TECH FRONTIER
The Future is Now

AI와 일자리의 변화: 인간은 필요 없는지?

2018. 3

한상기 / 테크프론티어

Job Apocalypse?

[출처: The Guardian]

Self-driving trucks: what's the future for America's 3.5 million truckers?

By 2021, robots will have eliminated 6% of all jobs in the US, starting with customer service representatives and eventually truck and taxi drivers. That's just one cheery takeaway from a report released by market research company Forrester this week.

"The doorbell rings, and it's the delivery of a new pair of running shoes, in the right style, color and size, just as you needed to replace your old ones. And here's the kicker: you didn't order them. Your intelligent agent did."

2018년 전 세계 노동자 중 3백만 명은 '로보-보스'를 갖게 되고 2020년 1억 명의 노동자는 AI에 의해 자신의 행동을 바꾸거나 업무 체계에 영향을 받을 것이다 - 가트너 예측

사심 없는 AI 면접관, 인재 제대로 뽑네요

올여름부터 다국적 기업 유니레버의 미국 지사에서 인턴으로 일하는 사니야 재퍼(21)는 채용 과정에서 독특한 경험을 했다. 이 회사 정보기술(IT) 부문 여름 인턴십에 지원했는데, 세 단계 전형을 거치는 동안 회사 관계자를 한 번도 못 봤다. 인사 담당 직원 대신...

V.MEDIA.DAUM.NET

골드만, IPO업무 자동화로 또한번의 혁신...월가에 '충격'

IPO 준비업무의 절반을 컴퓨터로 자동화 (서울=연합뉴스) 문정식 기자 = 골드만삭스가 번거로운 기업공개(IPO) 준비 절차를 대폭 자동화하는 작업을 마쳐 월...

부정적 예측들

- "2030년대 초까지 영국내 전체 직업의 30%가 자동화 될 것" – PwC (2017. 3)
  - 20년 후 운전기사와 공장근로자가 AI로 대체될 것이라고 전망
- "2025년에는 법률보조원의 업무 중 94%가 자동화돼 AI가 변호사를 대신해 법률조언을 해주는 서비스가 제공될 것" - '전문직의 미래'(The Future of the Professions) by Richard Susskind
- "향후 20년 내 법률분야의 10만개 이상 일자리가 자동화될 가능성이 높다" - 딜로이트(Deloitte) (2017. 3)
- "회계사의 업무 역시 20년 후엔 컴퓨터로 대체" - The Future Of Employment: How Susceptible Are Jobs To Computerisation? By Carl Benedikt Frey and Michael Osborne @ Oxford
- 텔레마케터같이 일상적·반복적이며 예측이 가능한 작업은 자동화될 위험이 높다 – Martin Ford in "Rise of the Robots"

[출처: 머니투데이]

다양한 예측 결과

Carl Benedikt Frey and Michael A. Osborne	Citibank with Frey and Osborne	OECD	World Economic Forum	McKinsey Global Institute
Date				
September 2013	January 2016	June 2016	January 2016	January 2017
Unit of analysis				
Jobs/occupations	Jobs/occupations	Tasks	Not applicable	Work activities
Scope				
US labor market	50+ countries and regions	21 OECD countries	15 major developed and emerging economies	46 countries representing about 80% of global labor force
Approach summary				
Analysis of 702 occupations (70 hand-labeled working with ML researchers, followed by a tailored Gaussian process classifier to estimate others and confirm hand-labels) to approximate the impact of future computerization on the US labor market	Extension of Frey-Osborne (2013), using World Bank data, to estimate impact of automation globally. Further analyses include examination of demographic changes, global value chain, etc.	Estimates of automatibility of tasks were developed based on matching of the automatibility indicators by Frey-Osborne and the PIAAC data occupational codes, followed by a two-step, tailored regression analysis	Analysis of large-scale survey of major global employers, including 100 largest global employers in each of WEF main industry sectors, to estimate the expected level of changes in job families between 2015-2020 and extrapolate number of jobs gained/lost	Disaggregation of occupations into 2,000 constituent activities and rating each against human performance in 18 capabilities. Further analysis of time spent on each activity and hourly wage levels. Scenarios for development and adoption of automation technologies
Key relevant findings				
• About 47% of total US occupations are at high risk of automation perhaps over the next decade or two • Wages and educational attainment show a strong negative relationship with probability of computerization	• Building on Frey and Osborne's original work, data from the World Bank suggests the risks are higher in many other countries; in the OECD, on average 57% of jobs are susceptible to automation. This number rises to 69% in India and 77% in China	• On average, 9% of jobs across the 21 OECD countries are automatable • There are notable differences across OECD countries when it comes to automation (e.g., the share of automatable jobs is 6% in Korea vs. 12% in Austria)	• Automation and technological advancements could lead to a net employment impact of more than 5.1 million jobs lost to disruptive labor market changes between 2015–20, with a total loss of 7.1 million jobs—two-thirds of which are concentrated in the office and administrative job family—and a total gain of 2 million jobs in several smaller job families	• Almost half of work activities globally have the potential to be automated using current technology. <5% of occupations can be automated entirely; about 60% have at least 30% of automatable activities • Technically automatable activities touch 1.1 billion workers and $15.8 trillion in wages. China, India, Japan, and the United States constitute over half • Automation's boost to global productivity could be 0.8–1.4% annually over decades

국내 예측

"10년내 AI·로봇이 일자리 절반 대체"

김기홍 기자

입력 : 2017.05.16 03:04

직능원, 4차산업혁명 영향 분석 "판매직 종사자 100% 대신할 듯"

4차 산업혁명 여파로 앞으로 10년 후 국내 일자리 두 개 가운데 하나가 로봇이나 인공지능(AI)으로 대체될 것이라는 연구 결과가 나왔다.

15일 한국직업능력개발원이 통계청·한국고용정보원의 자료를 분석한 '4차 산업혁명에 따른 취약 계층 및 전공별 영향' 보고서에 따르면 국내 일자리의 52%가 10년 정도 후 로봇·AI로 대체될 가능성이 높은 '고위험 직업군'에 속했다. 고위험 직업군은 인간의 노동이 로봇이나 AI로 대체될 비율이 0.7~1(1은 완전 대체)인 직업을 말한다.

업종별 고위험 직업군 종사자 비율을 보면 운수업(81.3%)이 가장 높았고, 이어 도·소매업(81.1%), 금융·보험업(78.9%) 등 순이었다. 반면 교육서비스업(9.0%), 보건·사회복지서비스업(12.2%), 전문과학·기술서비스업(18.7%) 등은 대체 가능성이 낮은 것으로 조사됐다.

직업별로 보면 판매 종사자는 AI·로봇이 인간을 100% 대체할 것으로 예측됐다. 장치 기계 조작·조립 종사자(93.9%), 기능원 및 관련 기능 종사자(82.9%), 단순 노무 종사자(73.7%) 등도 대체 가능성이 높았다. 반면 전문가 및 관련 종사자(0.9%)는 대체될 가능성이 거의 없으며 관리직(8.6%), 서비스 종사자(24.1%) 등도 대체 가능성이 낮은 것으로 조사됐다.

