본 세미나는 (사) 정보경영연구원의 지원으로 제작되었습니다.

안민정책포럼 2023.9.8.

DALLE2 Image:
“Realistic cityscape with skyscrapers, facilities, transportation system, and vehicles that blend in with nature"

AI와 인류의 미래 (시장, 윤리, 정책)

박성필
KAIST 문술미래전략대학원장

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Image Generated by Dall-e-2

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3 비용-편익 분석과 인공지능 거버넌스

4 토론: 포지티브 vs. 네거티브 규제

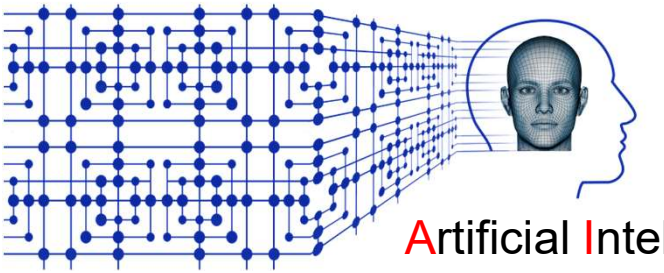
ARTIFICIAL INTELLIGENCE

The ability of a machine to display human-like capabilities such as reasoning, learning, planning, and creativity
- European Parliament

Some AI technologies have been around for more than 50 years
→ But major AI breakthroughs in recent years (e.g., Large Language Model)
- ❑ advances in computing power,
- ❑ the availability of enormous quantities of data, and
- ❑ new algorithms

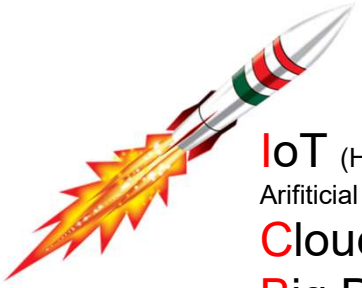
DIGITAL TRANSFORMATION

"IT-enabled business transformation" - *N. Venkatraman*



Artificial Intelligence

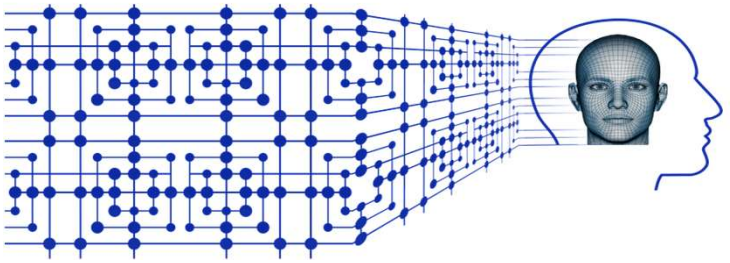
+



IoT (Home Appliances. Phone. Car. CCTV. Equipment. Facilities. Arifitiicial Organs. Smart-X)
Cloud Computing
Big Data
Mobile (WIFI. 5G)

1 인공지능 기술의 발전방향

Artificial Intelligence



The Next Big Thing?

DALLE2 Image:
"Futuristic digital art of an AI-generated cityscape with self-driving cars, drones, skyscrapers, and hover cars"

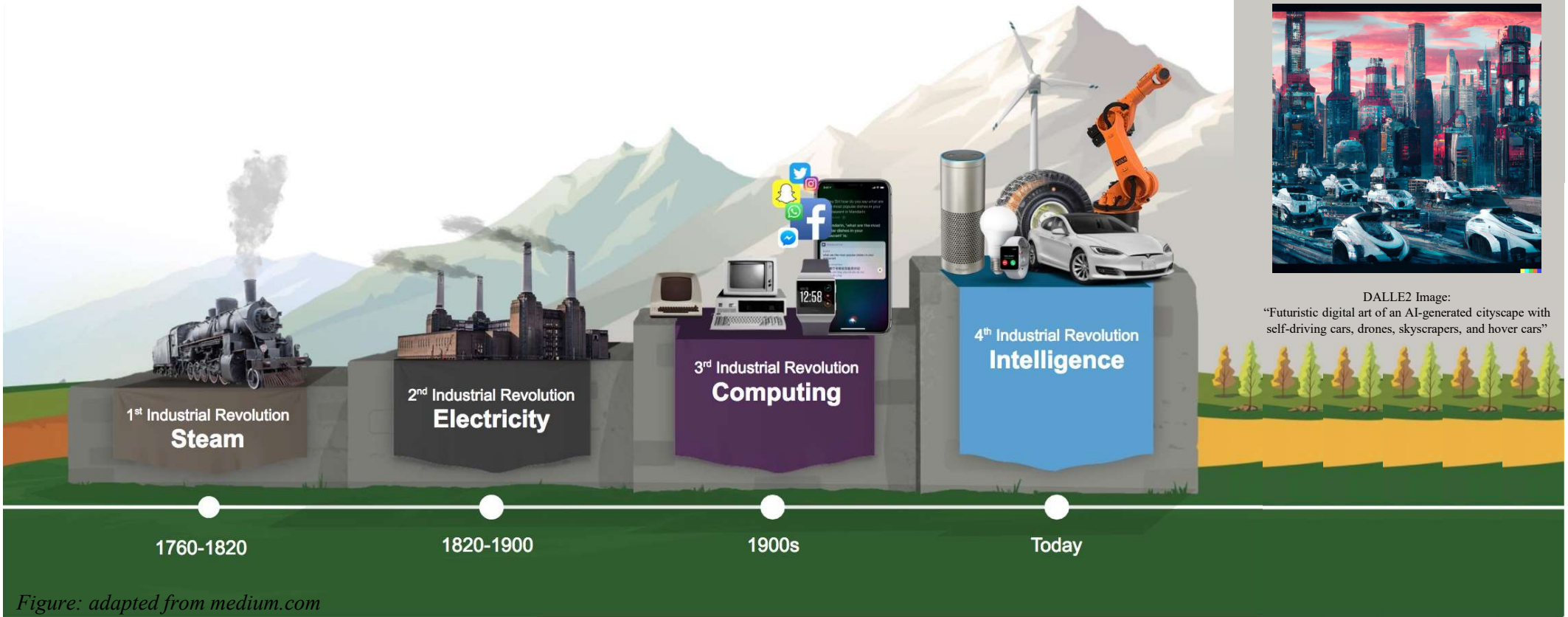


Figure: adapted from medium.com

Human Intelligence (HI) vs. Artificial Intelligence (AI)

ANI (AI < HI) | 생성형 AI (?) | AGI (AI = HI) | ASI (AI > HI)

INSTRUMENT/TOOL
for Invention/Creation

AI INVENTS/CREATES
with human-level intelligence

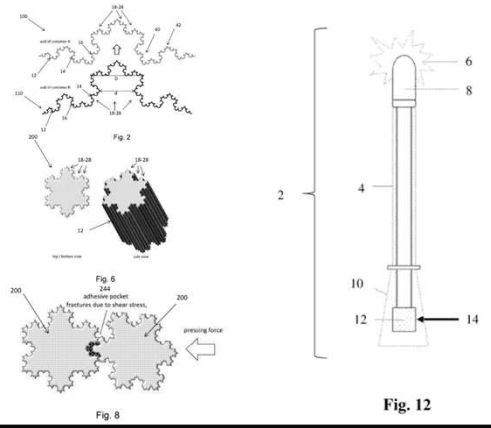
AI SURPASSES HI.

