

The Intelligent Economy: Preparing for the Transition

Education and Re-skilling



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The Industrial Revolution - Key Phases



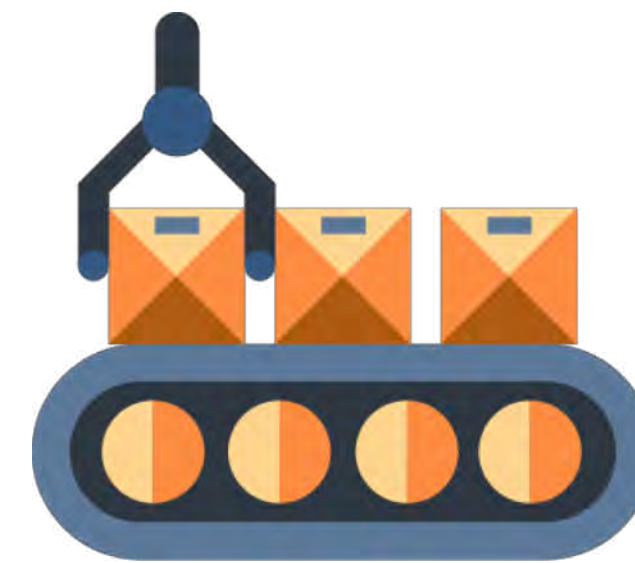
1st Revolution

Mechanisation,
Water Power,
Steam Power



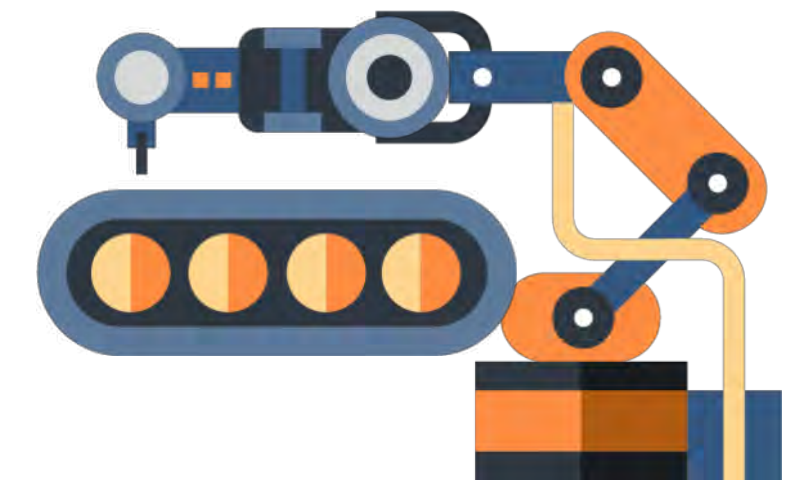
2nd Revolution

Mass Production,
Assembly Line,
Electricity



3rd Revolution

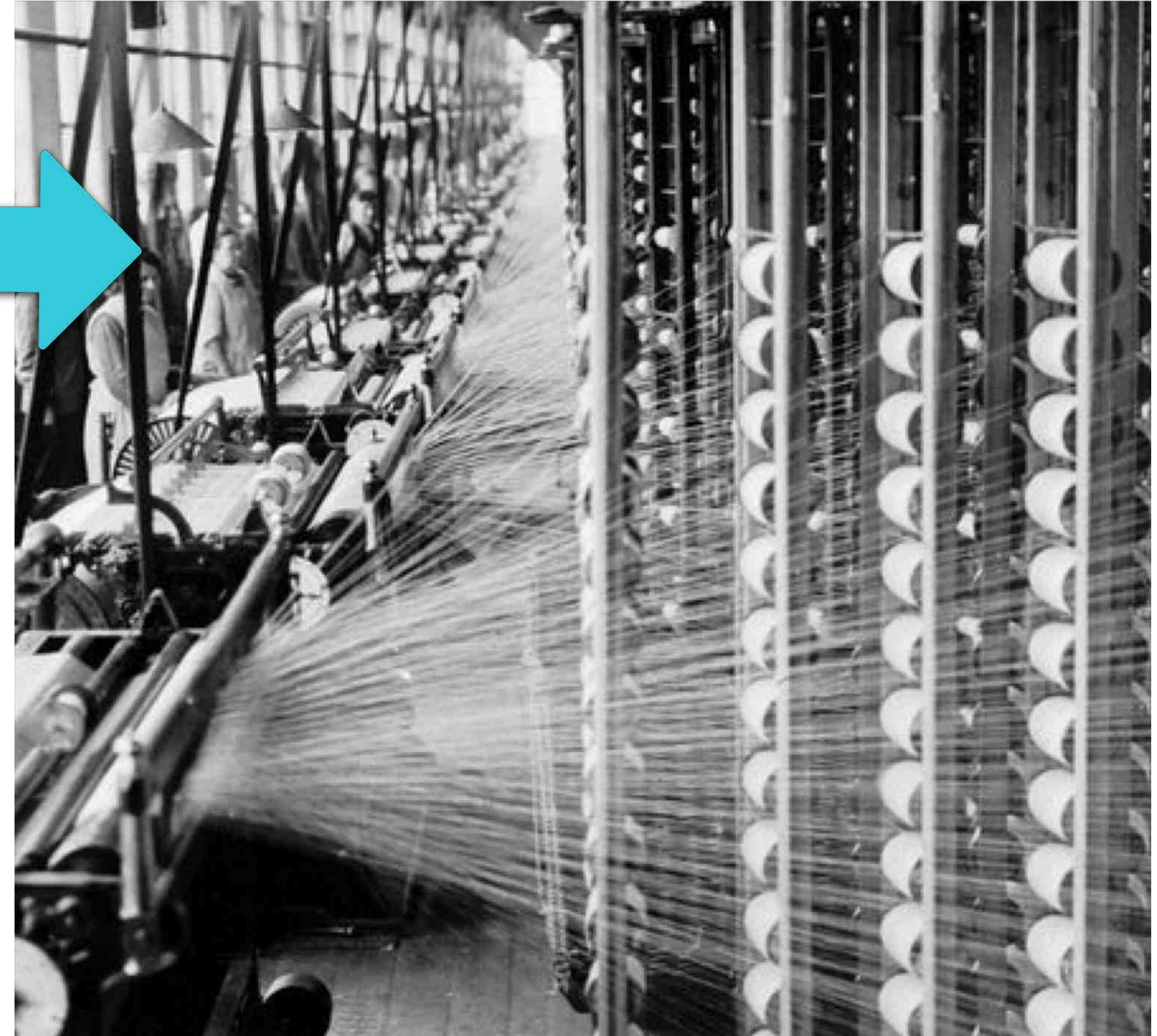
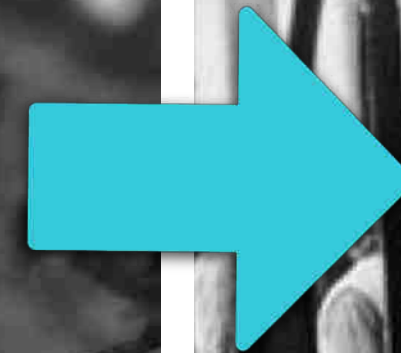
Computation and
Automation



4th Revolution

AI Revolution

The Industrial Age





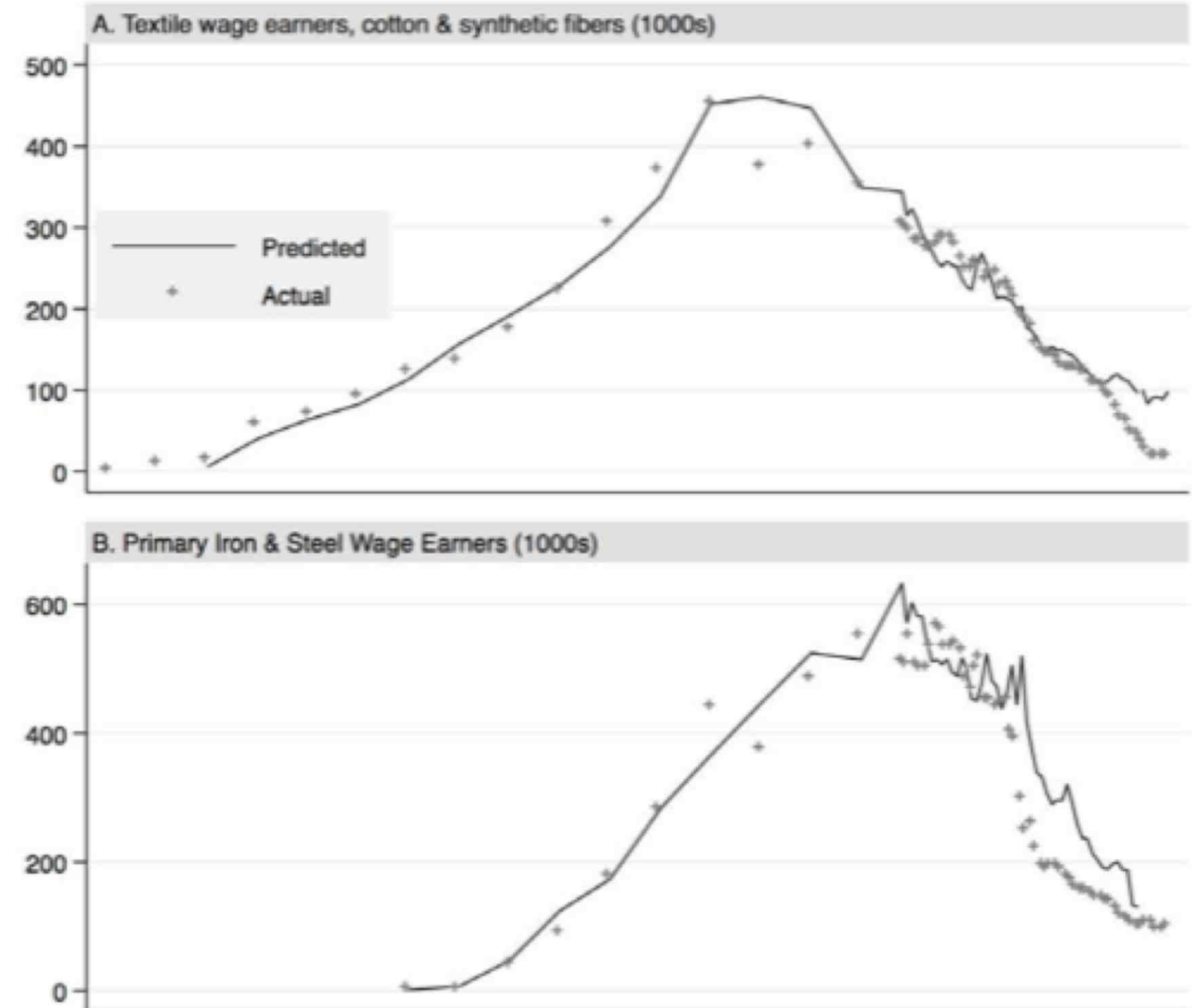
The Industrial Age

If demand increases sufficiently, employment will grow even though the labor required per unit of output declines.