■ 서울공대 연구팀 '미래도시 연구보고서'

인공지능(AI)과 가상현실(VR) 세계가 지배하고 있는 2090년 서울. 이곳에서 살아가는 평범한 중산층 시민 A씨의 직업은 아기들을 돌보는 '베이비 시터'다. 이미 이 사회에서 인간들이 할 수 있는 직업은 몇 개 남지 않았다. 베이비 시터도 이미 대부분 로봇으로 대체된 지 오래고, 인터넷으로 주문만 하면 불과 몇 시간 만에 최신형 보모 로봇이 드론에 실려 집까지 배달된다. 김씨의 고용주 B씨가 A씨를 고용한 유일한 이유는 인간만이 가진 따뜻한 감정과 정서를 아기에게 전달해 줬으면 하는 바람에서다.

A씨와 같은 노동자계층을 이미 오랜전부터 언론에서는 '프레카리아트(precariat)'라 불렀다. 직역하면 '불안정한 노동자'인데, 주로 비숙련 단순 노무직을 일컫는다.

인공지능과 가상현실이 본격화된 미래는 어떤 모습일까. 서울대 공대 교수 3명은 4차 산업혁명이 본격화한 2090년께 전 세계는 인공지능(AI) 권력이 계급을 나누는 이른바 '초양극화 사회'가 될 것이라는 전망을 내놨다.

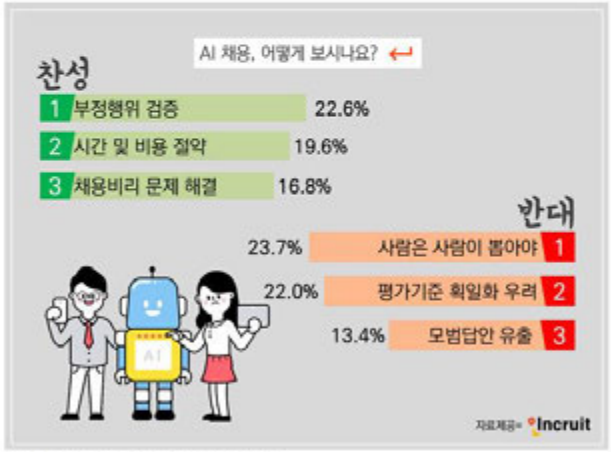
빅데이터와 사물인터넷 발달로 모든 것이 연결된 초연결사회에서는 현재의 페이스북이나 구글처럼 플랫폼을 소유한 극소수 IT기업이나 정치인, 인기 연예인처럼 뛰어난 재능을 가진 이른바 '플랫폼 스타'들이 고급 일자리의 대부분을 독점할 것으로 내다봤다. 전 세계 인구에서 이들이 차지하는 비중은 겨우 0.001%와 0.002%에 불과하다. 나머지 99.997%에 달하는 대다수 일반 시민들은 플랫폼에 종속돼 A씨처럼 인공지능 로봇과 힘겨운 일자리 경쟁을 벌이는 단순 노동자 신세로 전락할 것이라는 전망이다.

23일 서울대 공대에 따르면 유기윤 서울대 건설환경공학부 교수와 김지영·김정옥 연구 교수를 중심으로 구성된 15명의 공대 연구진은 '미래의 도시에서 시민들이 어떻게 살아갈 것인가'라는 주제로 1년여에 걸쳐 심층 연구한 보고서를 오는 27일 학회에서 발표할 예정이다.

AI 활용에 대한 의견은?

구직자들, 'AI 평가채용' 찬반 의견 팽팽

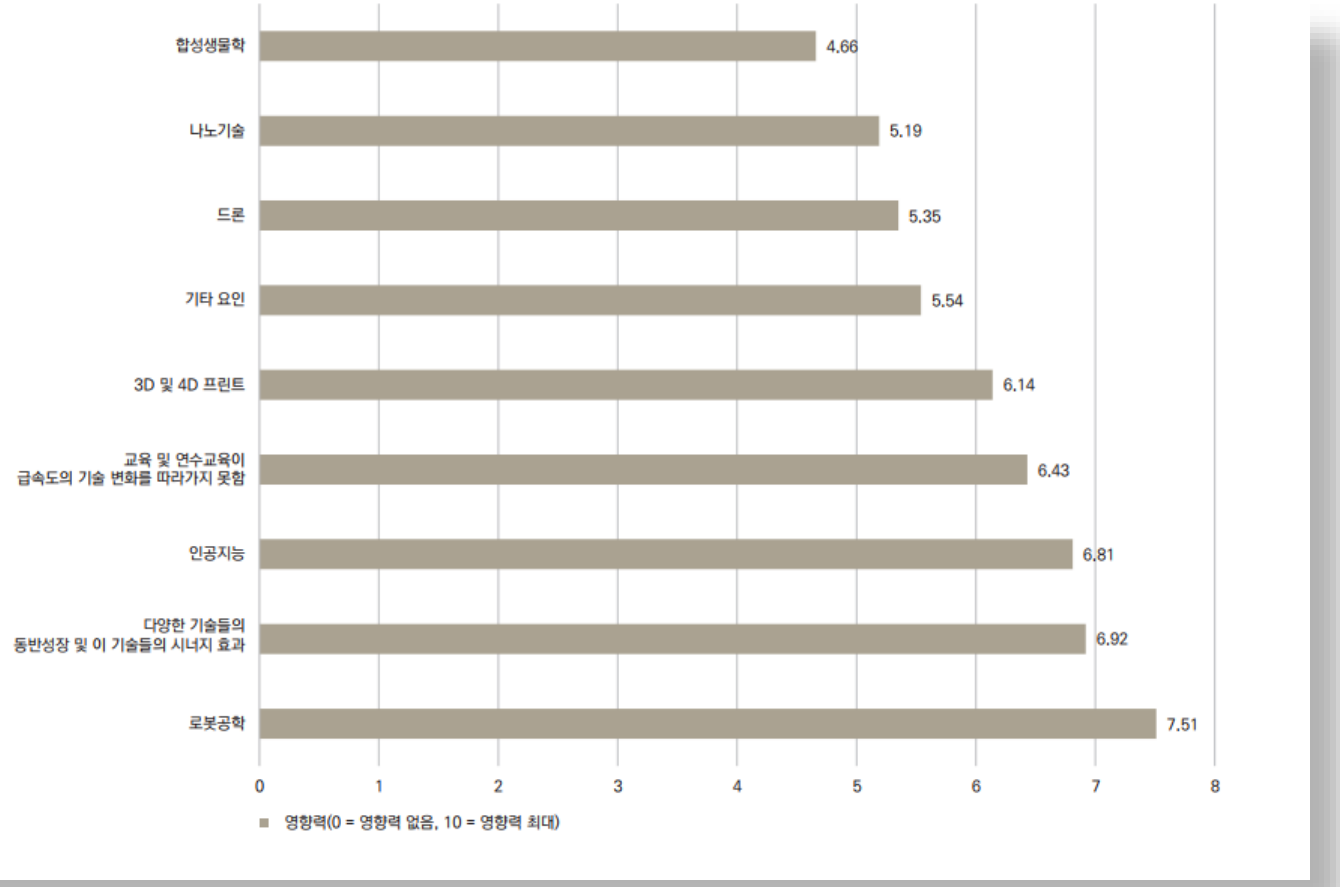
인공지능 채용 '찬성' 50.9% vs '반대' 49.1%
응답자 61.3% "인공지능 채용 확산될 것"



인크루트 제공(*누르면 크게 볼 수 있습니다.)