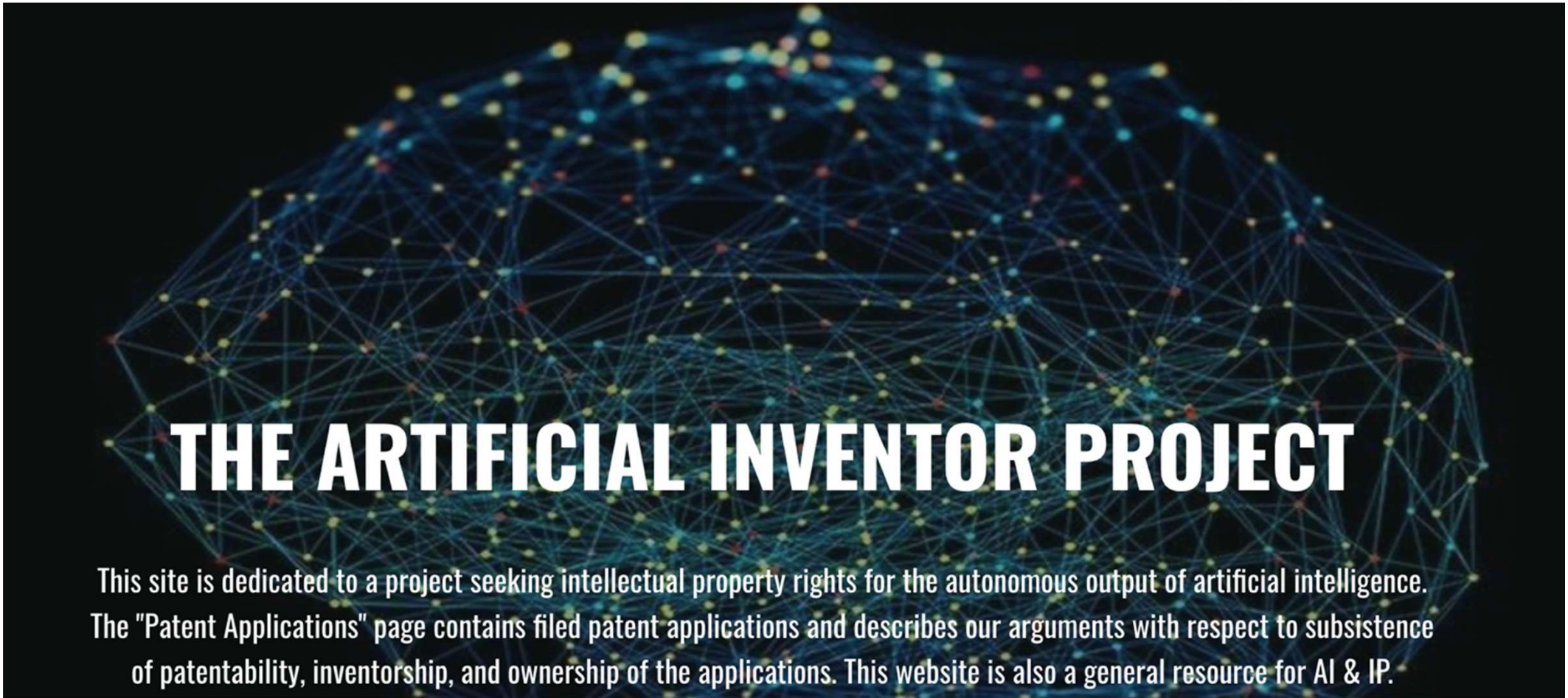
Image Courtesy of Pixabay (Gerd Altmann, RAE, Peggy Marco)

인공지능 발명가의 등장

"no natural person qualifies as an inventor"

DABUS: Inventing AI Invented by Stephen Thaler





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International Bureau

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WIPO | PCT

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B65D 8/00 (2006.01) *B65D 1/02* (2006.01)
B65D 6/00 (2006.01) *A61M 16/00* (2006.01)
B65D 13/02 (2006.01) *A61M 21/00* (2006.01)

(21) International Application Number:
PCT/IB20 19/057809

(22) International Filing Date:
17 September 2019 (17.09.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
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18275174.3 07 November 2018 (07. 11.2018) EP

(71) Applicant: **THALER, Stephen L.** [US/US]; 1767 Waterfall Dr., St Charles, Missouri 63303 (US).

(72) **Inventor: DABUS, The invention was autonomously generated by an artificial intelligence;** 1767 Waterfall Dr, St Charles, Missouri 63303 (US).

(74) **Agent: ABBOTT, Ryan;** 11601 Wilshire Blvd #2080, Los Angel, CA 90024 (US).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,

(54) **Title:** FOOD CONTAINER AND DEVICES AND METHODS FOR ATTRACTING ENHANCED ATTENTION

"no natural person qualifies as an inventor"

EPO, UKIPO, USPTO: 등록거절
(← 인간 발명가만 인정)

호주 연방법원(1심): "We are both created and create. Why cannot our own creations also create?"

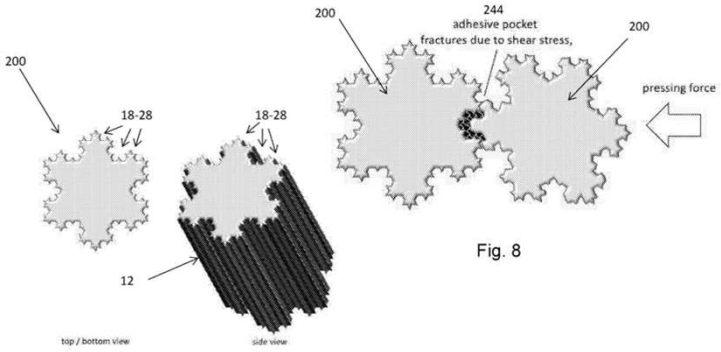


Fig. 8

Fig. 6

A food or beverage (10) container comprising:
a generally cylindrical wall (*intentionally omitted*);
wherein the wall (12) has a fractal profile with corresponding convex and concave fractal elements (18-28) on corresponding ones of the interior and exterior surfaces (14, 16);
(*intentionally omitted*)