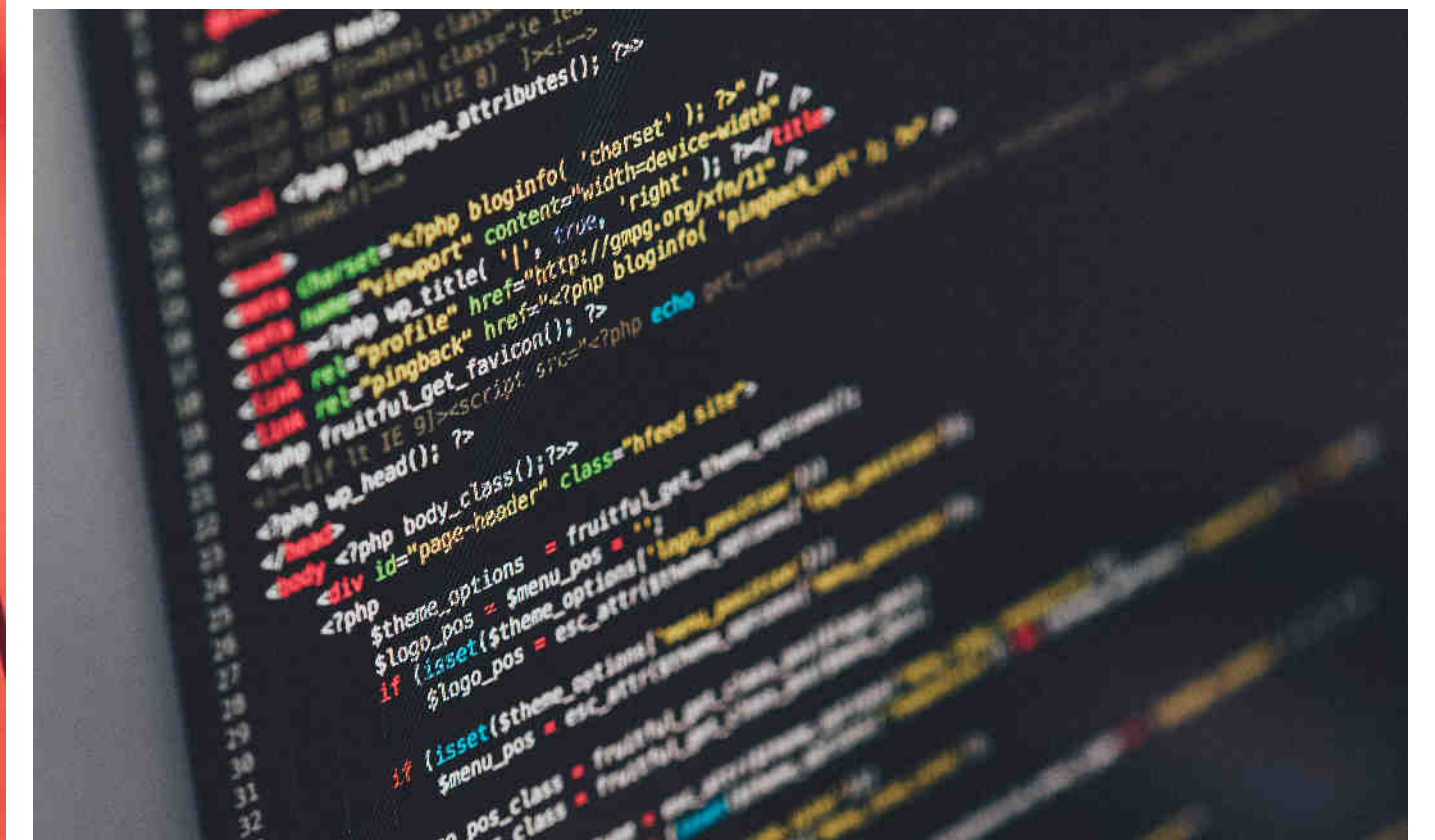
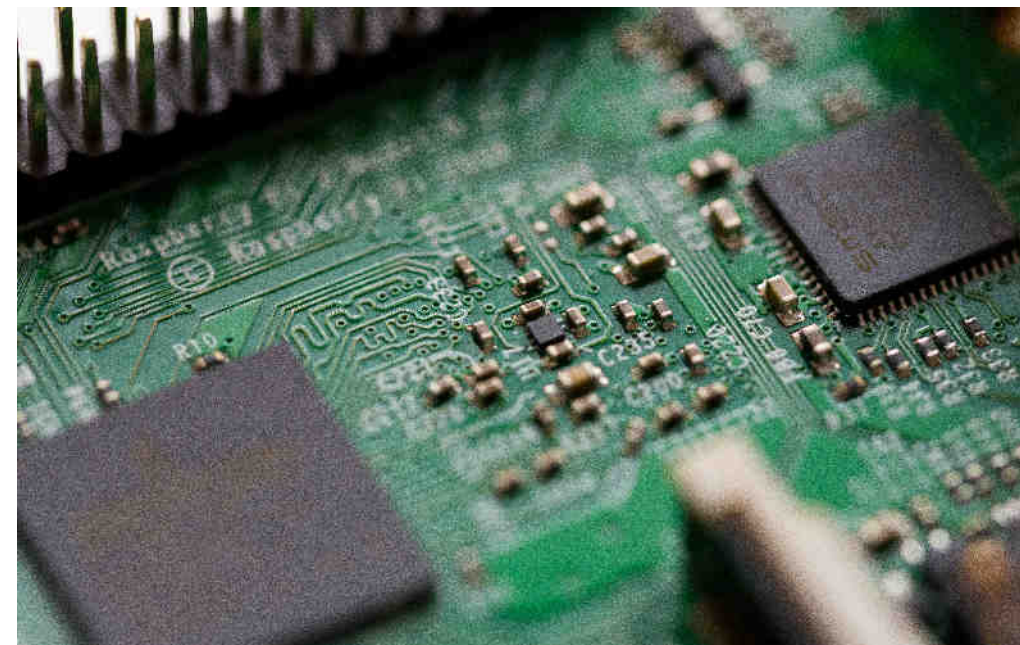
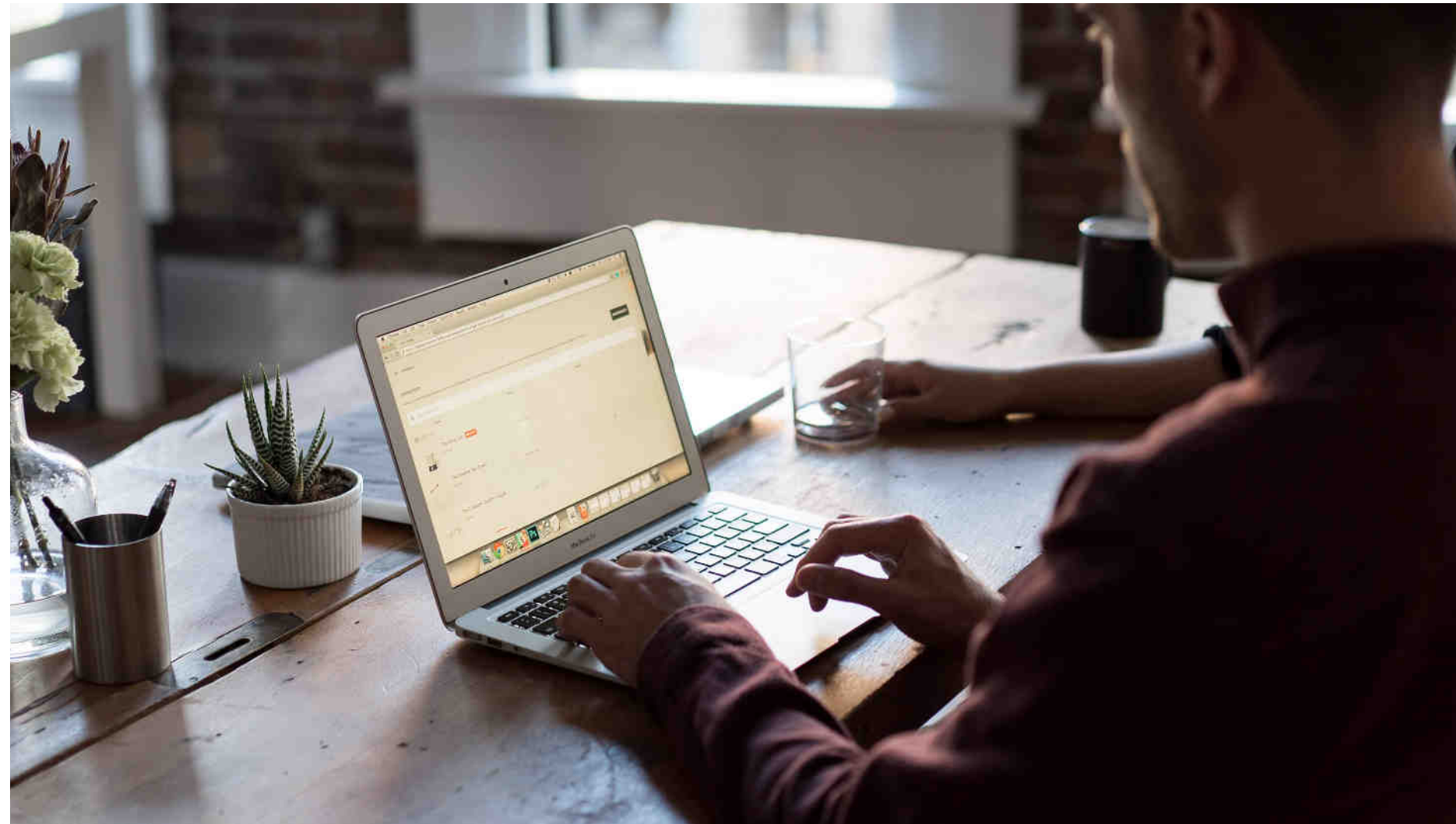
Textile		Steel	
Year	Elasticity	Year	Elasticity
181	2.13	1860	3.49
1995	0.02	1982	0.16

Here is a graph depicting the Production vs Employment in Textile and Steel industry between the year 1800s and 2000s

Cited:
James Bessem,
National Bureau
of economic
Research



The Digital Age



McKinsey
& Company

In the Digital Age, Technology drives the creation of many more jobs than it destroys over time

Take for example the number of jobs created vs the number of jobs destroyed with the advent of the Personal Computers.