일부 대기업 공개 채용 전형에서 인공지능(AI·에이아이) 평가 시스템이 도입된 가운데, 구직자들의 의견이 엇갈렸다.

실업의 기술적 요인



[출처: 베텔스만 재단 '2050년 노동의 미래', 노동연구원]

사례: Kensho

Data Analytics and Machine Intelligence Company

Kensho's AI For Investors Just Got Valued At Over $500 Millic
Round From Wall Street

Antoine Gara, FORBES STAFF
FULL BIO

When the United Kingdom voted to leave the European Union in June, ultimately tanking the British pound, traders with access to Cambridge, Massachusetts-based artificial intelligence platform Kensho had a special advantage.

With a few keystrokes on Kensho's AI-powered platform, traders quickly combed through an intelligence-grade database of information and in seconds learned that populist votes such as Brexit historically led to an extended drop in the local currency, washing out any short-term recovery. That's exactly what happened in the days and months after Brexit. The pound plunged to three-decade lows in July, sinking to $1.28 versus the dollar, before rallying slightly to $1.33. The currency has been in a slump since then and currently sits at $1.24. It was one of the biggest trades in currency markets since billionaire George Soros broke the Bank of England in 1992.

Kensho's insights are hardwired into some of the weightiest trading desks in the world, and are now available in a partnership with S&P Global. Daniel Nadler, 33, Kensho's founder, tells *Forbes* exclusively the company has raised $50 million in a Series B funding round led by S&P Global, which values the three-and-a-half year-old startup at over $500 million.

Read Steven Bertoni's May 2014 Feature On Kensho And Founder Daniel Nadler

In addition to S&P Global, Wall Street's biggest six banks (Goldman Sachs, JPMorgan Chase, Bank of America Merrill Lynch, Morgan Stanley, Citigroup and Wells Fargo) participated in the Series B round. Goldman led Kensho's $15 million Series A round in 2014 and participated in the company's latest round along with early venture capital investors such as General Catalyst and Breyer Capital. Kensho's seed institutional investor was Google Ventures. In addition to being a leading investor, S&P Global Market Intelligence will feed new data sets into Kensho's analytic platform, creating new AI-fueled fundamental analysis capabilities for investors.

"Pioneering real-time statistics and analytics machine learning for financial services" – GCP2016

INVESTORS

Google ventures
Goldman Sachs
J.P.Morgan
Bank of America Merrill Lynch
Morgan Stanley
citi
S&P Global
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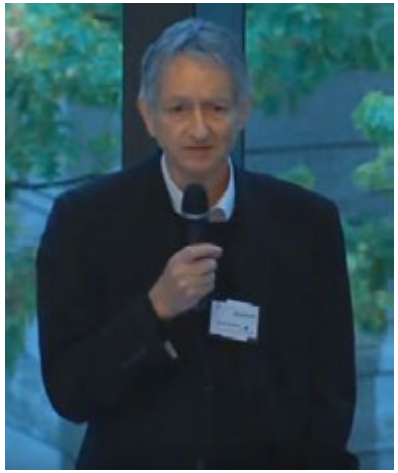
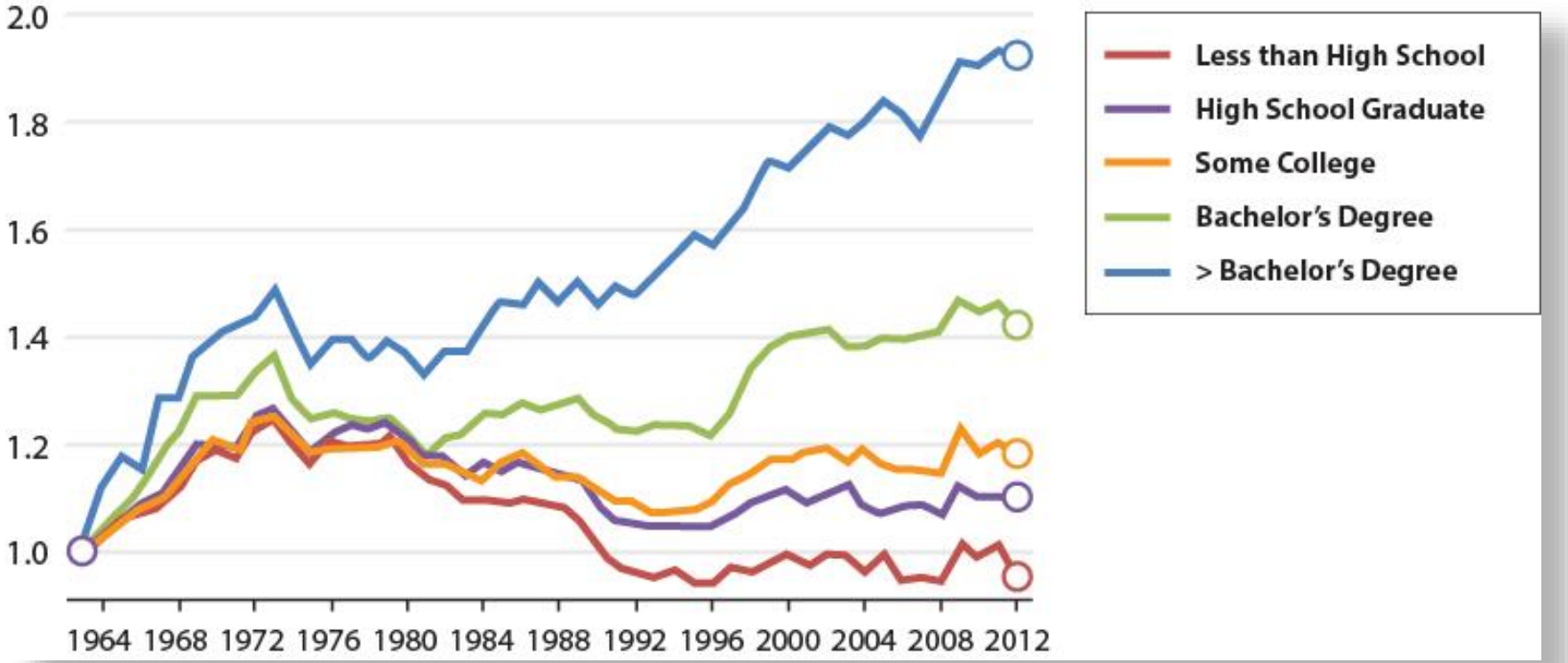
사례: 영상의학의 미래는?

"I think that if you work as a radiologist you are like Wile E. Coyote … You're already over the edge of the cliff, but you haven't yet looked down. There's no ground underneath."
"They should stop training radiologists now. It's just completely obvious within five years deep learning is going to do better than radiologists.

