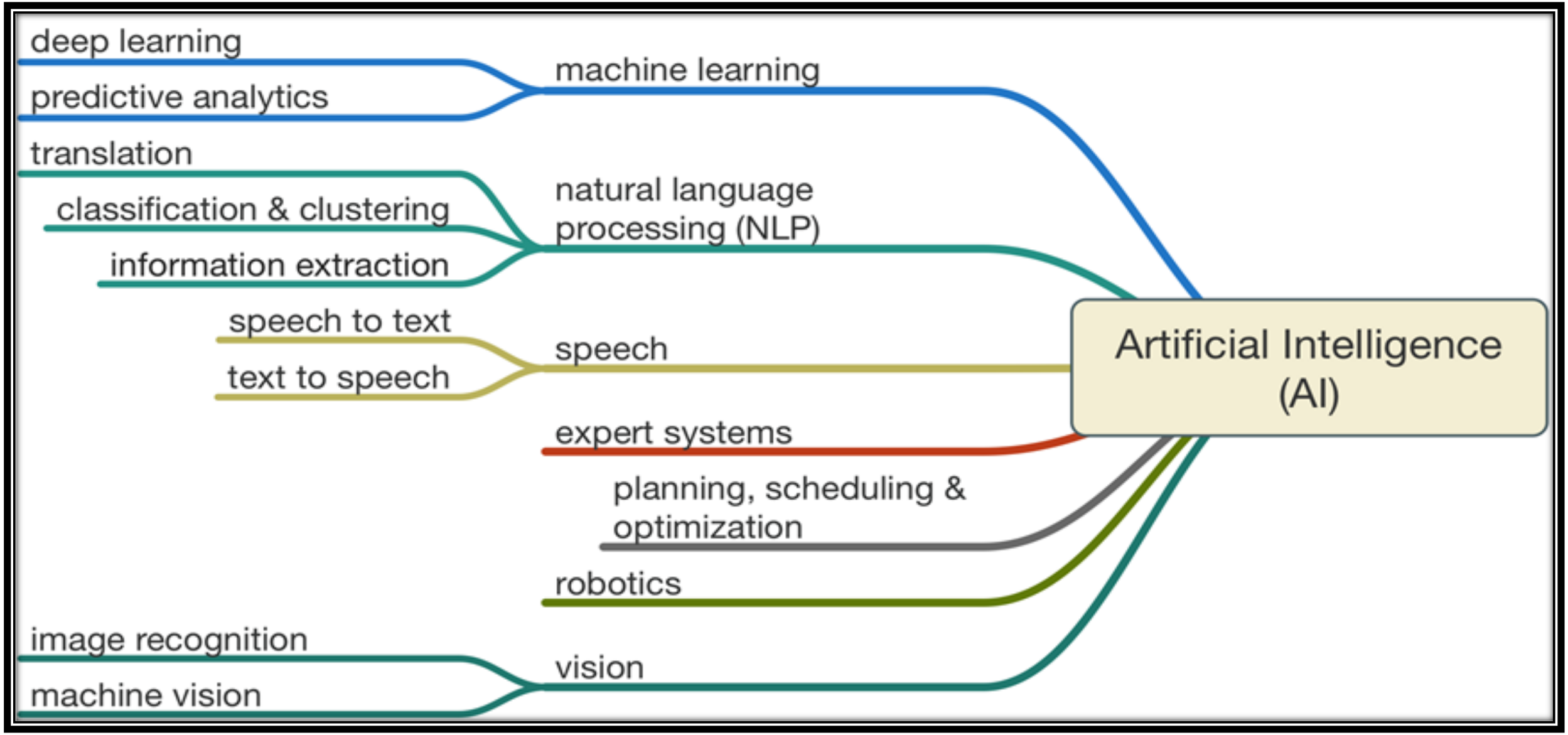
Will AI Usurp White Collar Jobs

John Chelliah©

Defining Artificial Intelligence (AI)…



https://www.legaltechnology.com/wp-content/uploads/2015/11/Artificial-Intelligence-AI-larger-graphic.png