19,263

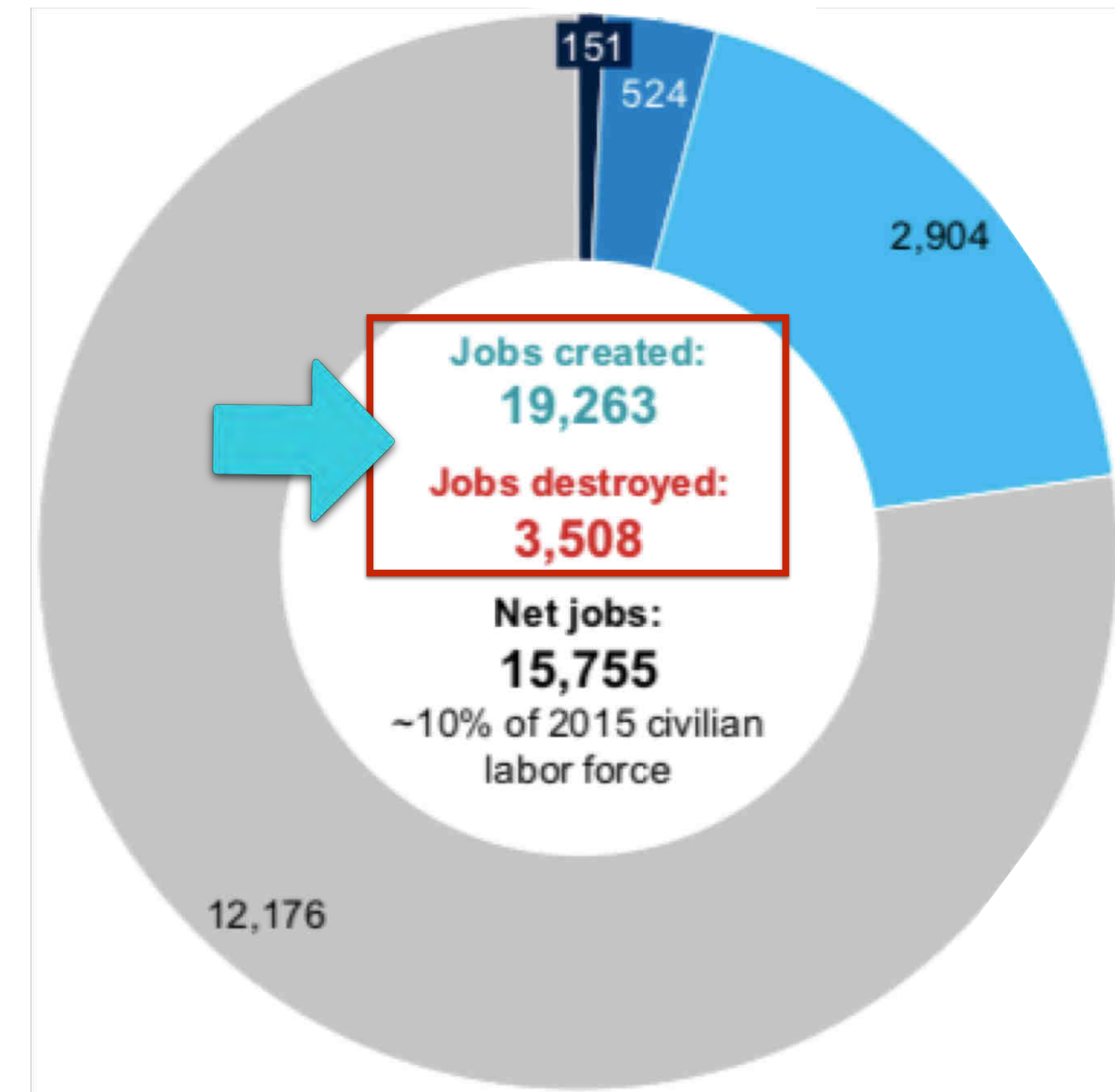
Jobs created

**3,508**

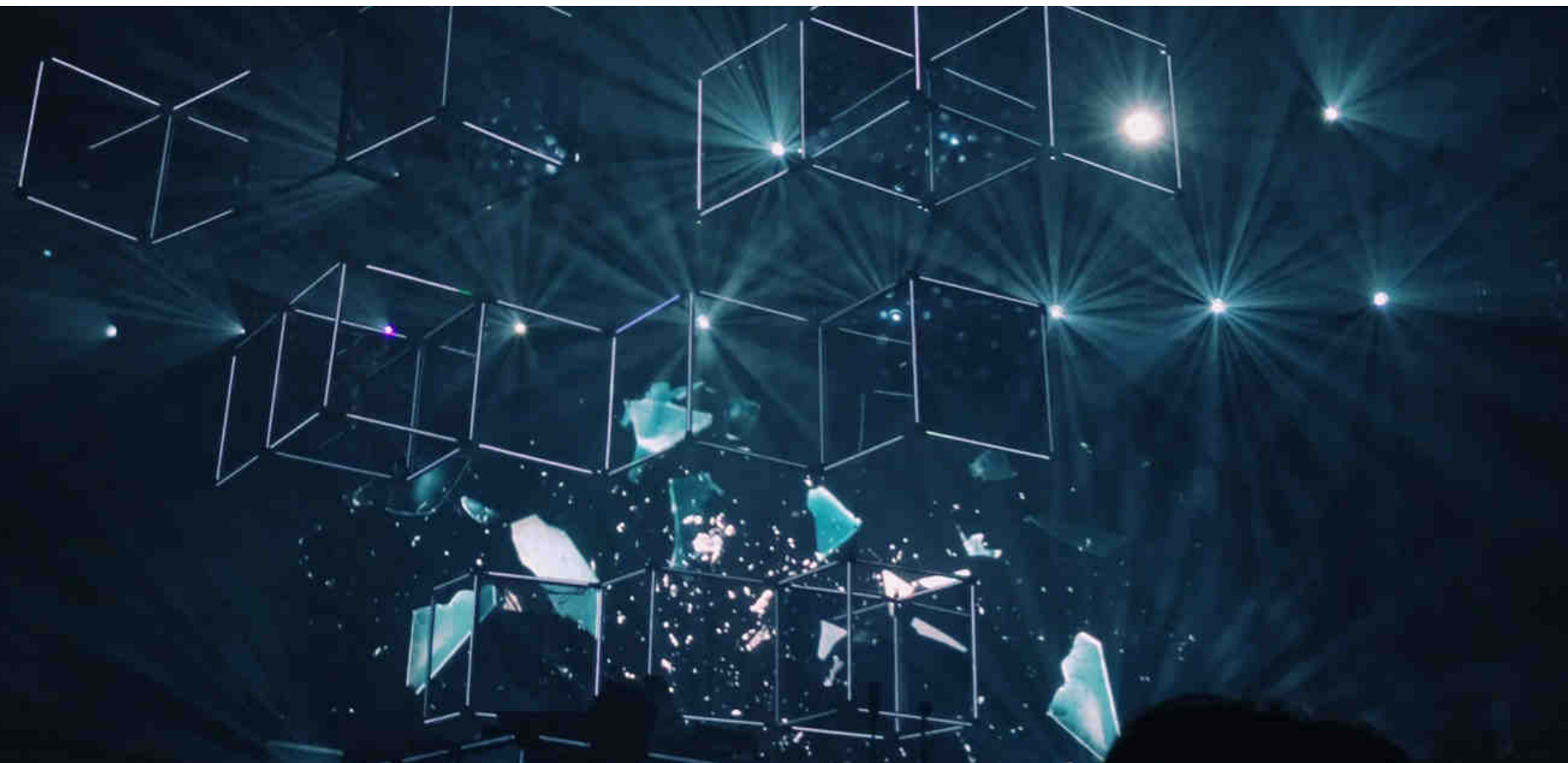
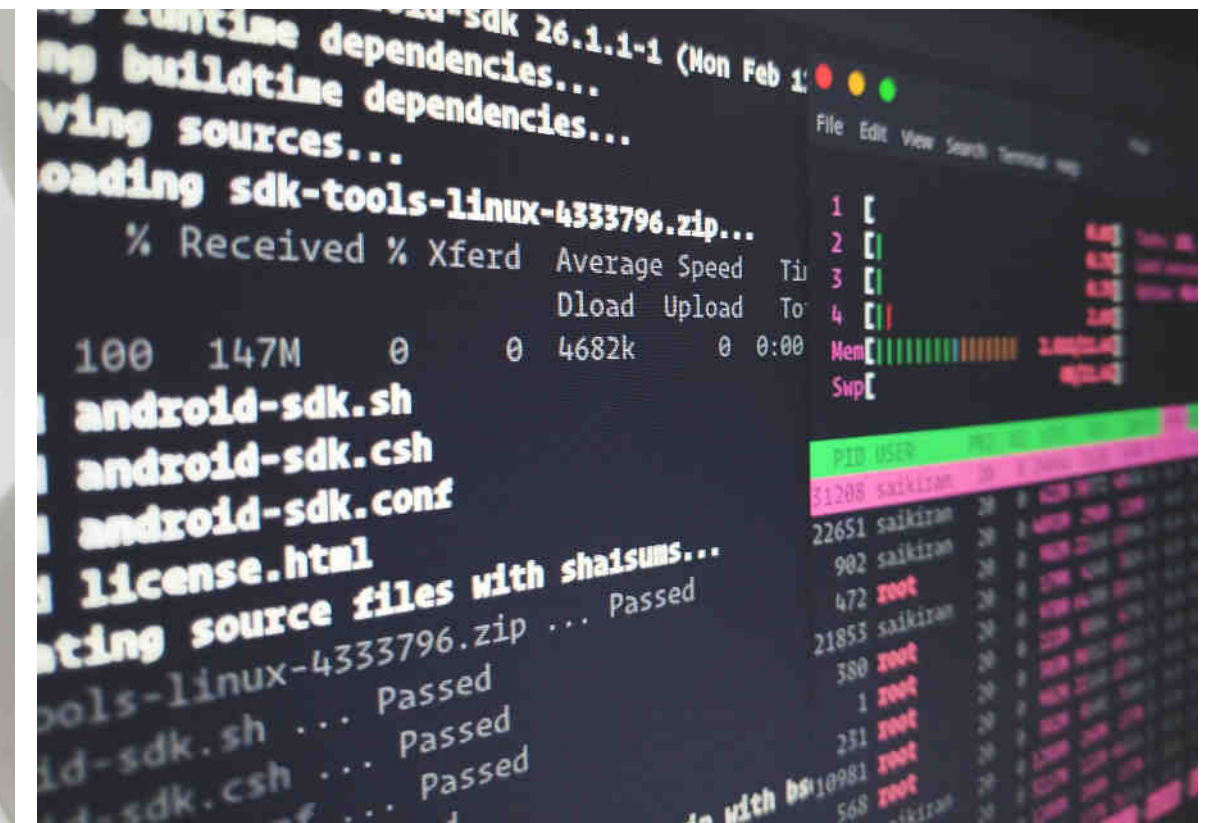
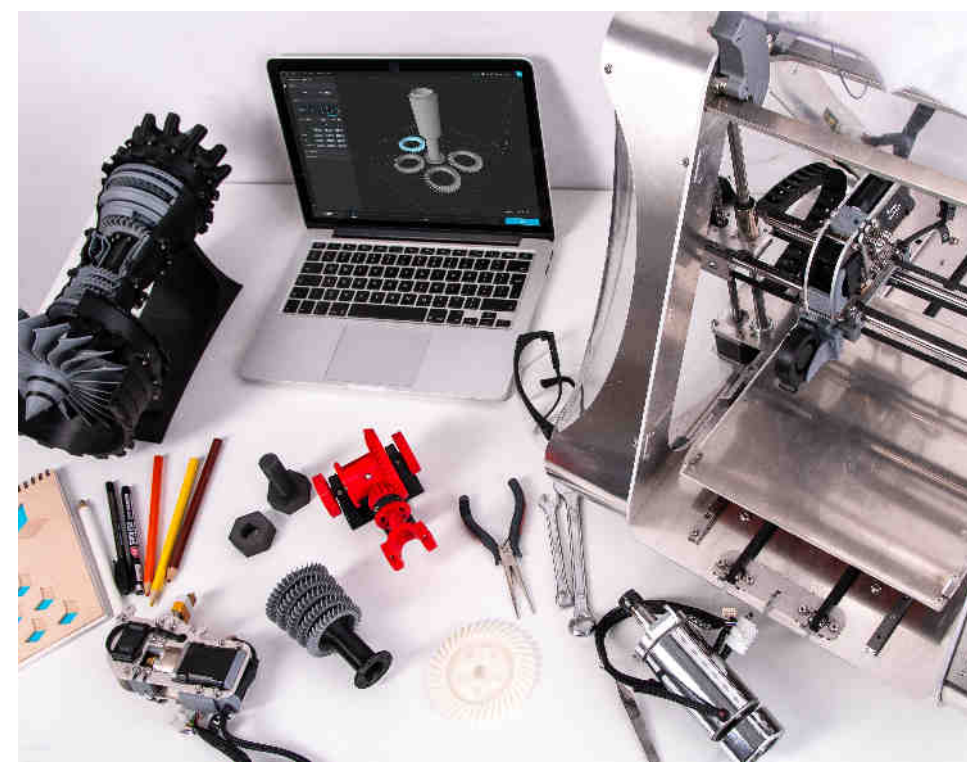
Jobs destroyed