- Geoff Hinton (2016, Machine Learning and Market for Intelligence Conference)

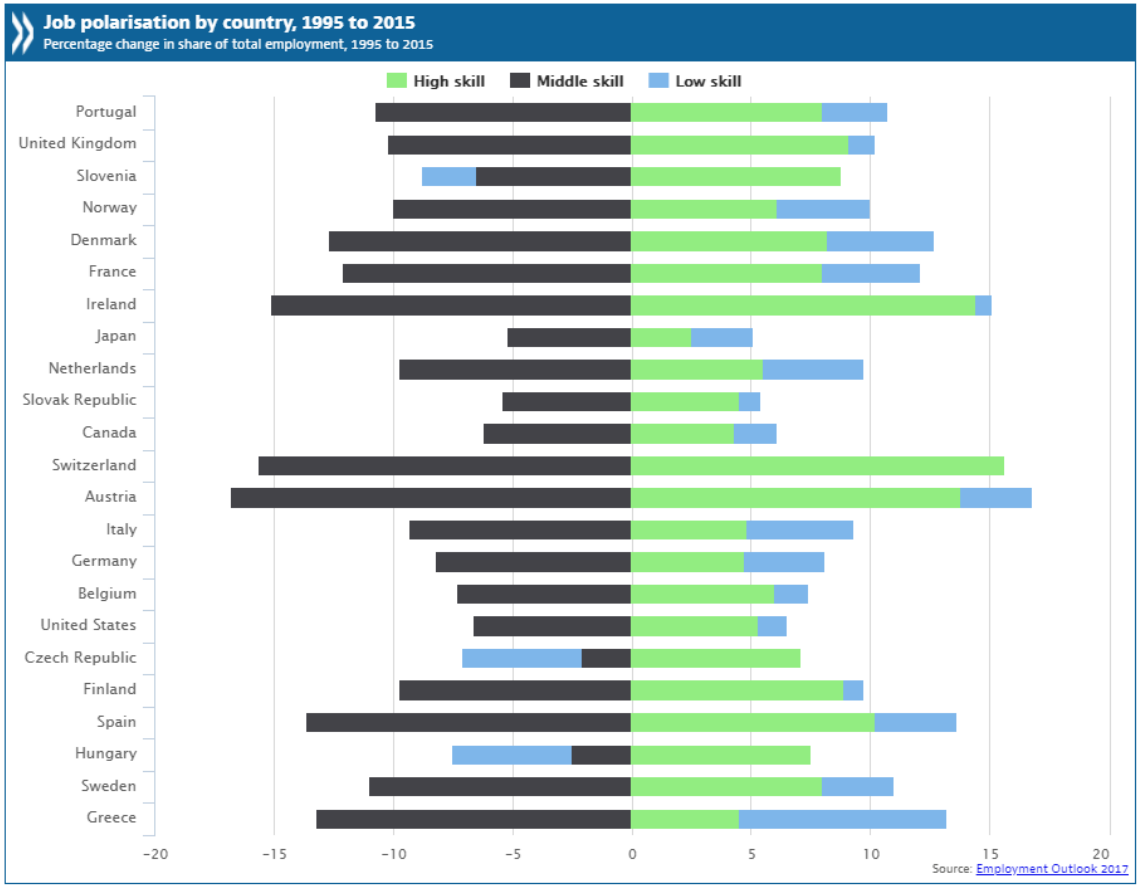


교육 수준과 임금의 변화



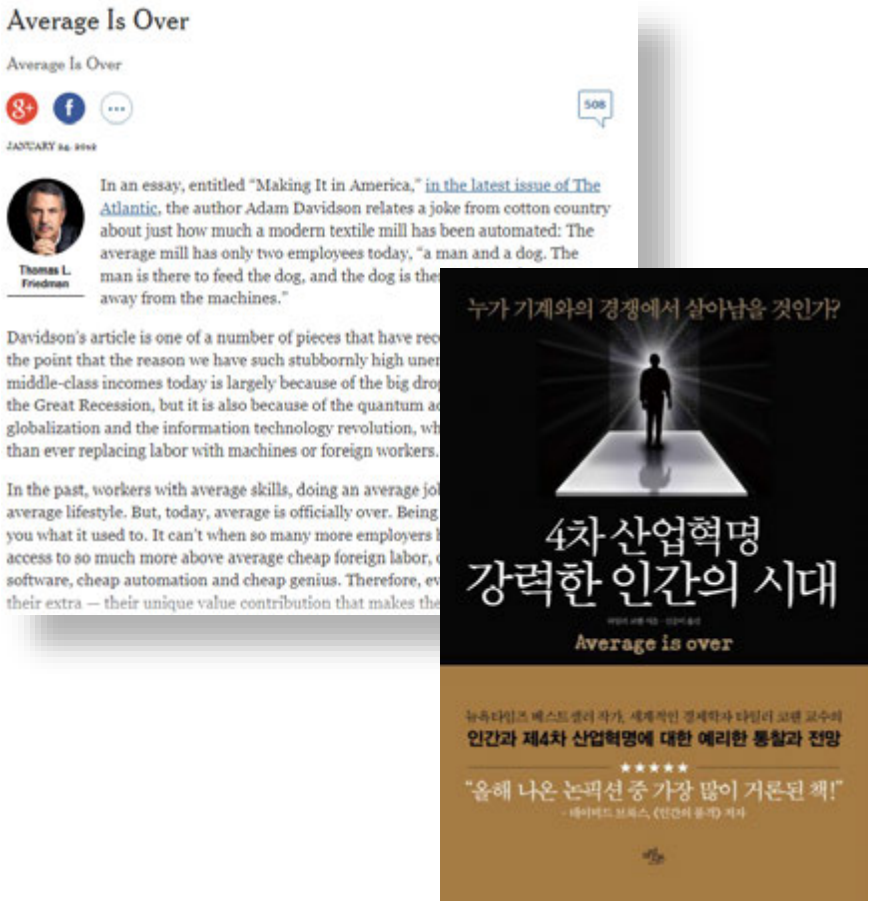
Source: David H. Autor, *Science* 2014; 344: 843-851.

문제는 중간 계층 일자리 문제



Note: Data for Japan covers the period 1995 to 2010.

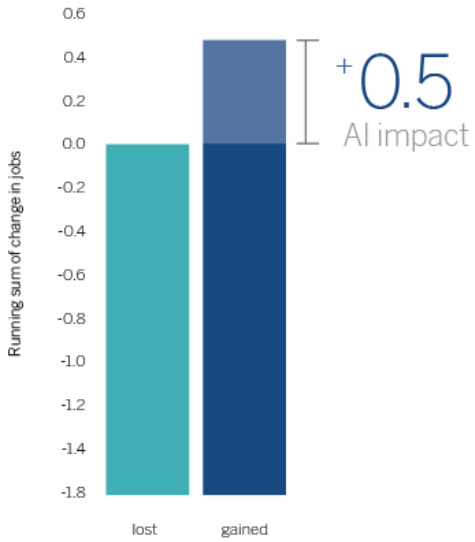
Average Is Over



- 지능형 기계에 의한 생산성 증가
- 경제의 세계화
- 극도로 침체한 부문과 대단히 활발한 부문으로 양분된 현대 경제

긍정적 예측 (가트너)

- By 2020 AI will automate 1.8 million people out of work, but it will create 2.3 million jobs. So, AI will drive a net gain of 500,000 new jobs
- AI is going to play a complementary role to a lot of workers. It will make them faster, more efficient, and more productive, Gartner argues.