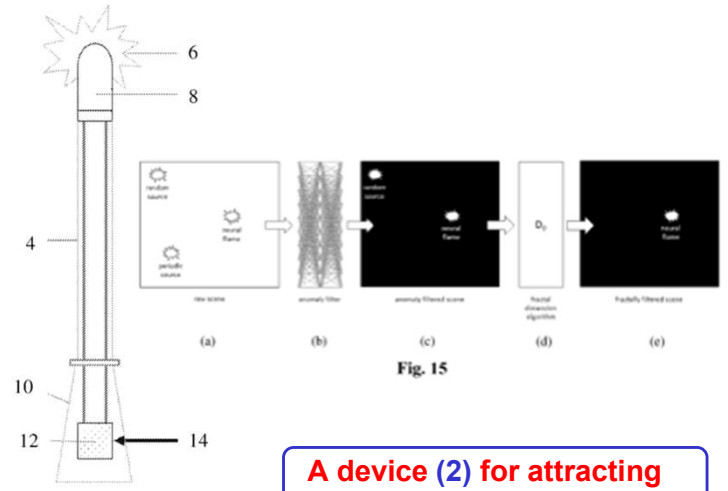


Fig. 15

Fig. 12

A device (2) for attracting enhanced attention, the device comprising:
(*intentionally omitted*)

2 인공지능 시대의 경제/사회적 변화

Daddy’s Car, Flowmachines

A Classical Piece Inspired by Star Wars, AIVA
Twit by Alfredo Canziani

“"백성을 평안하게 할 수 있는 정책과 전략을 논의하는 포럼"을 뜻하는 "안민 포럼"을 주제로 한 편의 서사시를 작성해 줄래?”

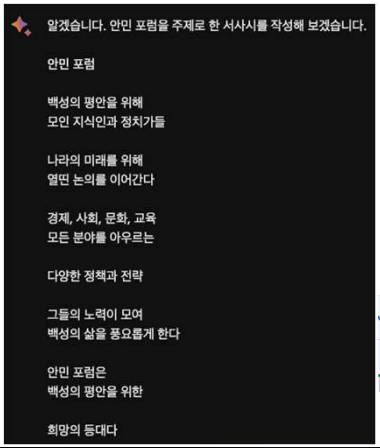
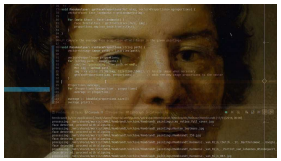


Image Courtesy of the Next Rembrandt



“Théâtre d'Opéra Spatial”
by Jason M. Allen via Midjourney
Colorado State Fair's annual fine art competition on 5 September, becoming one of the first AI-generated images to win such a prize.

2 인공지능 시대의 경제/사회적 변화

“리원” - CJ올리브네트웍스 AI연구소 개발
Face Generation, Face Swap 등 AI 기술 기반 가상인간 구현
(음성은 Voice Cloning 기술 (Speech Sythesis AI)

US Copyright Office: 2019년, 2022년 등록 거절

Copyright Review Board: 2차 등록거절 확정

DC 연방법원도 거절 확정(2023.8.18.)

- 미국 저작권법상 “original works of authorship”
- 인간만이 저작자가 될 수 있음
- 단, 인간의 input이 증가하면 등록 가능성

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STEPHEN THALER,

Plaintiff,

v.

SHIRA PERLMUTTER, *Register of Copyrights and Director of the United States Copyright Office, et al.*

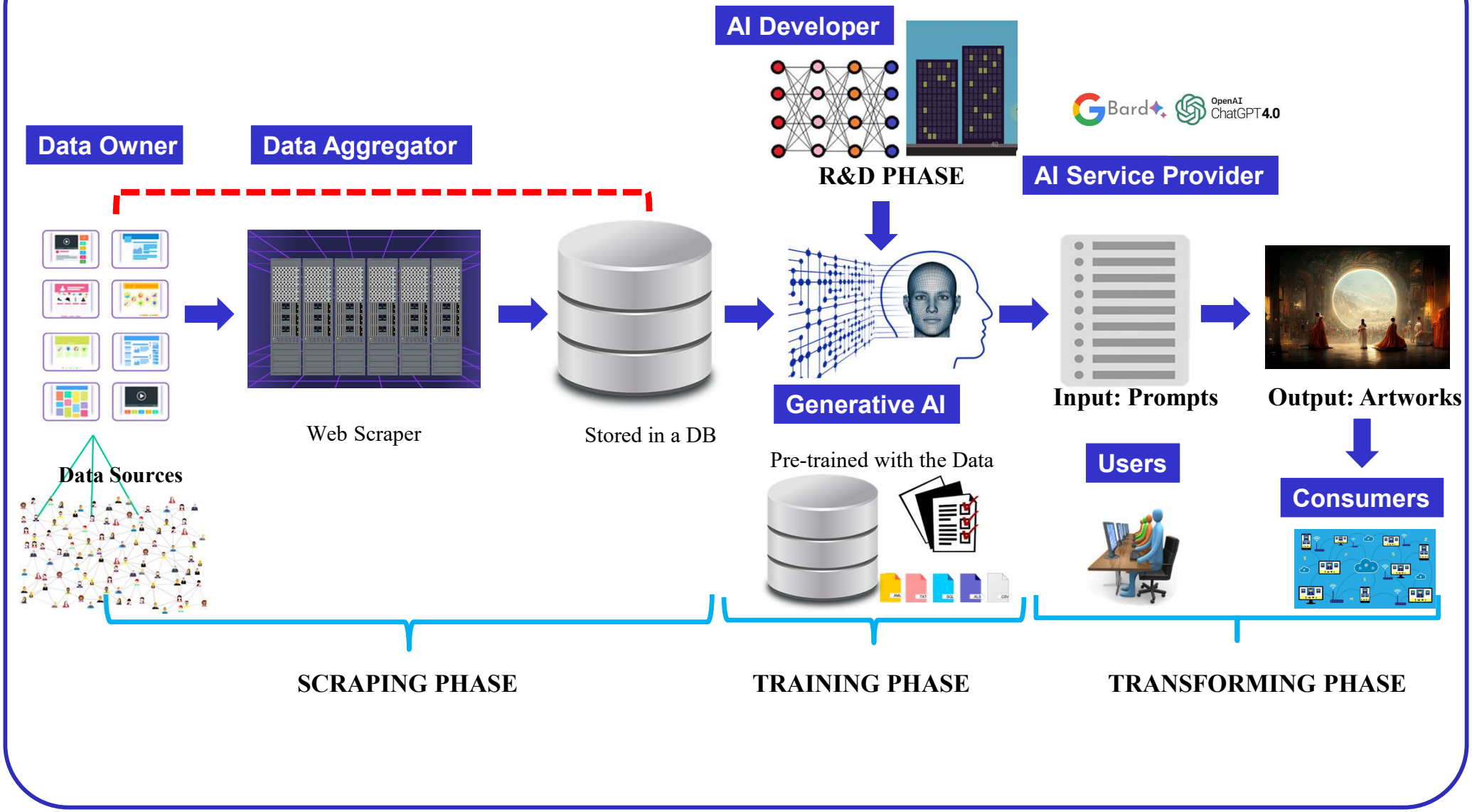
Defendants.