US Bureau of
Labour Statistics:
FRED: McKinsey
Global Institute
Analysis



The AI Revolution: The advent of the 4th Industrial Age



Medium

*Yuval Noah Harari and Fei-Fei Li
on Artificial Intelligence: Four
Questions that Impact All of Us*

How is this different from the other revolutions?

$B * C * D = H$ (Biological Advances * Computing Power * Data = Human Hack).

This technology would be enable its users to know you better than you know yourself



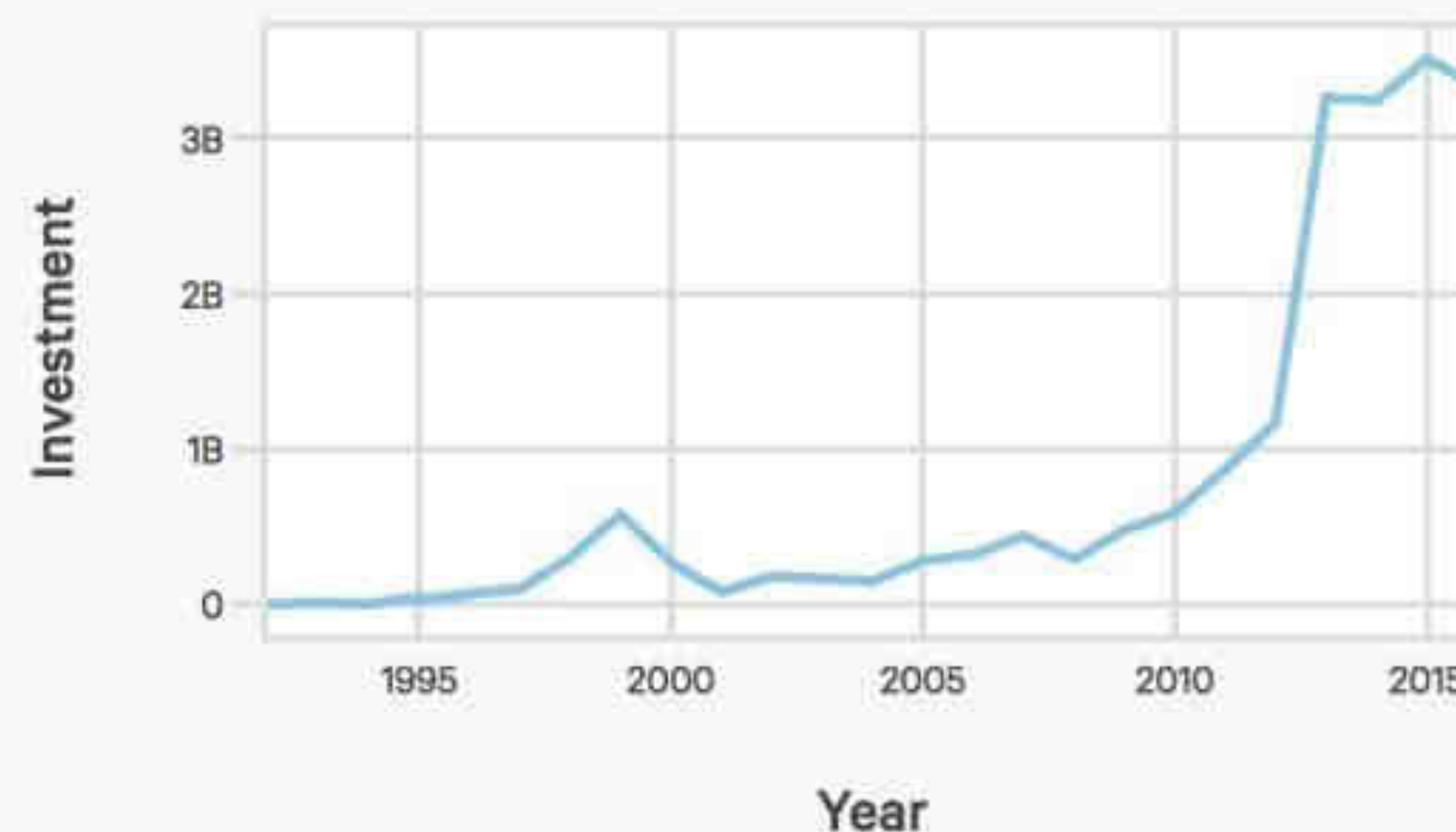


Annual VC investment
into US startups
developing AI systems
since 2000 has
increased by

6x ▲

*Annual VC
Investment in
AI Startups*

Annual VC Investment in AI Startups



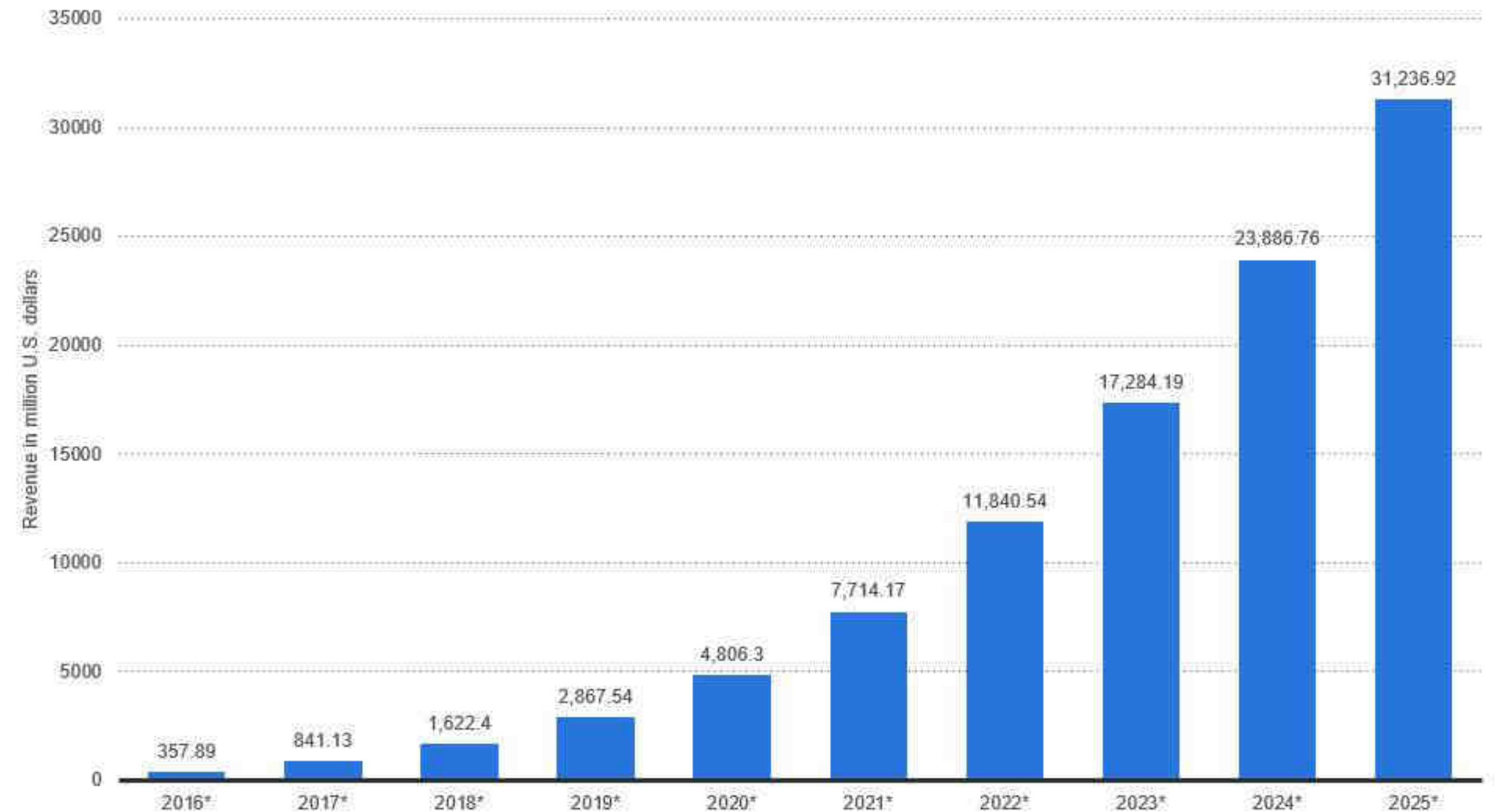
Sources: Crunchbase, VentureSource, Sand Hill Econometrics

AIINDEX.ORG

Revenues from the AI
for enterprise
application market
worldwide, from 2016
to 2025 is estimated
to be at