2020년에는 AI가 긍정적인 일자리 창출 역할을 하여 180만 개의 일자리가 사라지는 대신 230만 개의 일자리를 창출할 것입니다. (Gartner)

가장 빨리 수요가 증가할 직업 특성에 대한 이해가 필요

Table 1.3 Fastest growing occupations, 2016 and projected 2026
(Numbers in thousands)

2016 National Employment Matrix title and code		Employment		Change, 2016–26		Median annual wage, 2016(1)
		2016	2026	Number	Percent	
Total, all occupations	00-0000	156,063.8	167,582.3	11,518.6	7.4	$37,040
Solar photovoltaic installers	47-2231	11.3	23.2	11.9	105.3	$39,240
Wind turbine service technicians	49-9081	5.8	11.3	5.5	96.1	$52,260
Home health aides	31-1011	911.5	1,337.0	425.6	46.7	$22,600
Personal care aides	39-9021	2,016.1	2,770.1	754.0	37.4	$21,920
Physician assistants	29-1071	106.2	145.9	39.7	37.4	$101,480
Nurse practitioners	29-1171	155.5	211.5	56.0	36.0	$100,910
Statisticians	15-2041	37.2	49.6	12.4	33.4	$80,500
Physical therapist assistants	31-2021	88.3	115.5	27.2	30.8	$56,610
Software developers, applications	15-1132	831.3	1,084.6	253.4	30.5	$100,080
Mathematicians	15-2021	3.1	4.0	0.9	29.4	$105,810
Bicycle repairers	49-3091	12.4	16.1	3.7	29.4	$27,630
Medical assistants	31-9092	634.4	819.0	184.6	29.1	$31,540
Physical therapist aides	31-2022	52.0	67.1	15.1	29.1	$25,680
Occupational therapy assistants	31-2011	39.3	50.7	11.4	28.9	$59,010
Information security analysts	15-1122	100.0	128.5	28.4	28.4	$92,600
Genetic counselors	29-9092	3.1	3.9	0.9	28.3	$74,120
Operations research analysts	15-2031	114.0	145.3	31.3	27.4	$79,200
Forest fire inspectors and prevention specialists	33-2022	1.7	2.2	0.5	26.6	$36,230
Health specialties teachers, postsecondary	25-1071	233.5	294.0	60.5	25.9	$99,360
Derrick operators, oil and gas	47-5011	11.1	13.9	2.8	25.7	$48,130
Physical therapists	29-1123	239.8	299.8	60.0	25.0	$85,400
Occupational therapy aides	31-2012	7.5	9.3	1.8	24.7	$28,330
Roustabouts, oil and gas	47-5071	50.0	62.3	12.2	24.5	$37,340
Phlebotomists	31-9097	122.7	152.6	30.0	24.4	$32,710
Rotary drill operators, oil and gas	47-5012	16.7	20.8	4.0	24.2	$54,430
Nursing instructors and teachers, postsecondary	25-1072	67.9	84.2	16.3	24.0	$69,130
Massage therapists	31-9011	160.3	198.1	37.7	23.5	$39,860
Service unit operators, oil, gas, and mining	47-5013	41.4	51.1	9.7	23.4	$48,610
Respiratory therapists	29-1126	130.2	160.6	30.4	23.4	$58,670
Diagnostic medical sonographers	29-2032	67.3	82.9	15.6	23.2	$69,650

Footnotes:
(1) Data are from the Occupational Employment Statistics program, U.S. Bureau of Labor Statistics. Wage data cover non-farm wage and salary workers and do not cover the self-employed, owners and partners in unincorporated firms, or household workers.
Source: Employment Projections program, U.S. Bureau of Labor Statistics

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(미 노동부 예측)

Last Modified Date: October 24, 2017

The volunteer service jobs of today may turn into the real jobs of the future

- Unlike the Industrial Revolution and the computer revolution, the A.I. revolution is not taking certain jobs (artisans, personal assistants who use paper and typewriters) and replacing them with other jobs (assembly-line workers, personal assistants conversant with computers). Instead, it is poised to bring about a wide-scale decimation of jobs — mostly lower-paying jobs, but some higher-paying ones, too.
- Artificial intelligence is poorly suited for jobs involving creativity, planning and "cross-domain" thinking
- "service jobs of love" -- These are jobs that A.I. cannot do, that society needs and that give people a sense of purpose
- Who will pay for these jobs? -- large chunks of the money created by A.I. will have to be transferred to those whose jobs have been displaced
- Two insurmountable problems
  - First, most of the money being made from artificial intelligence will go to the United States and China.
  - For many countries that are not China or the United States, taking in welfare subsidies in exchange for letting the "parent" nation's A.I. companies continue to profit from the dependent country's users → economic arragements
- A.I. is presenting us with an opportunity to rethink economic inequality on a global scale