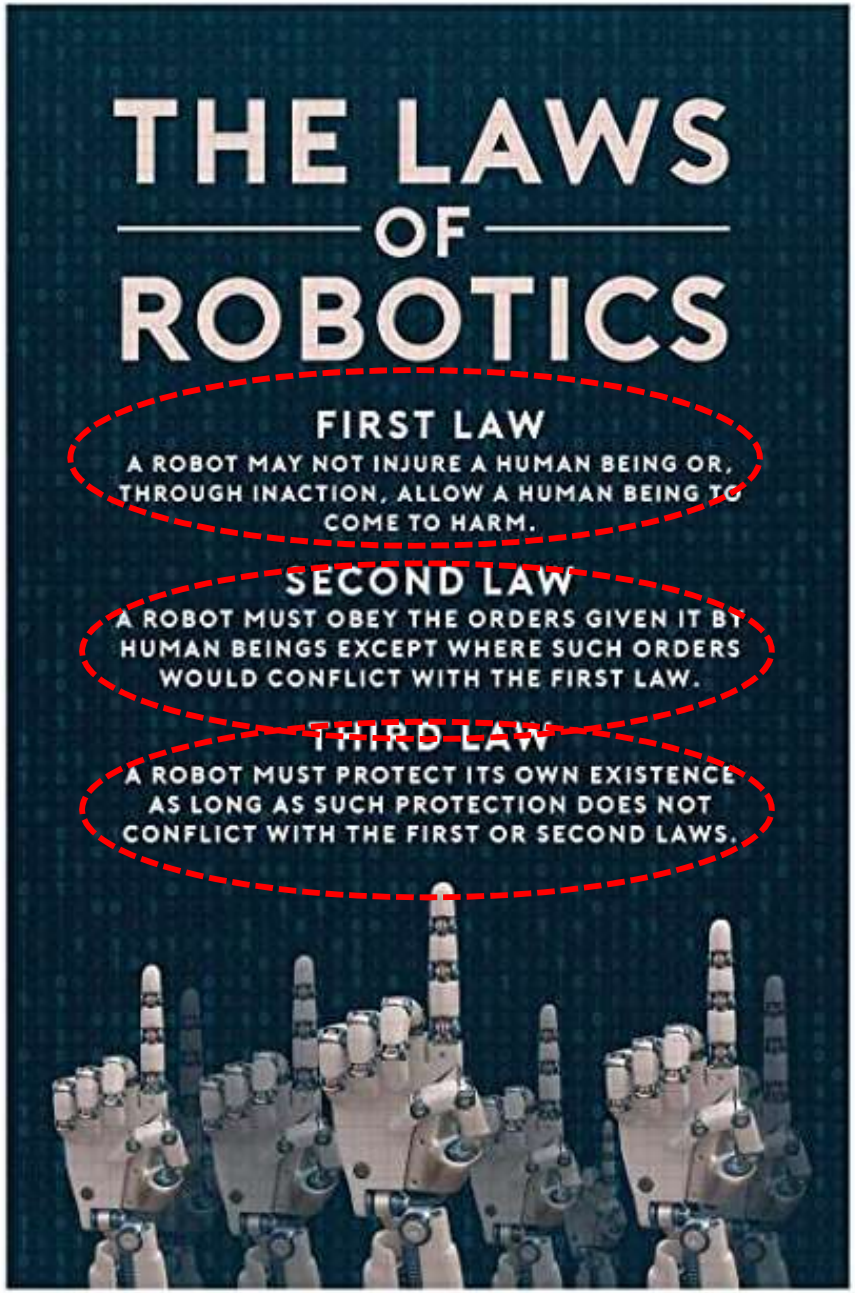
Civil Action No. 22-1564 (BAH)