\$31 Billion

*Enterprise AI
market revenue
worldwide
2016-2025*





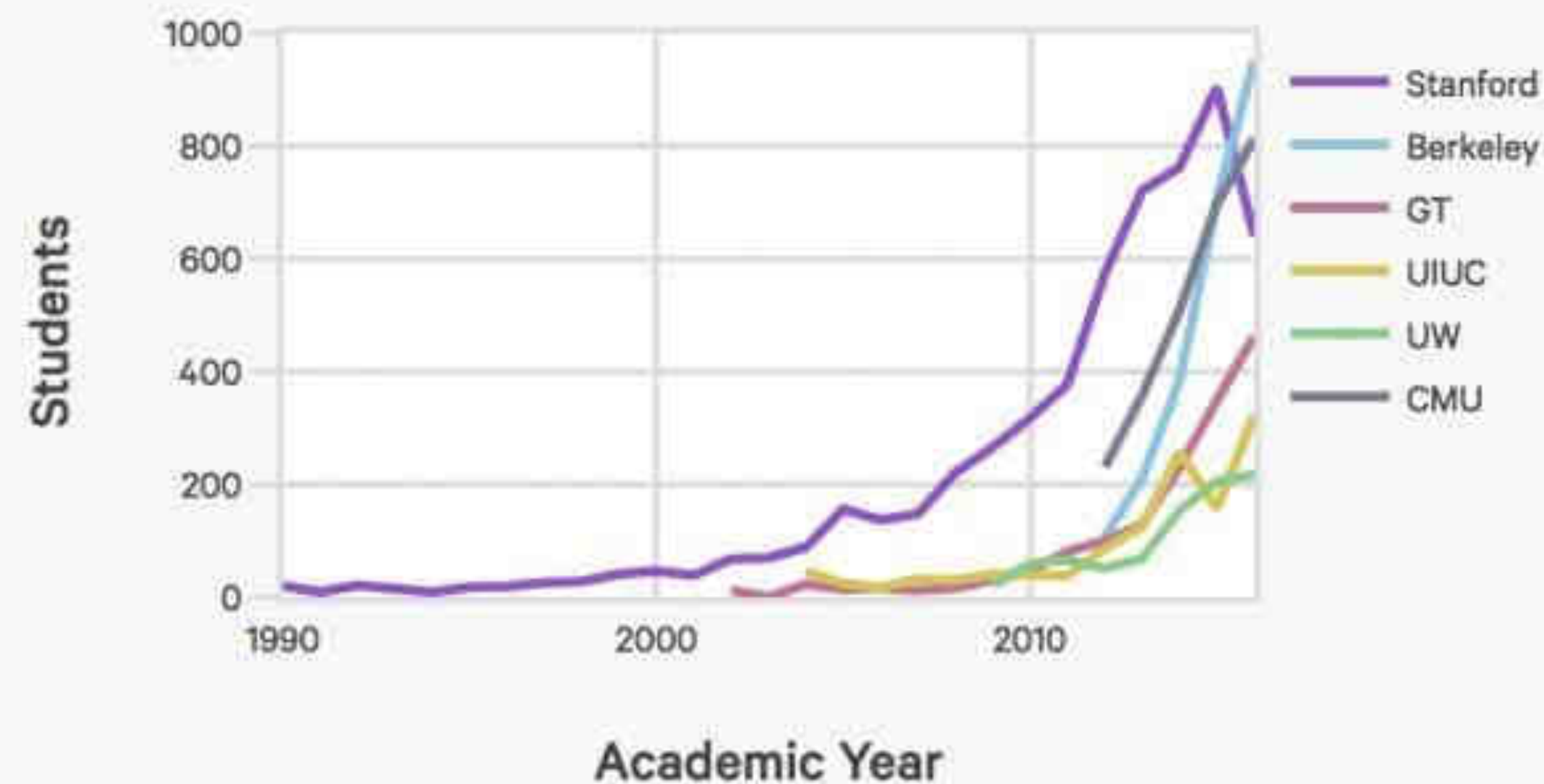
artificial
intelligence
index

Enrolment in AI/ML
studies in top
Universities has
increased by

3x ▲

ML Course
Enrolment
between the
year 1990 -
2010

ML Course Enrollment



AIINDEX.ORG

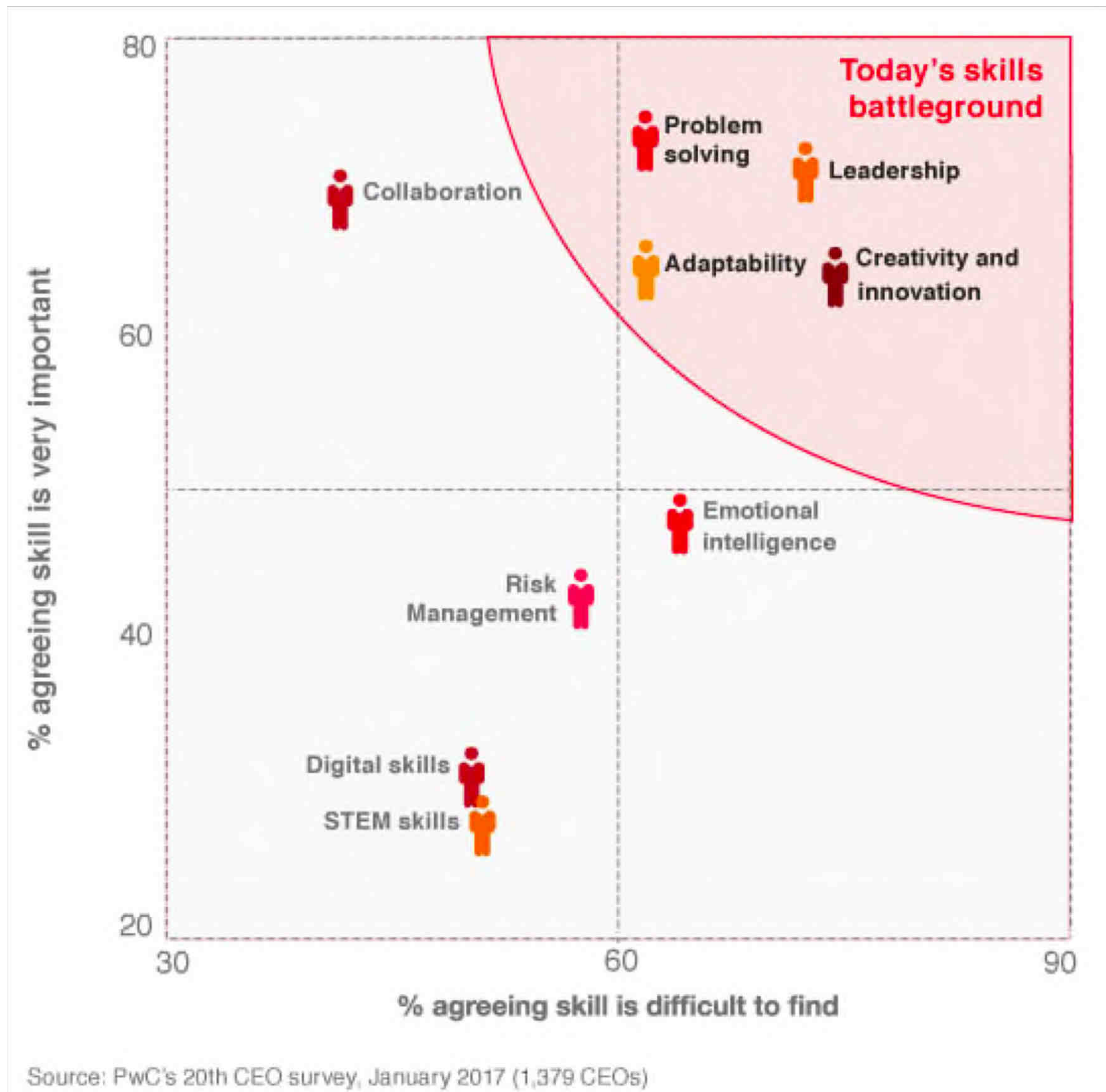
Note: Many universities have offered ML courses since before the 90's. The graphs above represent the years for which we found available data.



We're witnessing today radical Transformation of Skills

**Problem Solving,
Leadership, Adaptability,
Creativity and Innovation
are the New Game Changers**

*A graph to
understand
Today's skills
Battleground.*



Critical skill sets are not technological but instead human to stay ahead of the curve

Today, 2018	Increasing, 2022	Declining, 2022
Analytical thinking and innovation	Analytical thinking and innovation	Manual dexterity, endurance and precision
Complex problem-solving	Active learning and learning strategies	Memory, verbal, auditory and spatial abilities
Critical thinking and analysis	Creativity, originality and initiative	Management of financial, material resources
Active learning and learning strategies	Technology design and programming	Technology installation and maintenance
Creativity, originality and initiative	Critical thinking and analysis	Reading, writing, math and active listening
Attention to detail, trustworthiness	Complex problem-solving	Management of personnel
Emotional intelligence	Leadership and social influence	Quality control and safety awareness
Reasoning, problem-solving and ideation	Emotional intelligence	Coordination and time management
Leadership and social influence	Reasoning, problem-solving and ideation	Visual, auditory and speech abilities
Coordination and time management	Systems analysis and evaluation	Technology use, monitoring and control