The Real Threat of Artificial Intelligence

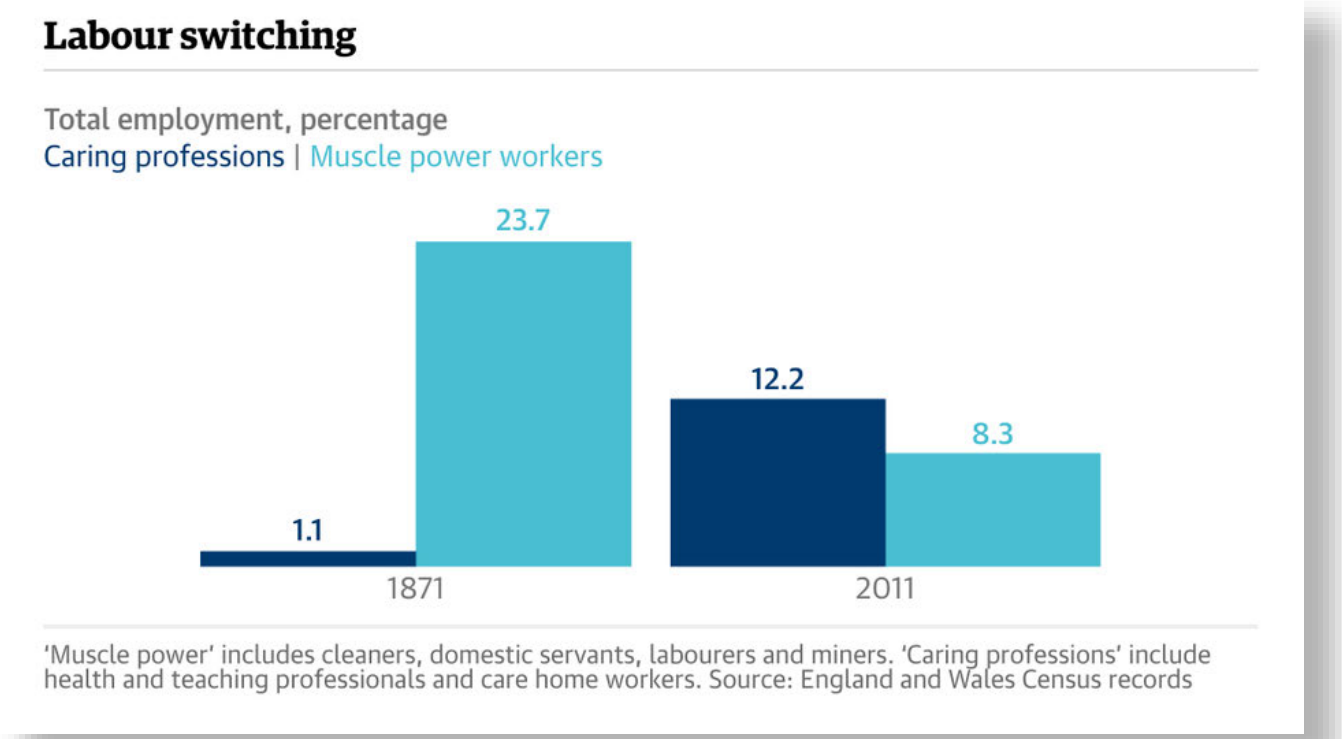
Leer en español

By KAI-FU LEE JUNE 24, 2017

BEIJING — What worries you about the coming world of artificial intelligence?

Labor Switching

- Caring professions such as nurses, teachers, and social workers



AI가 창출할 새로운 직업들

Bot Trainer: Welcome to the Future of Customer Experience

DeepMind launches new research team to investigate AI ethics

The Google-owned company will publish research on the effects of AI on society

By James Vincent | @jjvincent | Oct 4, 2017, 6:46am EDT

The Job Of The Future Is Training Robots To Work With Humans

It's all about character

It all comes to down to virtual assistants being loved, and used more often by people. Robyn Ewing, TV and film writer turned AI wordsmith summed this up when she told the **Financial Review** that for most users, it's often easier and quicker to get the info you need online without the help of a virtual assistant, "so if the character doesn't delight you, then what is the point?"

With this in mind, it seems less about humanity, and more about a specific, authentic and relatable character. In fact, Cathy Pearl, director of user experience at **Sense.ly**, argues that people are **more forgiving of mistakes** made by an AI that presents itself as *non*-human – provided it has a sense of humour about any blunders.

If you're currently building a chatbot, remember that it isn't enough to simply inject some humanity into the dialogue. You have to give it some authentic, consistent character as well. So, if you haven't hired any professional dialogue writers, it could

Virtual assistants: They're made out of people!

Why Siri, Cortana and Alexa are only semi-fictional characters

Representative Roles Created by AI

TRAINERS	
Customer-language tone and meaning trainer	Teaches AI systems to look beyond the literal meaning of a communication by, for example, detecting sarcasm.
Smart-machine interaction modeler	Models machine behavior after employee behavior so that, for example, an AI system can learn from an accountant's actions how to automatically match payments to invoices.
Worldview trainer	Trains AI systems to develop a global perspective so that various cultural perspectives are considered when determining, for example, whether an algorithm is "fair."
EXPLAINERS	
Context designer	Designs smart decisions based on business context, process task, and individual, professional, and cultural factors.
Transparency analyst	Classifies the different types of opacity (and corresponding effects on the business) of the AI algorithms used and maintains an inventory of that information.
AI usefulness strategist	Determines whether to deploy AI (versus traditional rules engines and scripts) for specific applications.
SUSTAINERS	
Automation ethicist	Evaluates the noneconomic impact of smart machines, both the upside and downside.
Automation economist	Evaluates the cost of poor machine performance.
Machine relations manager	"Promotes" algorithms that perform well to greater scale in the business and "demotes" algorithms with poor performance.

Job of the future: robot psychologist

Amazon is aware that its Alexa virtual assistant has been f
people out with seemingly random and "creepy" laughter
working to fix the issue, the company told CNBC in a state

21세기형 인재 육성의 과제

방송/통신

"독일 4차산업혁명, 핵심은 사람이다"

마인처 뮌헨공대 교수 인터뷰..."직업교육 중요"

안희정 기자 | 입력 : 2017.03.13.07:54 | 수정 : 2017.03.13.08:21

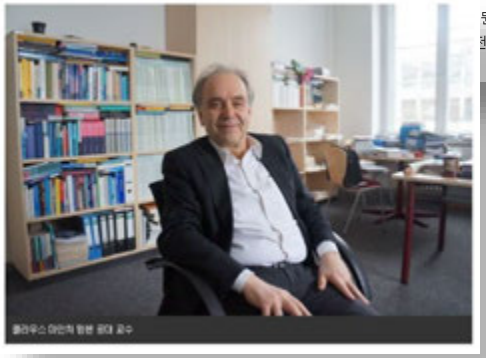
1691

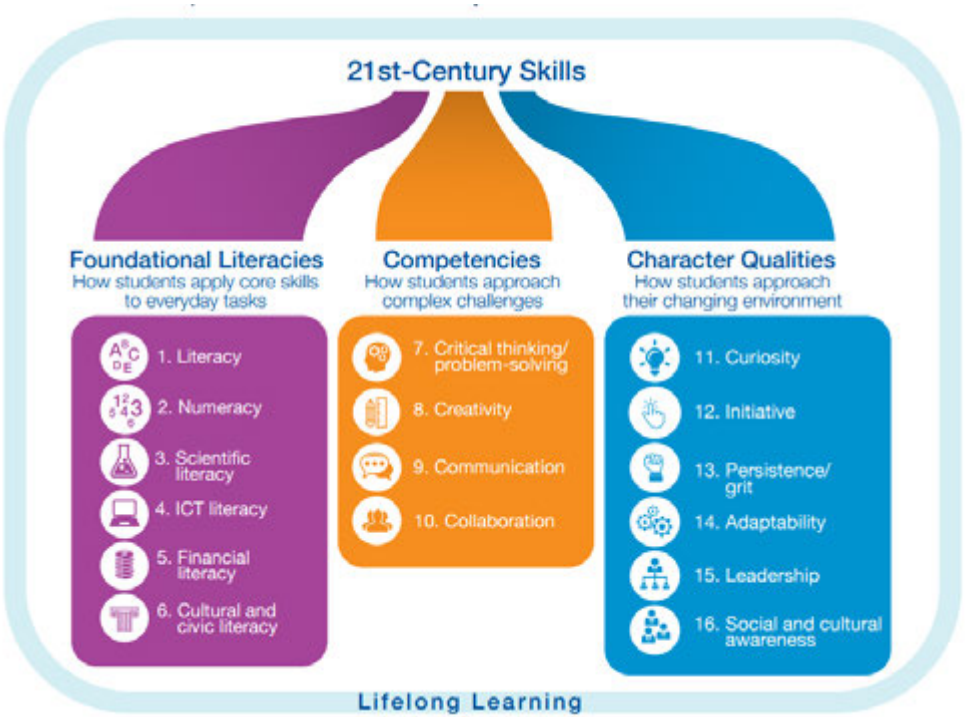
[뮌헨(독일)=안희정 기자] "4차산업혁명은 지멘스와 보쉬 같은 기업들에게 새로운 기회가 될 수 있습니다. 제조업과 사물인터넷(IoT)이 결합돼 생산성을 높이고, 맞춤형 제조를 통해 더 큰 부가가치를 창출할 수 있기 때문입니다."