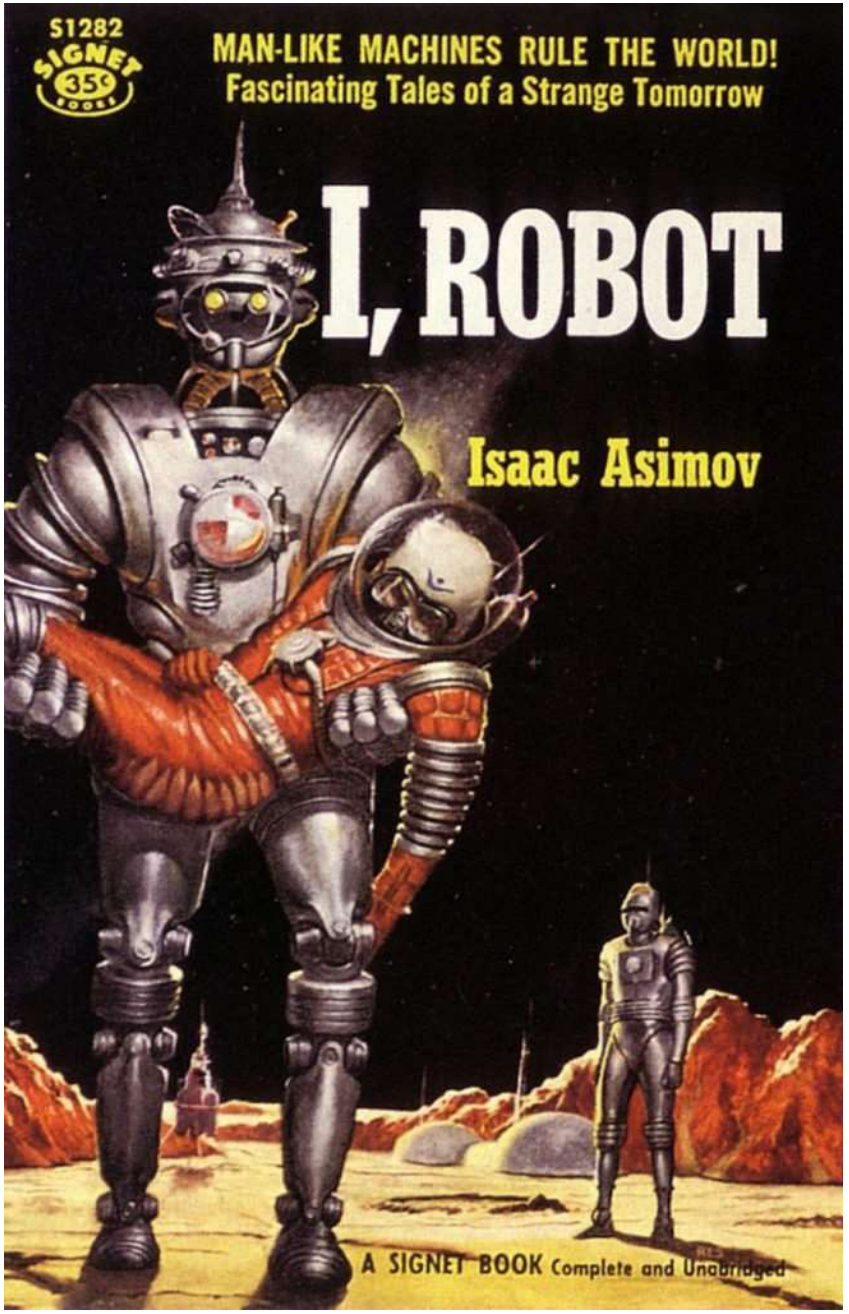
Judge Beryl A. Howell

“A Recent Entrance to Paradise” - *generated by Creativity Machine, a generative AI invented by Steven Thaler*

생성형 인공지능의 가치사슬




THE LAWS OF ROBOTICS
FIRST LAW
A ROBOT MAY NOT INJURE A HUMAN BEING OR, THROUGH INACTION, ALLOW A HUMAN BEING TO COME TO HARM.
SECOND LAW
A ROBOT MUST OBEY THE ORDERS GIVEN IT BY HUMAN BEINGS EXCEPT WHERE SUCH ORDERS WOULD CONFLICT WITH THE FIRST LAW.
THIRD LAW
A ROBOT MUST PROTECT ITS OWN EXISTENCE AS LONG AS SUCH PROTECTION DOES NOT CONFLICT WITH THE FIRST OR SECOND LAWS.


S1282
SIGNET
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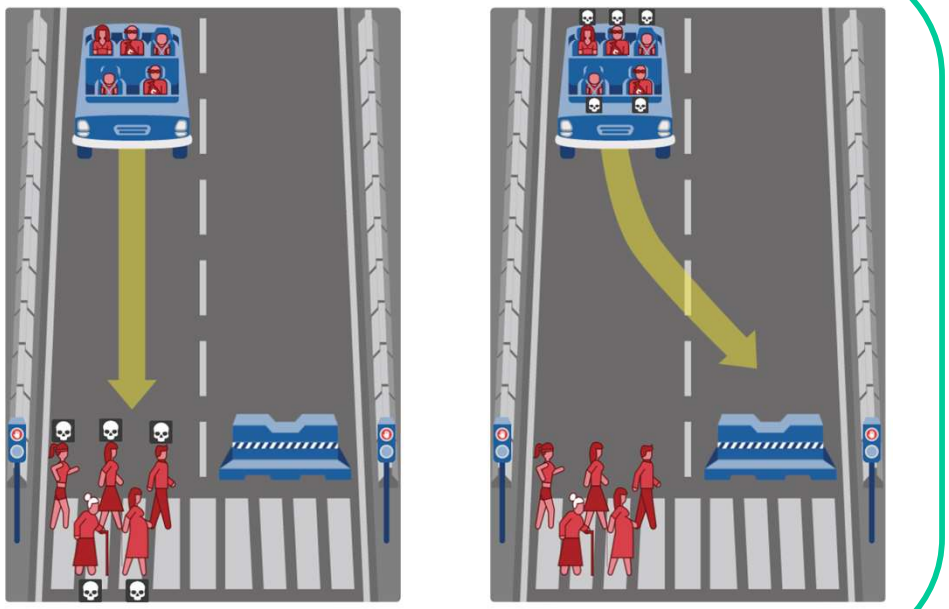
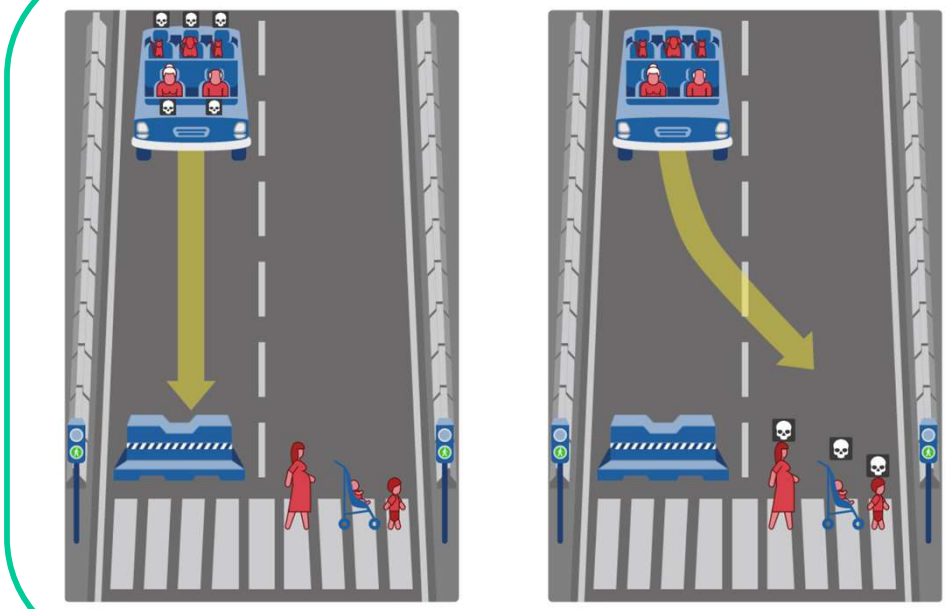
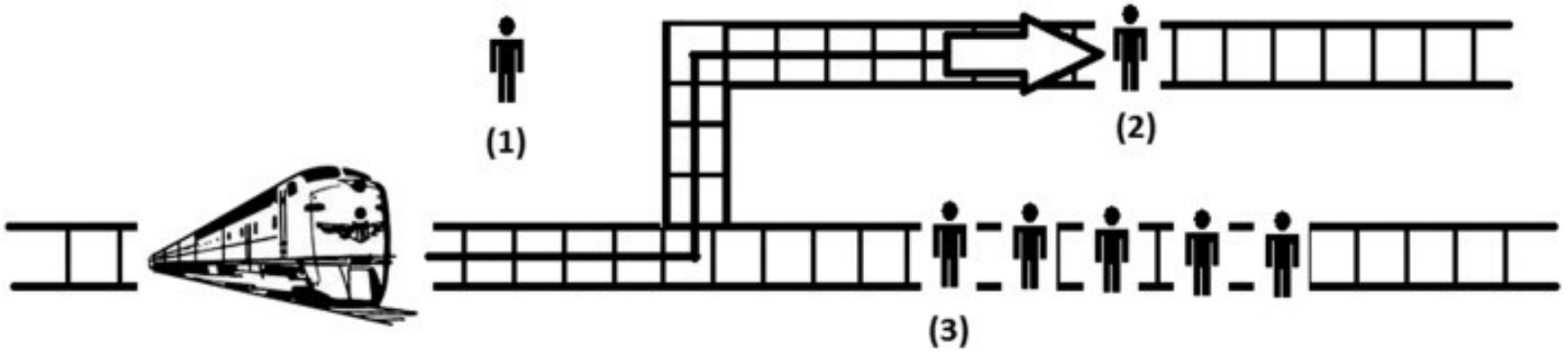
MAN-LIKE MACHINES RULE THE WORLD!
Fascinating Tales of a Strange Tomorrow
I, ROBOT
Isaac Asimov
A SIGNET BOOK Complete and Unabridged