McKinsey
& Company

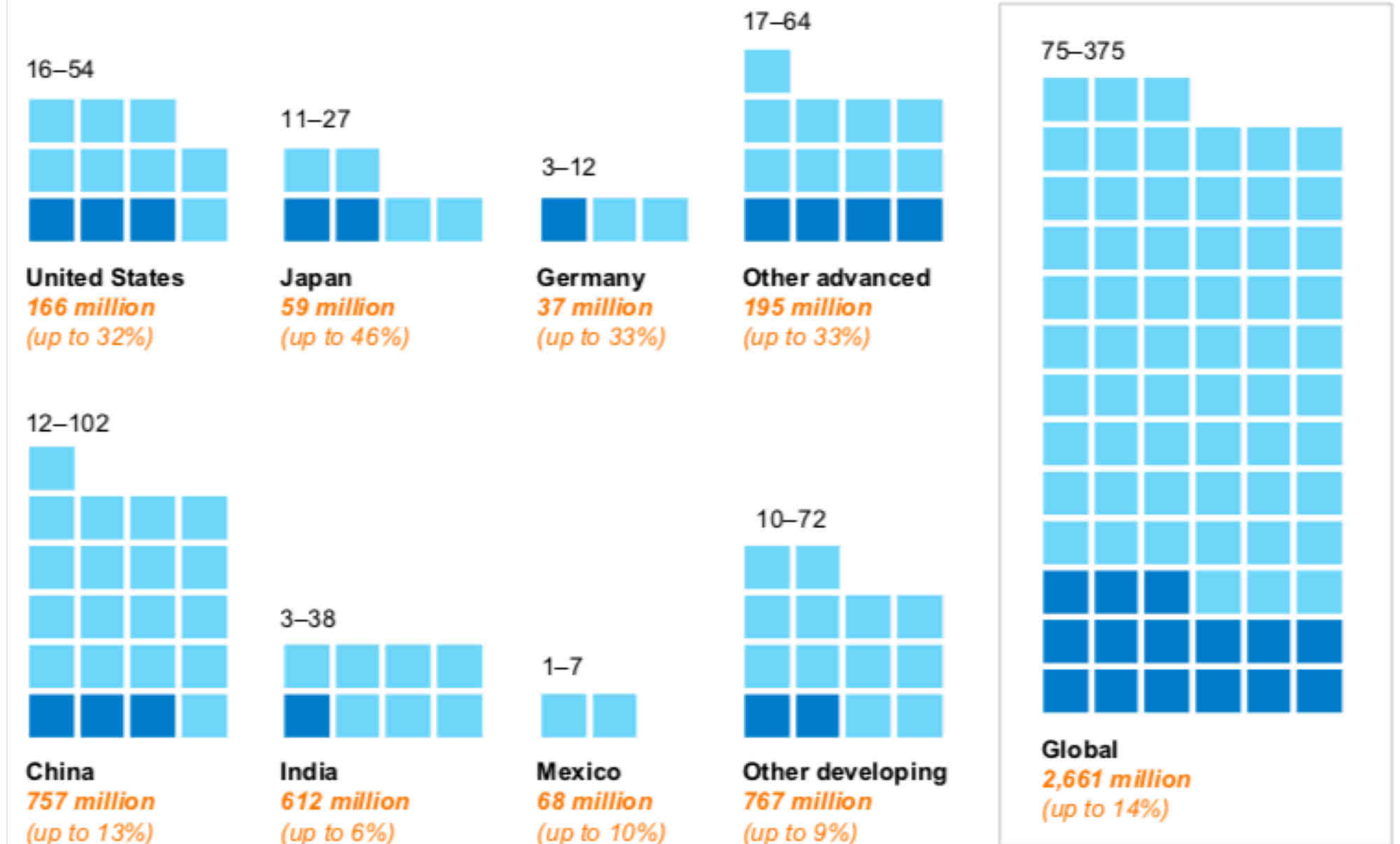
Job Switching: The Inevitable Future

Come 2030, globally, up to
375M workers
may need to switch their
occupational categories

*Rising consumer
incomes are the
largest source of
job creation
among our seven
catalysts*

Number of workers needing to move out of current occupational categories
to find work, 2016–30 (trendline scenario)¹
Million (1 block = ~5 million)

■ Additional from earliest
adoption scenario
■ Midpoint automation scenario
2030 workforce
(% transitioning)



¹ Some occupational data projected into 2016 baseline from latest available 2014 data.

Forward looking enterprises are already re-skilling their employees via strategic initiatives



\$1 per day:

Cost of earning a college degree through Walmart's new higher education benefit.



50 million:

Initial investment in the Walt Disney Company's new education program, Disney Aspire.

- **\$600+ million:**
Up-skilling investments announced publicly by large corporations in 2018.
- **2.2 million:**
Number of people eligible for the **Prior Learning Access Network of Florida**.
- **14,500+:**
Number of employees eligible for a free degree through the **Discover College Commitment**.

Companies across sectors and geographies are investing in re-skilling their talent

أرامكو السعودية
Saudi Aramco



Saudi Aramco:

Investing in its employees for greater employee job satisfaction and increased company performance



Nike/YOUNGONE:

Adult Literacy Workplace training in Bangladesh: Building Adult Literacy skills through supply chain networks



AT&T:

Linking learning & professional development to work performance assessments



Will Amazon's Plan to 'Upskill' Its Employees Pay Off?

Amazon has invested \$700M to upskill over a third of their US workforce



MANAGEMENT

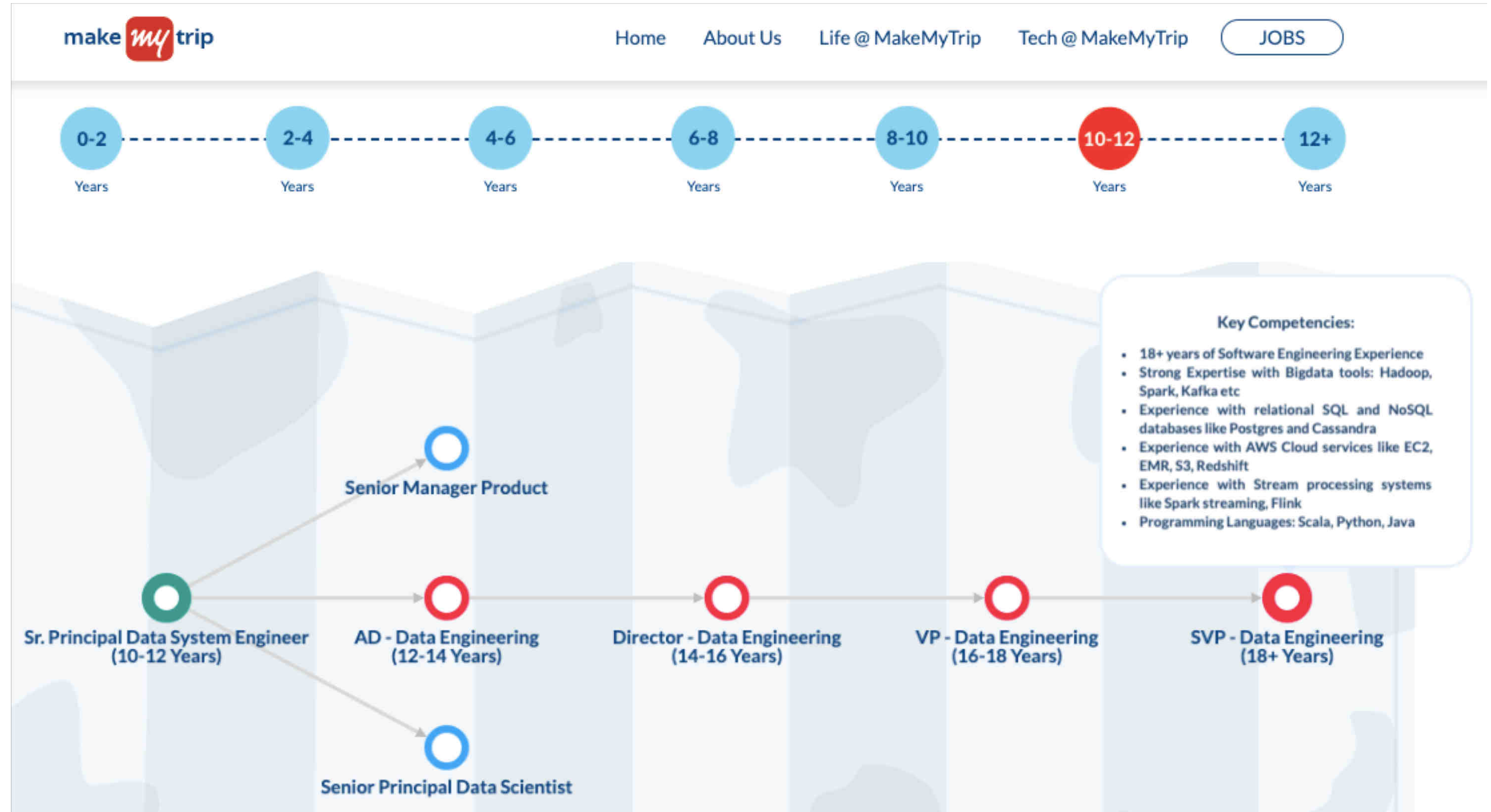
Will Amazon's Plan to 'Upskill' Its Employees Pay Off?

LISTEN TO THE PODCAST

The six-year, \$700 million effort covers about 100,000 employees, or about a third of Amazon's U.S. workforce of nearly 300,000, and works out to about \$1,200 a year annually for each employee. (That contrasts with a \$500 spend on each employee for training by large employers with 10,000 workers or more that were surveyed by the Association for Talent Development, *The Wall Street Journal* **reported**.) The mostly free program does not require employees to stay on at Amazon; some **programs** pay 95% of the costs for tuition and textbooks, capped at \$12,000 per employee over four years.

more that were surveyed by the Association for Talent Development, *The Wall Street Journal* **reported**. The mostly free program does not require employees to stay on at Amazon; some **programs** pay 95% of the costs for tuition and textbooks, capped at \$12,000 per employee over four years.

Talent Focussed Companies like MakeMyTrip are giving candidates an overview of what their potential career path could be like going forward



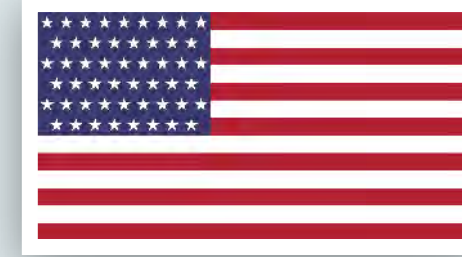
Models & Inspiration to Re-skill Employees

Here are some recommendations that we collectively as a society can attempt to re-skill talent



Inspiration #1

Government & University Wide Initiative.



GI Bill, USA

- **8M Veterans took advantage :**

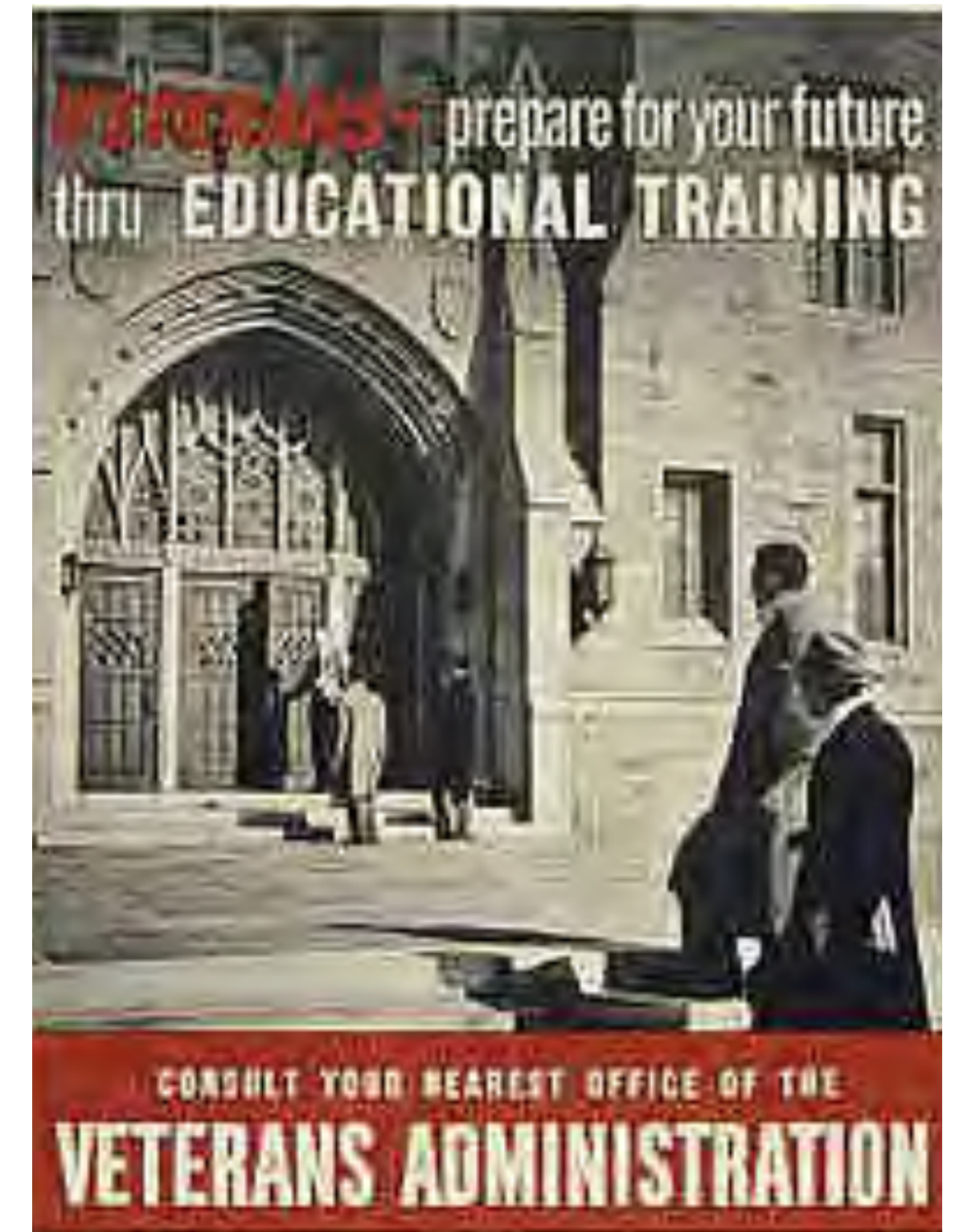
Within its first seven years of use, about 8 million veterans took advantage. U.S. college and university degree-holders more than doubled between 1940 and 1950.