제4차산업혁명을 전 세계의 화두로 만든 건 세계경제포럼(WEF)이었다. WEF는 지난 해 1월 스위스 다보스에서 열린 포럼에서 사물인터넷(IoT)과 인공지능이 주도할 4차산업혁명 시대에 대비해야 한다는 메시지를 내놨다.

하지만 독일은 WEF보다 훨씬 먼저 4차산업혁명을 부르짖고, 또 대비해 왔다. 독일은 "변하지 않으면 미국과 중국에게 종속될 수 있다"는 절박한 위기감에 제조업 혁신 프로젝트인 '인더스트리 4.0'을 추진해 왔다.

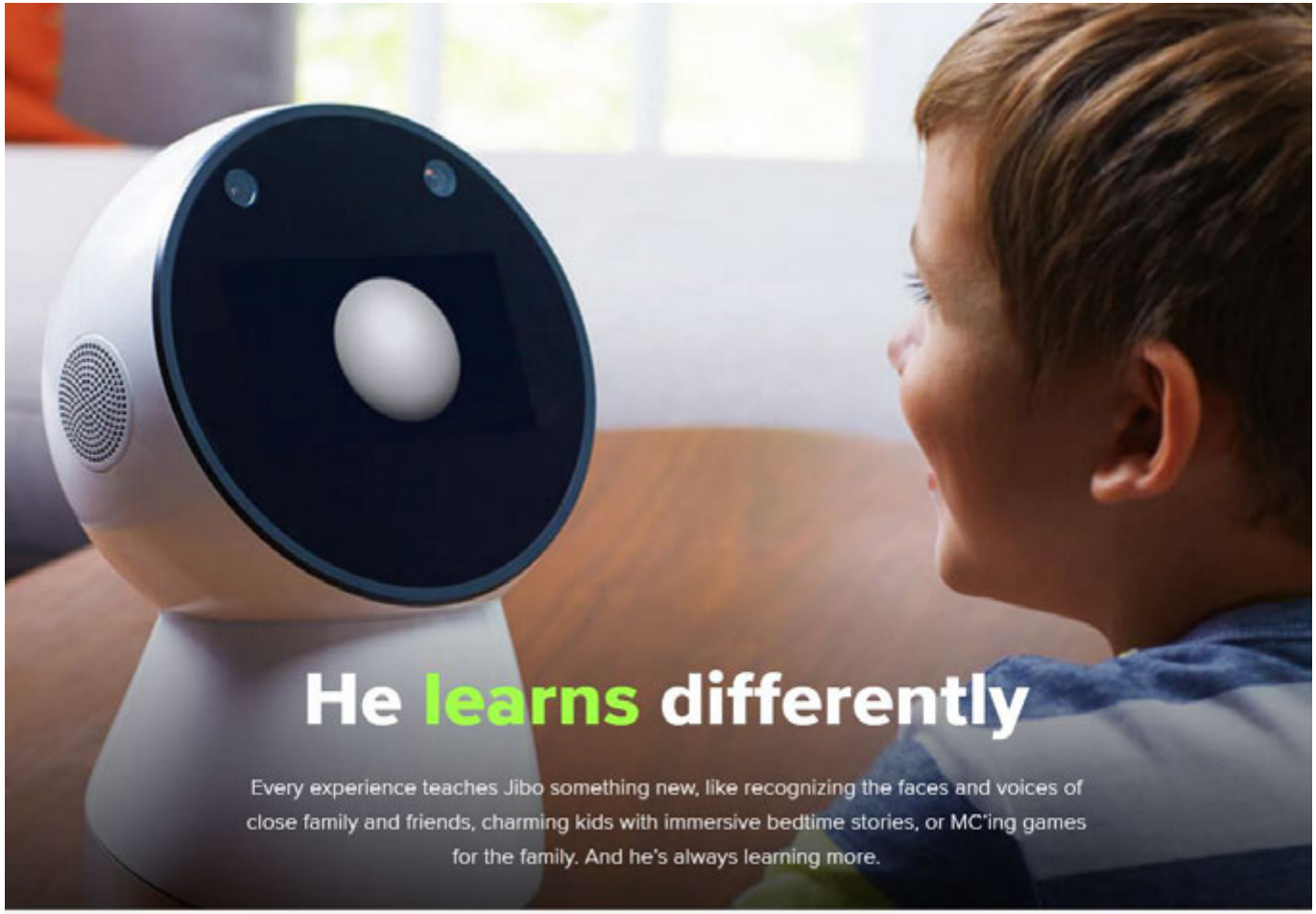
기자는 인더스트리 뮌헨 공대 교수를 직접 문가로 유명하다.