Human Driver vs. AI Driver

Moral Machine
- *MIT Media Lab*







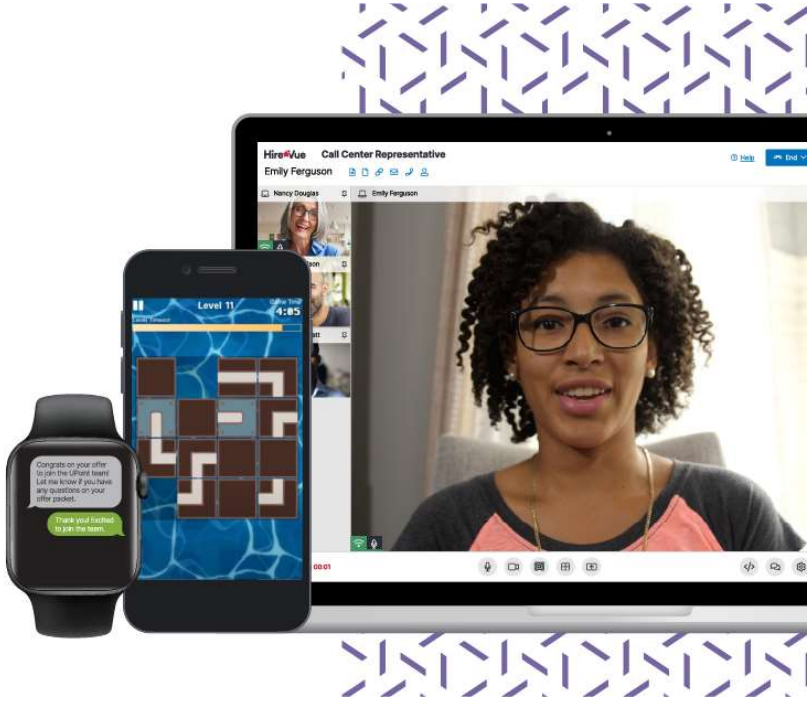
Trolley Problem

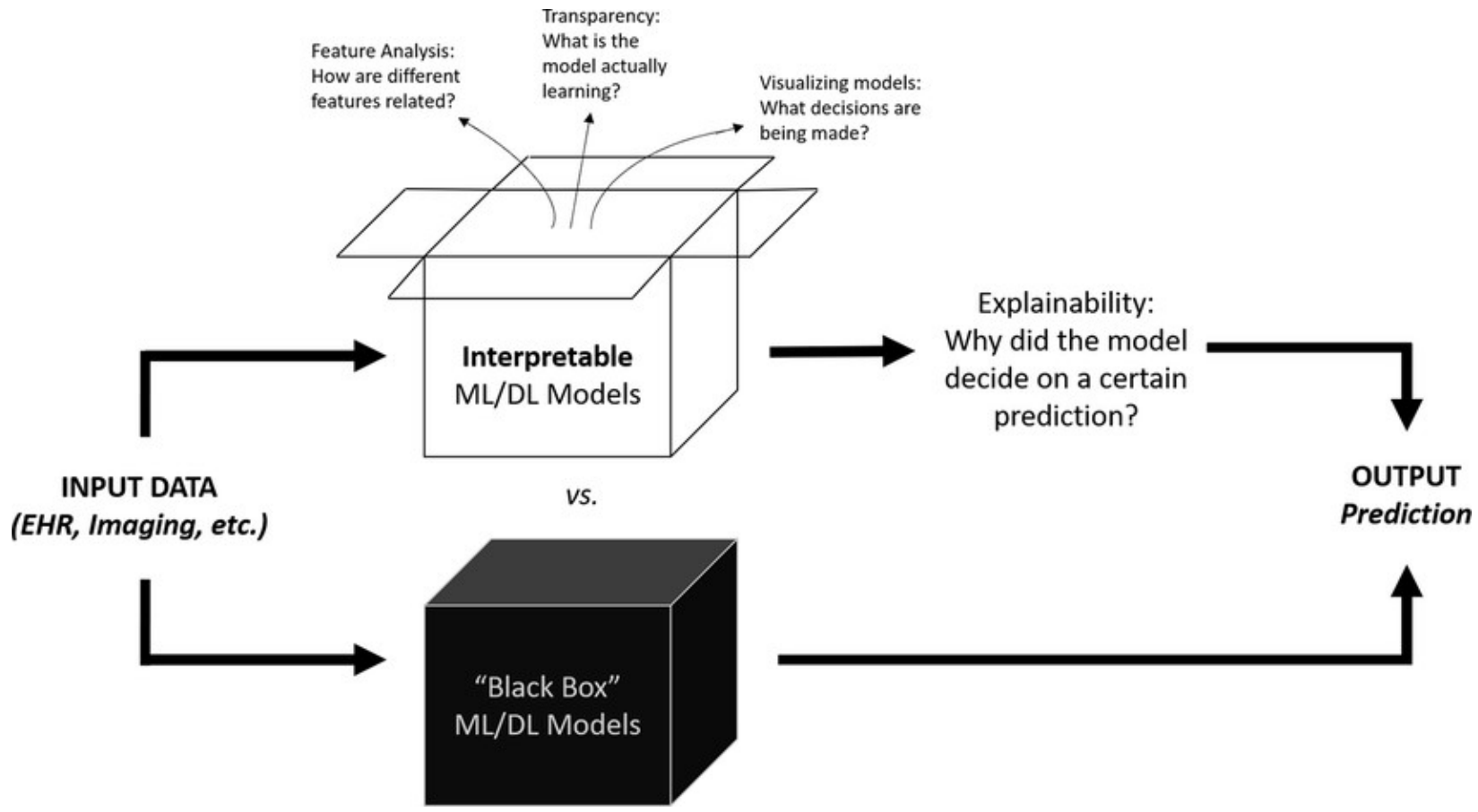
Three Black Teenagers

Three White Teenagers

HireVue

Fast. Fair. Flexible. Your talent experience platform.