- **Americans with advanced degrees rose nearly 20 percent:**

Within 50 years, the number of Americans with advanced degrees rose nearly 20 percent.

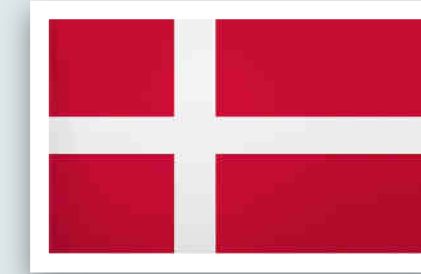
- **16M WW2 vets got trained:**

By July 1956, when the bill initially expired, almost half of the 16 million World War II vets had gotten education or training through the GI Bill.



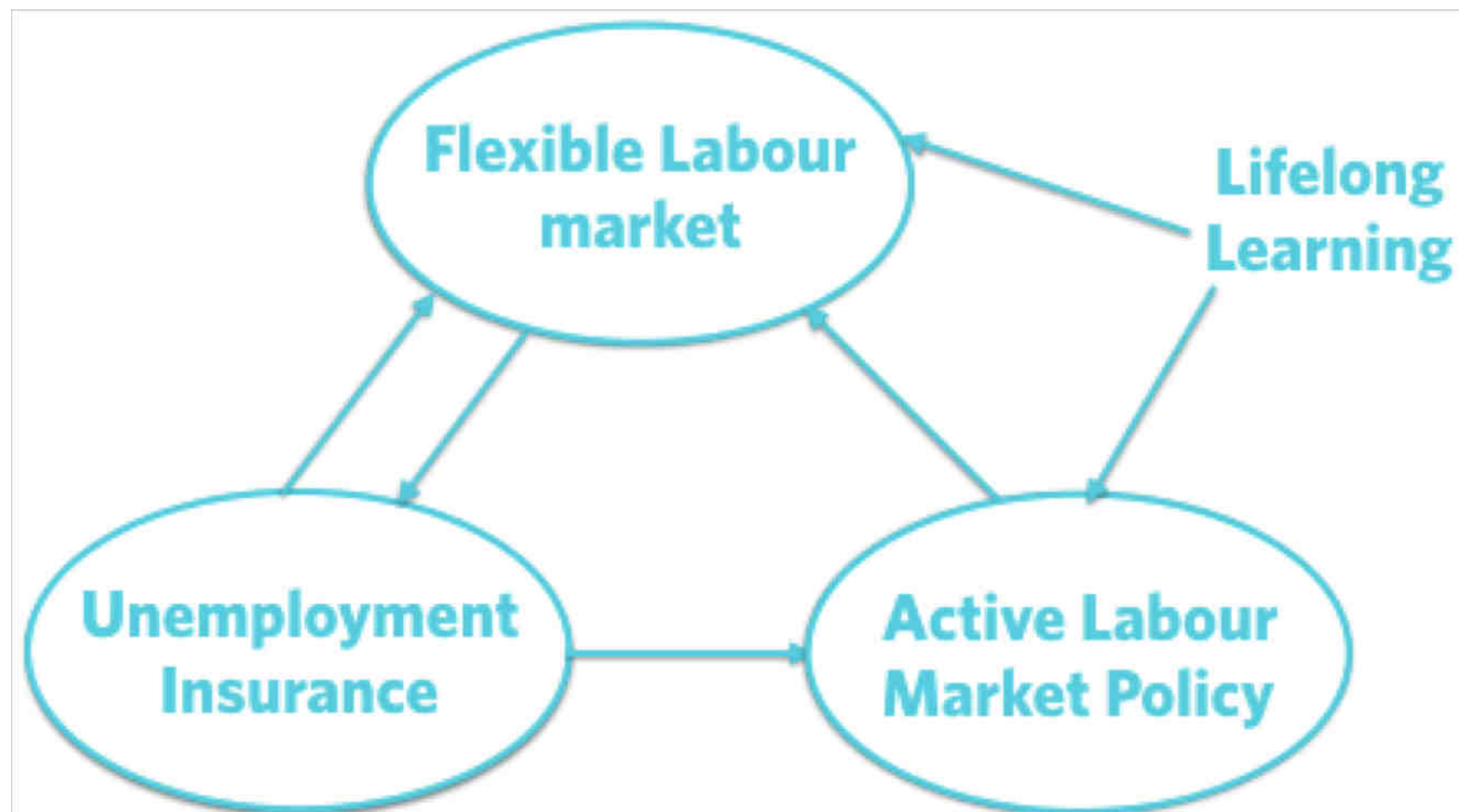
Inspiration #2

Government, Private Companies & Agencies



Denmark's
Golden Triangle

DENMARK GOLDEN TRIANGLE



Flexibility + Security = Flexicurity

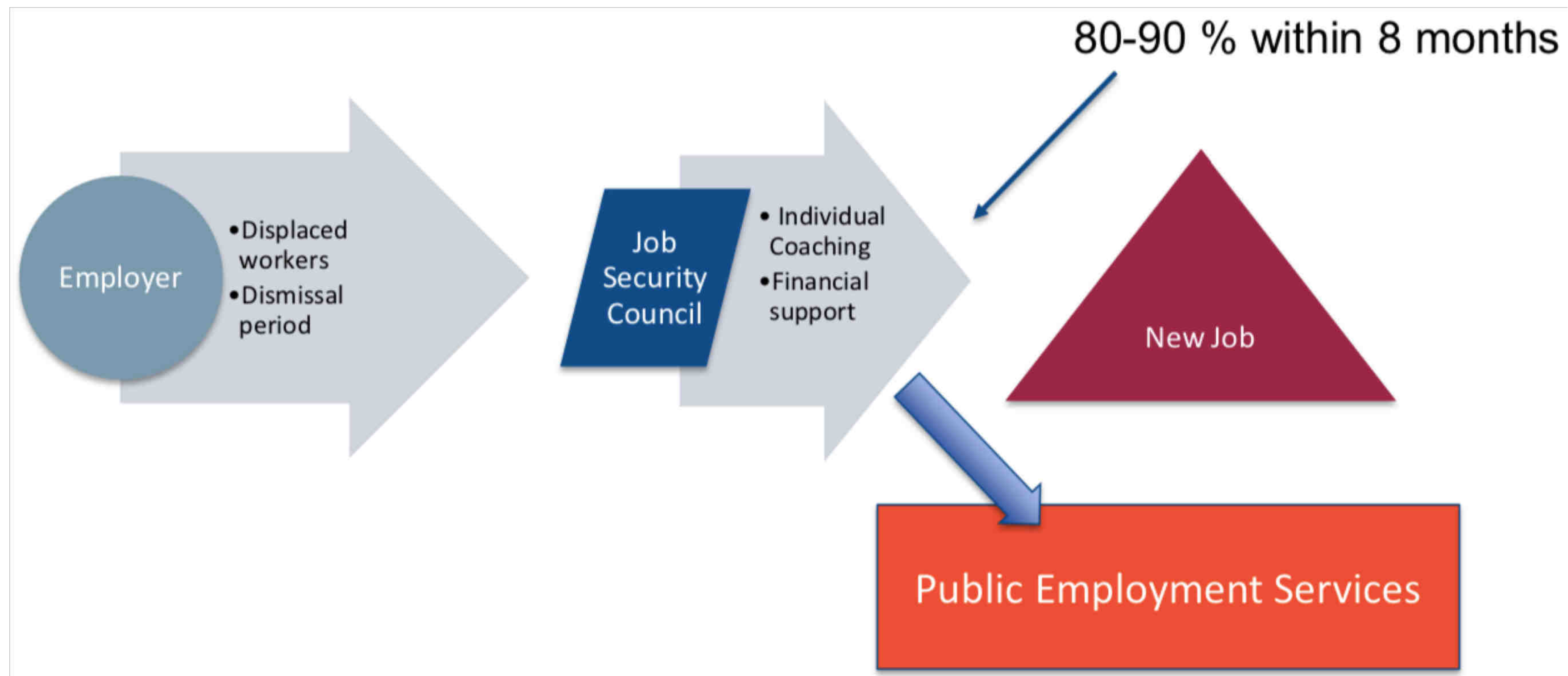
Denmark devoted 3.3% of its GDP to labour market policies in 2015.
(2.1% for active up-skilling)

Inspiration #3

Private Enterprises & NGOs Partnership



Job Security Council -
TRR, Sweden

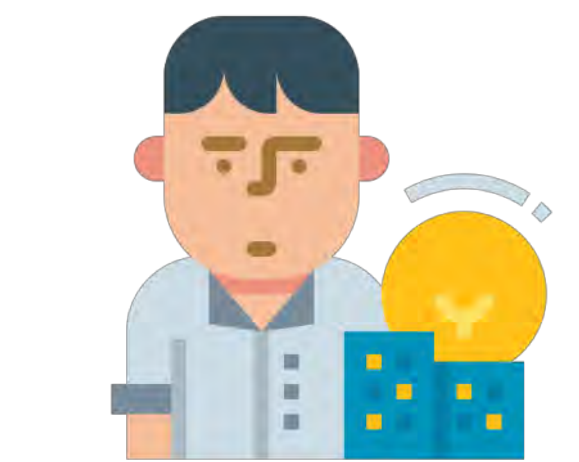


Inspiration #4

Government & Universities

Since Entrepreneurs are projected to increase their workforce by 47% when compared to large corporations, Universities and Government should invest in educating and funding Entrepreneurs

Projected increase in workforce



47%

Entrepreneurs



29%

Corporations

WORLD
ECONOMIC
FORUM

*Can
Entrepreneurship
Solve the Youth
Unemployment
crisis*

Inspiration #5

Government, Universities & MooCs

Government innovations to educate citizens using digital educational platforms

In 2014, the Saudi Arabian government used the open source platform created by edX – the non-profit platform launched by Harvard and MIT – to launch its own MOOC portal, providing online classes tailored to disadvantaged groups.