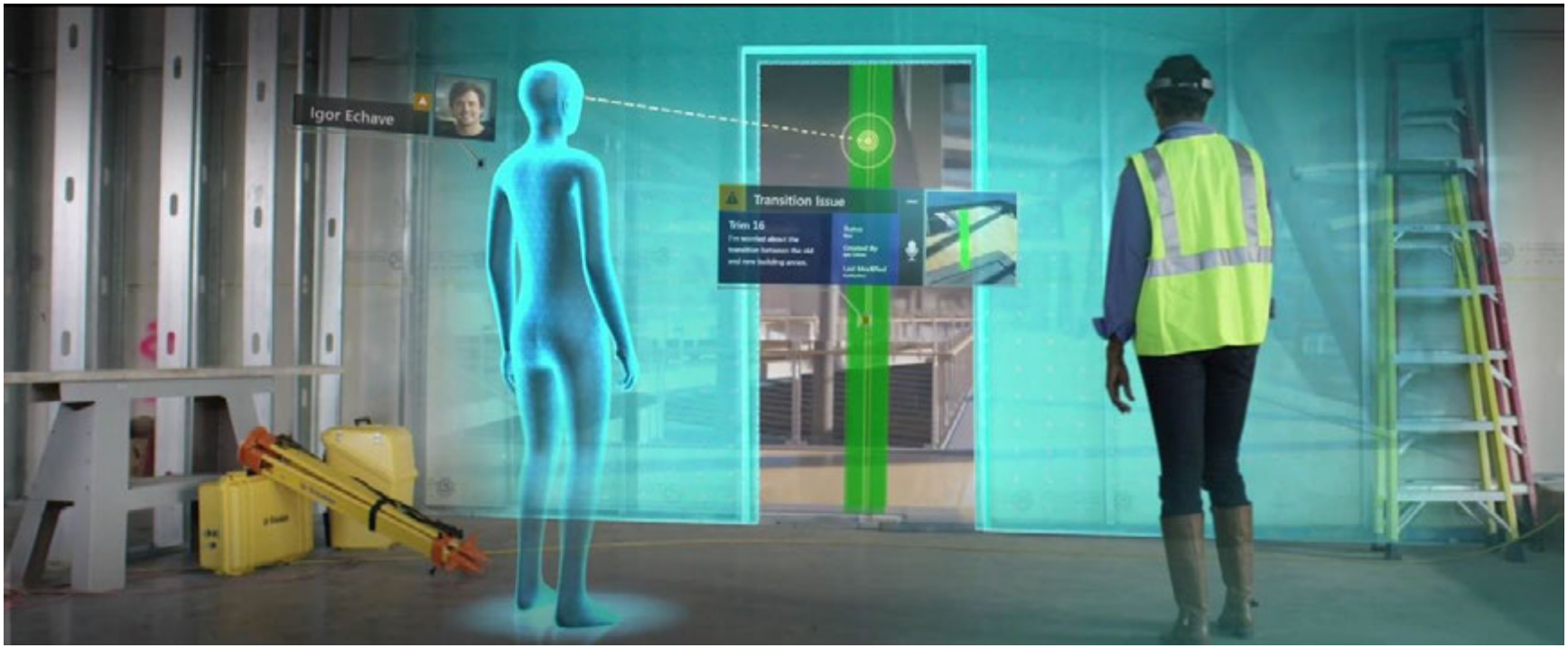


21세기에 필요한 기술 (출처: World Economic Forum – New Vision for Education)

아이들은 새로운 학습 환경에 놓일 것이다



Thyssenkrupp – bringing new vision to elevator maintenance with Microsoft HoloLens



도서관은 “Library of Experiences"

Libraries of the future are going to change in some unexpected ways

Chris Weller
Aug. 24, 2016, 10:00 AM 13,382

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Your idea of a library might be a musty, carpeted room with outdated technology, but don't ditch your library card just yet.

According to David Pescovitz, co-editor at Boing Boing and research director at the Institute for the Future, a Palo Alto-based collective that makes forecasts about our world, it's likely in the coming decades that society's traditional understanding of a library will get completely upended.

Jay Walker

새로운 근무 환경

Could Your Next Boss Be a Robot?

May 6, 2016
Contributor: Christy Pettey

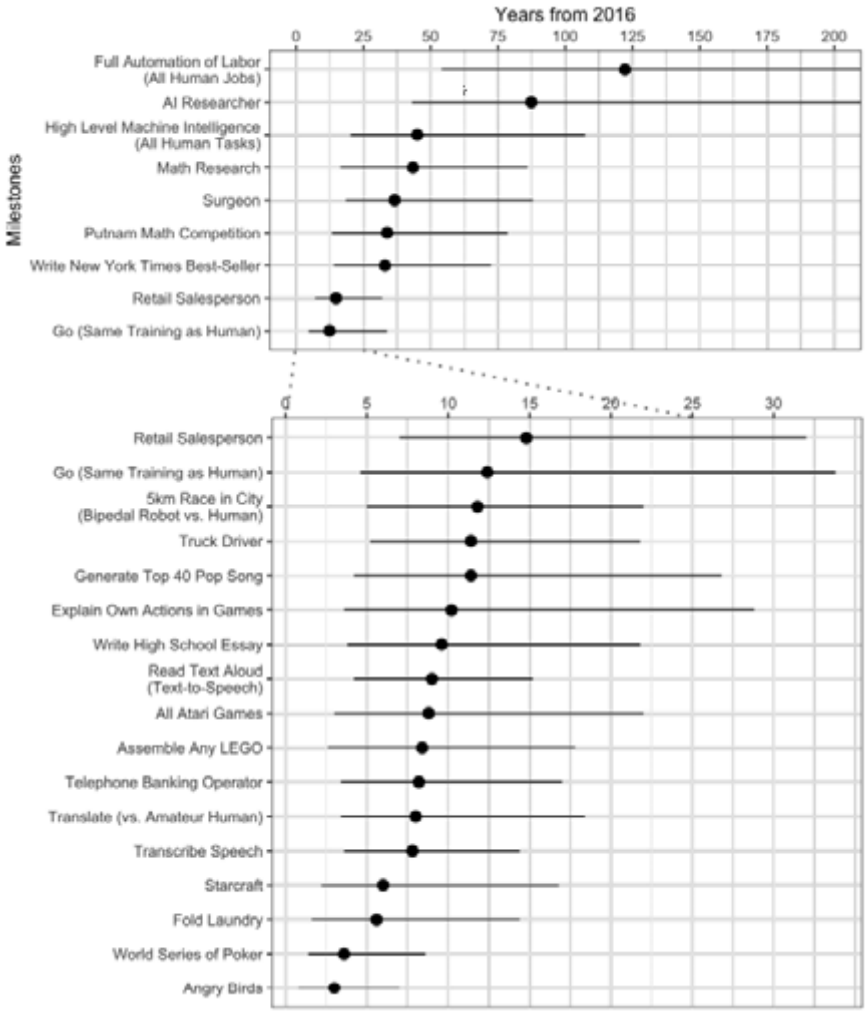
DIGITAL BUSINESS

Smart machines are set to change the DNA of the workplace.

In a world of smart machines that can drive cars, beat humans at chess, advise on medical diagnoses and perform a host of other tasks, imagine the next likely step as a smart machine as a people manager. As business investment in smart machines grows, “robobosses” will increasingly make workplace decisions that previously could only have been made by human managers.

By 2018, more than three million workers globally will be supervised by robobosses, according to Frances Karamouzis, vice president and distinguished analyst at Gartner.

Timeline of Median Estimates (with 50% intervals) for AI Achieving Human Performance



Timeline of Median Estimates for AI Achieving Human Performance

Researchers predict AI will outperform humans in many activities in the next ten years, such as translating languages (by 2024), writing high-school essays (by 2026), driving a truck (by 2027), working in retail (by 2031), writing a bestselling book (by 2049), and working as a surgeon (by 2053)

What Role for Policy?

- OECD Employment Outlook 2017
- Workers need help in building the right skills for the future
  - Initial education, including early education, should equip all students with solid literacy, numeracy, problem-solving abilities but also with basic ICT skills and soft skills
  - Those already in the labour market need better opportunities to maintain their skills, up-skill and/or re-skill throughout their working lives.
  - Devising policy solutions that reduce barriers to training and encourage employers to provide training more widely is a crucial step in preventing further increases in inequality
    - Paradoxically, the low skilled are the most likely to be affected by the ongoing changes, but also the least likely to receive training
- Policies to get people back to work and social protection measures should be updated to help people face disruptive changes and facilitate labour mobility
- Dealing with structural change can be achieved more easily and effectively if social partners work closely together in a spirit of cooperation and mutual trust
  - Adapting labour market regulation, training and social security systems to new challenges; finding compromises between employers' need for flexibility and workers' desire for security; achieving an equitable distribution of productivity gains; and helping individuals displaced by technology or trade get back into work.

감사합니다

(Meet me at facebook.com/stevehan 또는 '책과얽힘')