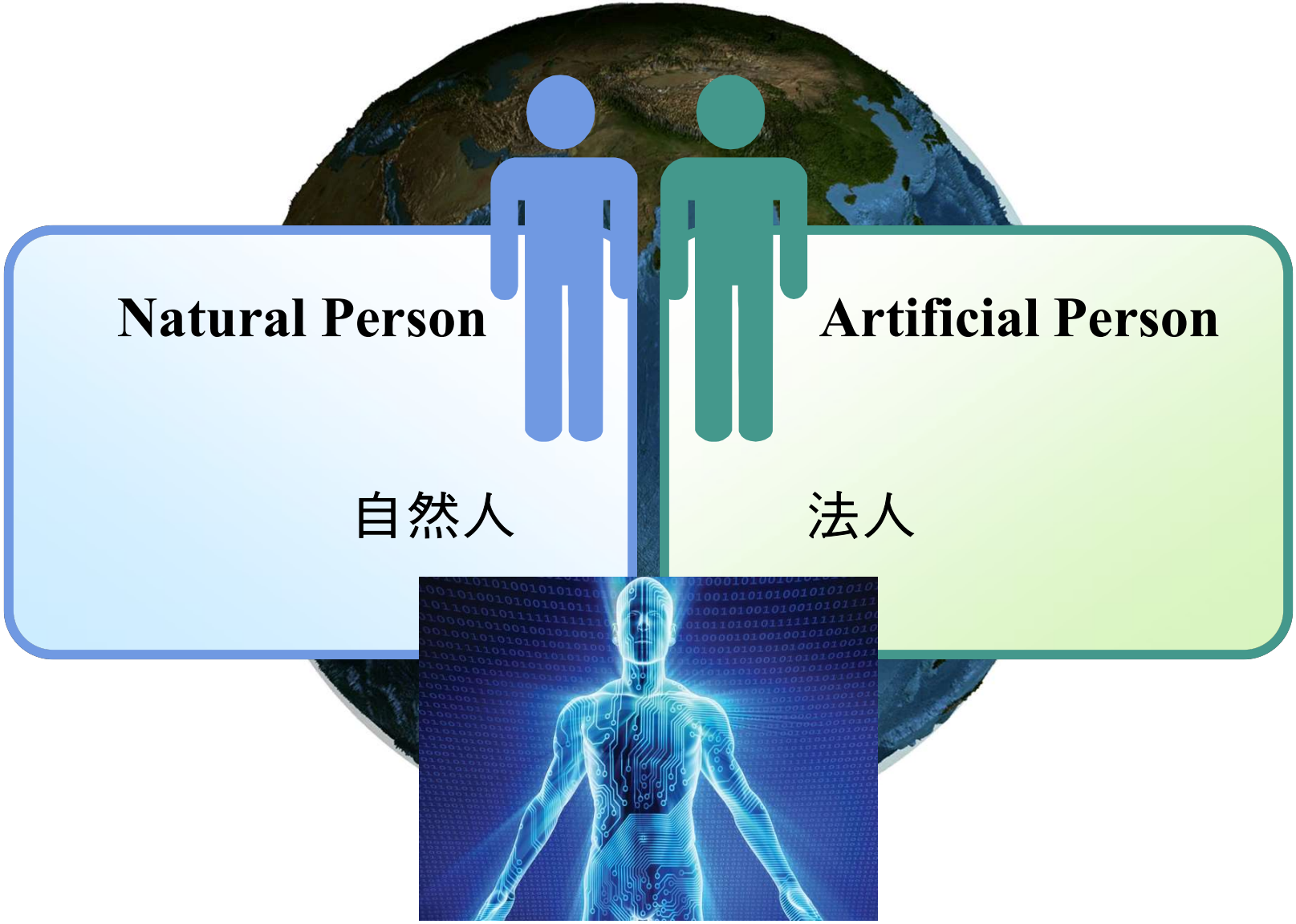




Hui, Aaron & Ahn, Shawn & Lye, Carolyn & Deng, Jun. (2022). Ethical Challenges of Artificial Intelligence in Health Care: A Narrative Review. Ethics in Biology, Engineering and Medicine: An International Journal. 12. 10.1615/EthicsBiologyEngMed.2022041580.

인공지능 윤리 문제
Black Box
Information Leakage/Tampering
Garbage In/Garbage Out
Faulty Algorithm (Intentionality; Automony)
Abuse by Humans; Inheritance of Human Biases
Impact on the Labor Market (Job Replacement; Inequality)
Intimacy with AI (AI's Influence on Humans; Distorting Relationships among Humans)
Responsbility (Trolley's Dilemma)
Impact on Legal System (AI Crimes; Legal Personality)
Sustainability (Natural Resources for AI Development; Energy for Maintenance; Waste/Pollution; Water Consumption)
Threat to Democracy (Political Power of AI Developers; Manipulation of Public Opinion)

윤리원칙/가치
Trustworthiness
Transparency
Algorithm Explainability
Privacy
Data Security
Algorithm Security
Accountability
Fairness
Accessibility
Human Rights



e-personality?

Naruto v. Slater

888 F. 3d 418 - Court of Appeals, 9th Circuit 2018

- 7세 Macaque 원숭이. 인도네시아. Sulawesi섬
- 2011년 David Slater의 카메라도 셀피 촬영
- dailymail.co.uk 웹사이트 게시 (2011.7.4).
- Wikimedia Commons & Techdirt 사진 게시 (2011)
- US Copyright Office 동물 저작자 부인(2014).
- Slater & Wildlife Personalities 사진 게시(Blurb 웹사이트, 2014)
- 2014년 PETA 가 Slater 등을 상대로 Naruto 저작권 침해 주장(Naruto의 “Next Friends”로서 당사자 적격)
- PETA 패소. 제9연방항소법원: Naruto의 당사자 적격은 헌법상 가능 (‘Cases & Controversies’), 단 저작권법상 불가능