WORLD
ECONOMIC
FORUM

*5 ways
MOOCs are
making a
difference to
education*

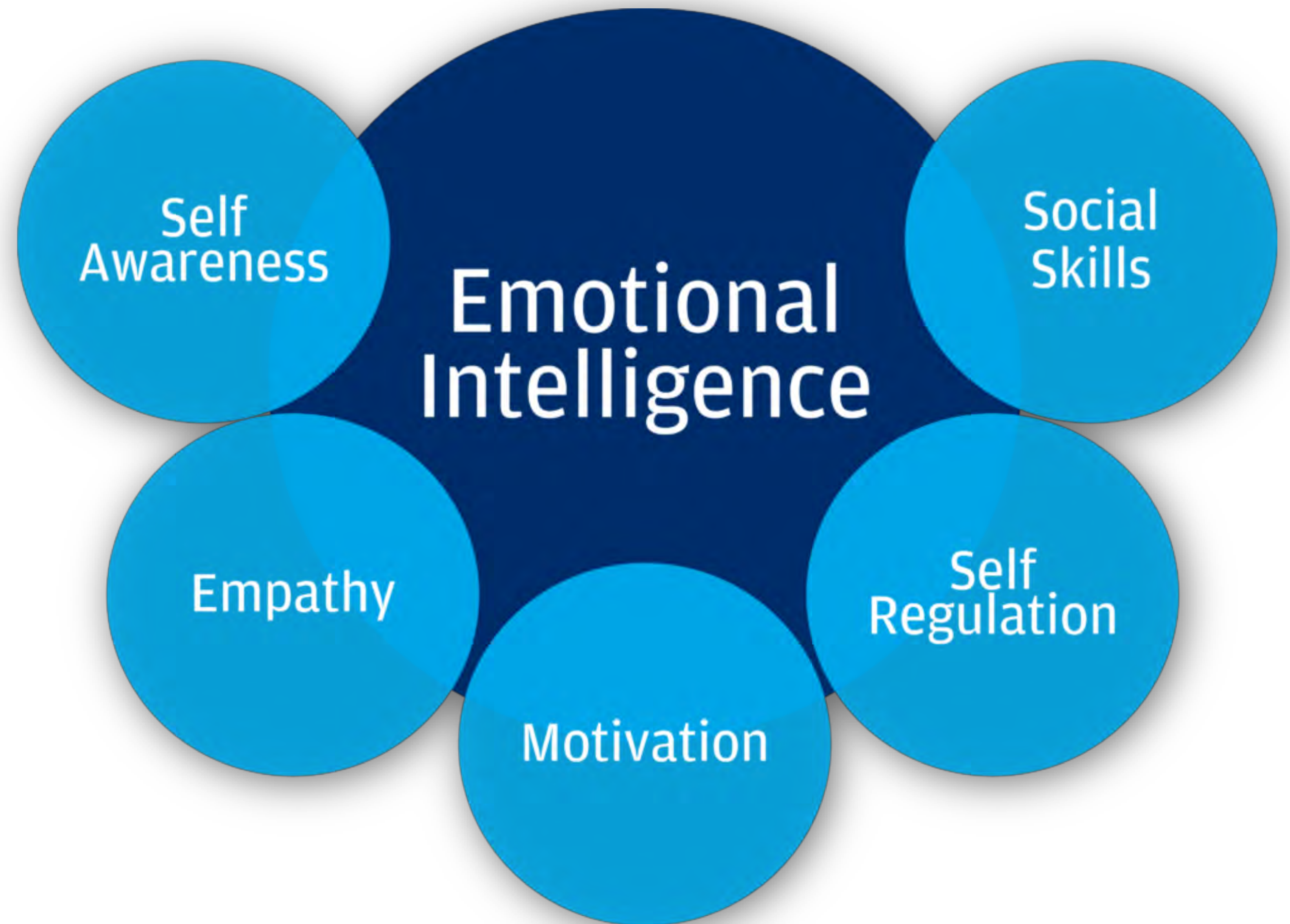
Parents play a key role in shaping up society

Education and empowerment of parents to guide their children to the right path absolutely critical to ensure that we collectively as a society solve the problem of Education and Re-skilling for the generation to come.



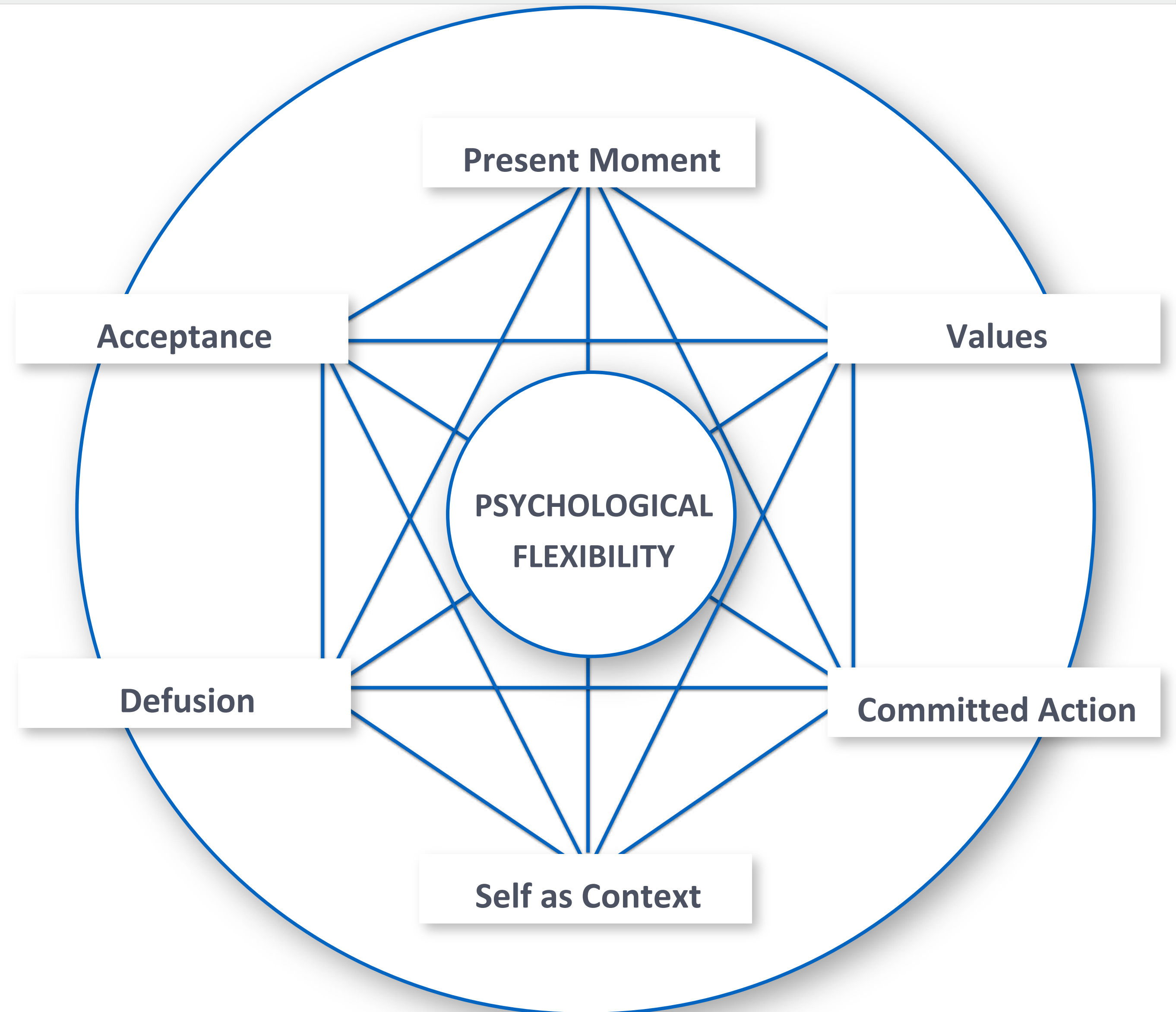
Emotional Intelligence

As people have to constantly learn new skill sets and change jobs frequently, there is a need to inculcate and to develop emotional intelligence



Psychological Flexibility

Emotional intelligence and emotional flexibility should be inculcated as qualities in children from a young age



Mental Well-being courses are on the rise

Search 5,000+ tutorials

freeCodeCamp (🔥)

Learn Forum News

24 DECEMBER 2018 / #EDUCATION

2018's Most Popular Free Online Courses

Dhawal Shah
Founder of Class Central

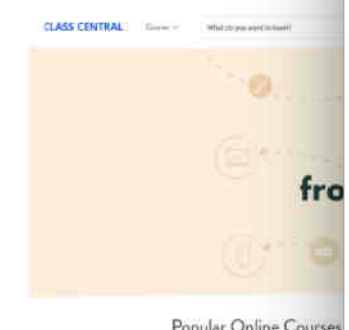


Free online courses — also known as MOOCs — have quite a year.

It's been seven years since these professors decided to offer their courses for free. In that time, universities have launched over

And in its seven years these MOOCs have reached a new milestone: 100+ million learners.

And I've been keeping track of them since they rose to prominence. I'm a review site for MOOCs. More than 100,000 courses have been reviewed on their next course.



Without further ado, here are the most popular free online university courses of 2018:

- Learning How to Learn: Powerful mental tools to help you master tough subjects from *University of California, San Diego* ★★★★★(5923)
- Machine Learning from *Stanford University* ★★★★★(338)
- The Science of Well-Being from *Yale University* ★★★★★(4)
- Introduction to Computer Science and Programming Using Python from *Massachusetts Institute of Technology* ★★★★★☆(119)
- CS50's Introduction to Computer Science from *Harvard University* ★★★★★(73)
- Intro to Computer Science from *University of Virginia* ★★★★★☆(71)
- Mindfulness for Wellbeing and Peak Performance from *Monash University* ★★★★★(82)
- Algorithms, Part I from *Princeton University* ★★★★★(58)
- English Grammar and Style from *University of Queensland* ★★★★★☆(28)
- Financial Markets from *Yale University* ★★★★★☆(26)
- Introduction to Cyber Security from *The Open University* ★★★★★☆(20)
- Introduction to Psychology from *University of Toronto* ★★★★★(19)

Thank You!



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