawbacks** caused by science and technology projects which have left uncontrolled.



**Thank you
for your attention.**



GIST