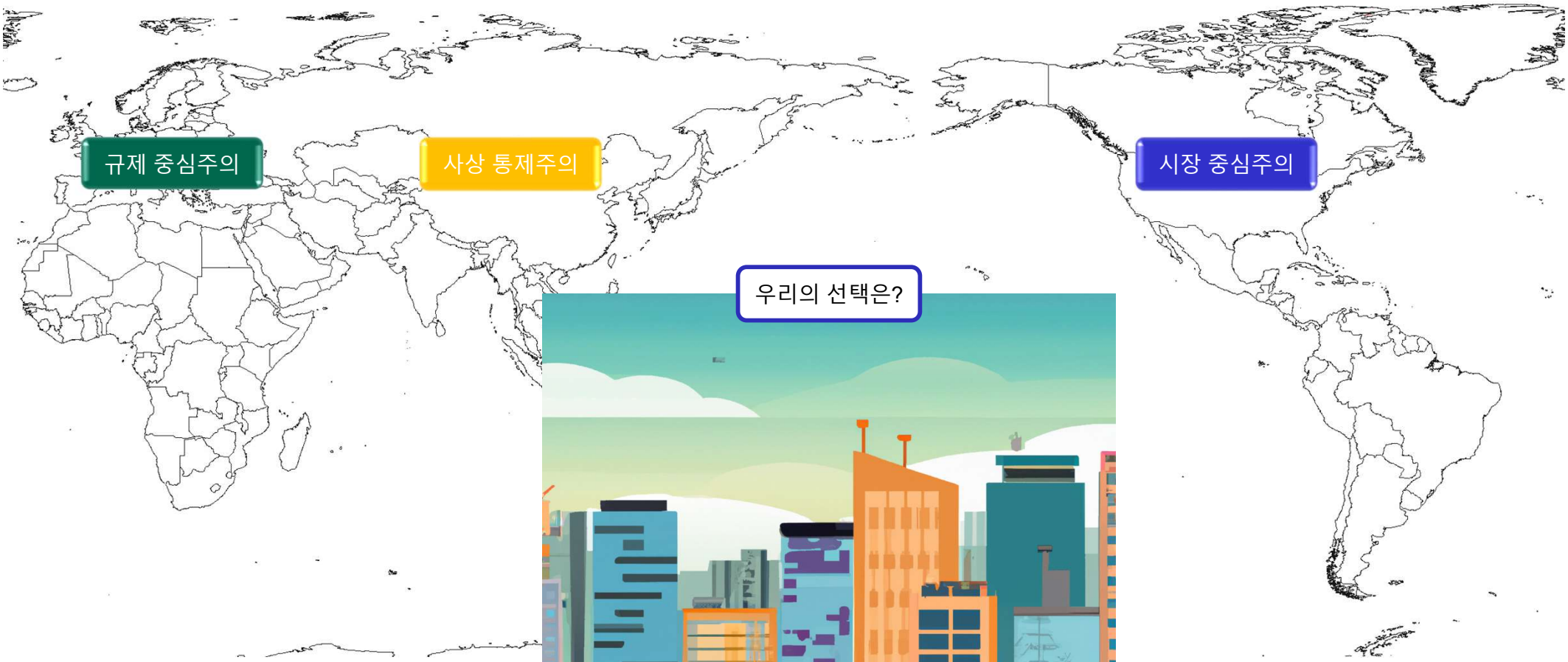
적극적 입법정책 사례: 영국 저작권법

Copyright, Designs and Patents Act (“CDPA”)

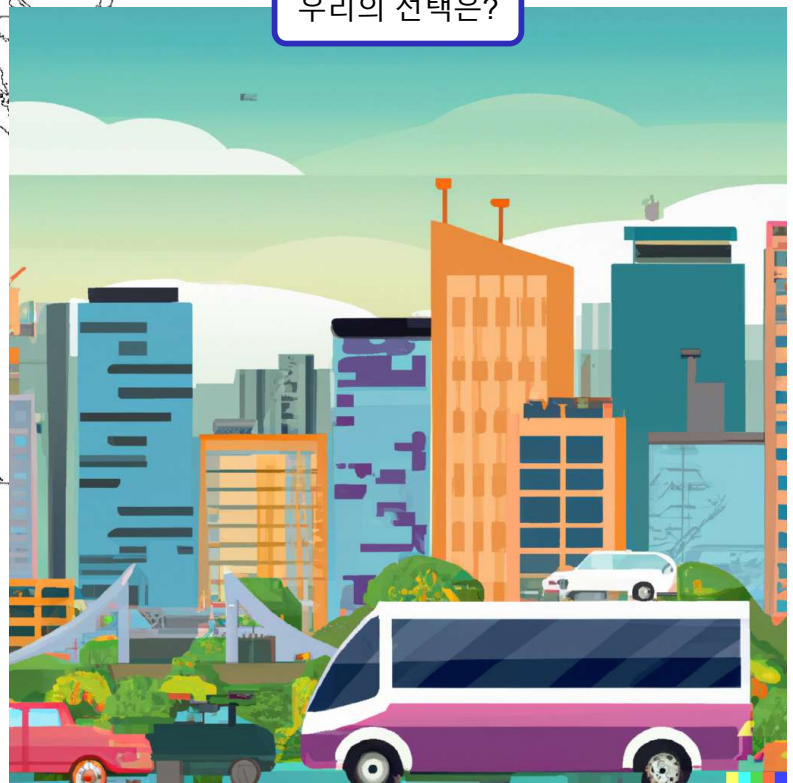
§178: “computer-generated”, in relation to a work, means that the work is generated by computer in circumstances such that there is no human author of the work

§9: (3) In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.

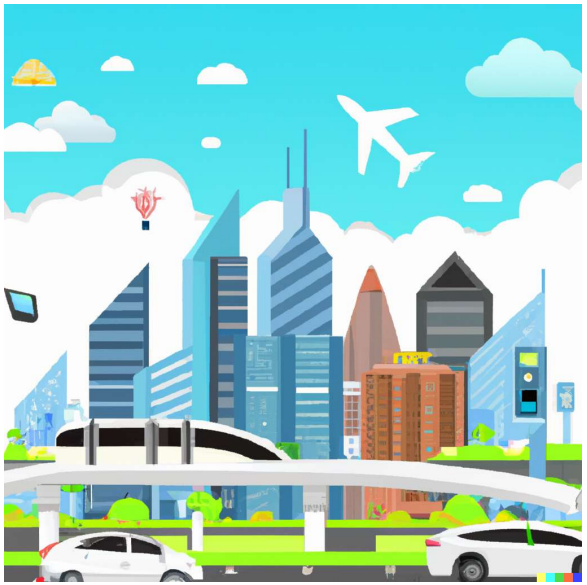
4 토론: 포지티브 vs. 네거티브 규제



우리의 선택은?



DALLE2 Image:
"Realistic cityscape with skyscrapers, facilities, transportation system, and vehicles that blend in with nature"



DALLE2 Image:
“Realistic cityscape with skyscrapers, facilities, transportation system, and vehicles that blend in with nature"

감사합니다