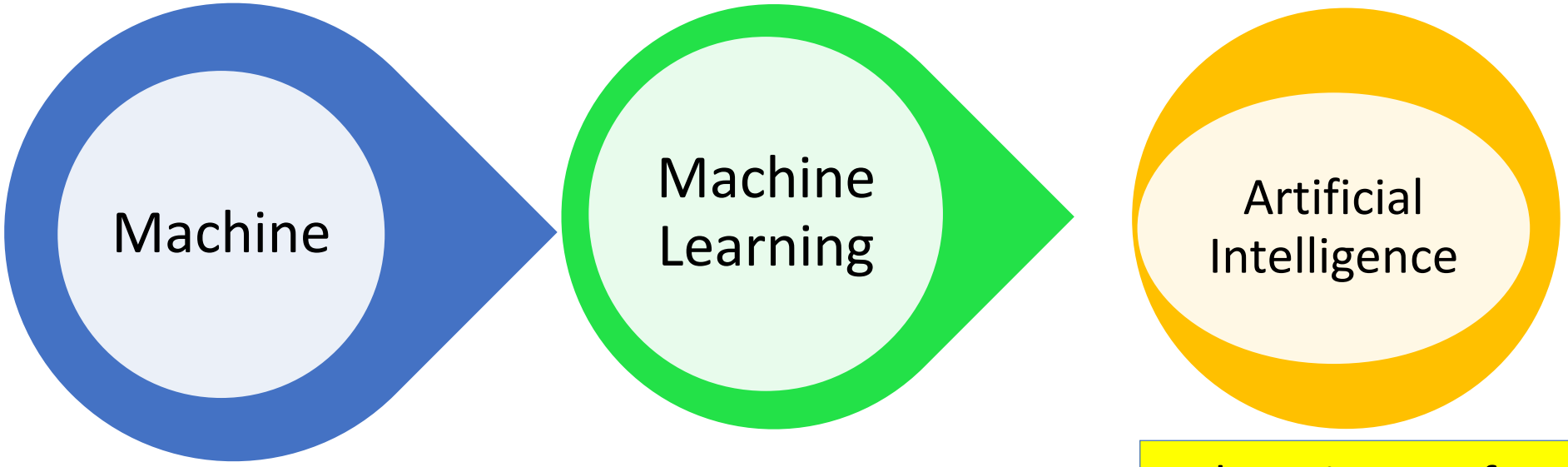
Table 1

From steam engines to unattended factories, from the ENIAC computer to big data and from neural net devices to self-driving cars and singularity.

Industrial revolution (mechanical power)	Digital revolution (computer power)	AI revolution (brain power)
Substituting, supplementing and/or amplifying routine manual tasks	Substituting, supplementing and/or amplifying standardized mental tasks	Substituting, supplementing and/or amplifying practically all mental tasks
1712 Newcomen's steam engine	1946 ENIAC Computer	1990 Neural net device reads handwritten digits
1784 Watt's double action steam engine	1950s IBM's business computers	1993 Robot Polly navigates using vision
1830 Electricity	1970s Electronic data processing (EDP)	1997 Deep Blue defeats the world chess champion
1876 Otto's internal combustion engine	1971 Time-sharing computers	1998 Robotic toy Furby learns how to speak
1890 Cars	1973 Microprocessor	2005 Robot ASIMO serves restaurant customers
1901 Electricity in homes	1977 Apple's computer	2009 Google's first self-driving car
1914 Continuous production line	1980s Computers with modems	2011 Watson computer beats Jeopardy's
1919 Electricity in one-third of homes		2016 AlphaGo defeats GO champions using
Actual use of	***Actual use in 2015***	***Widespread use of***
1950s Electrical appliances	2015 61% of Americans use smartphones	202? Computer translations
1960s Cars	2015 Amazon most valuable US retailer (surpassing Walmart)	202? Self-driving cars
1970s Long-distance telephones	2015 37% of employees in USA work from home (full-time or part-time)	202? Deep neural learning
2010 Unattended factories	2015 Collecting/Exploiting Big Data	203? Machines reach human intelligence

Makridakis, 2017

The evolution continues…



- Machine - A piece of equipment with moving parts that does work when it is given power from steam, electricity, gasoline, etc. (Merriam Webster Dictionary)

- Machine learning enables a computer system to independently learn from, and continuously adapt to, data without being explicitly programmed for that data. Machine learning is a crucial component in many artificial intelligence systems.

- the science of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence. (John McCarthy Stanford University 2007)

What is the most valued capital?

Financial capital was king – to secure land, labour, raw materials

Human Talent/Resources

AI

Industrial Revolution
1760 -1840 – Hand to machine production (e.g. textiles)
1760 -1840 – Second
Large scale manufacturing powered by steam & steam powered transport.

Information Age
Industry became more knowledge intensive;
value of financial diminished.
1941 –starting with Claude Shannon working for Bell Labs developed information theory leading to modern computing.

The new source of competitive advantage – innovation, efficiency and effectiveness – creating value for shareholders/stakeholders.
1956 - John McCarthy, a math professor at Dartmouth College, Came up with the idea that a machine could simulate every aspect of learning if described precisely to it.

https://www.cnbc.com/2017/06/17/what-is-artificial-intelligence.html

So what? We always have had machines! (Part 1)

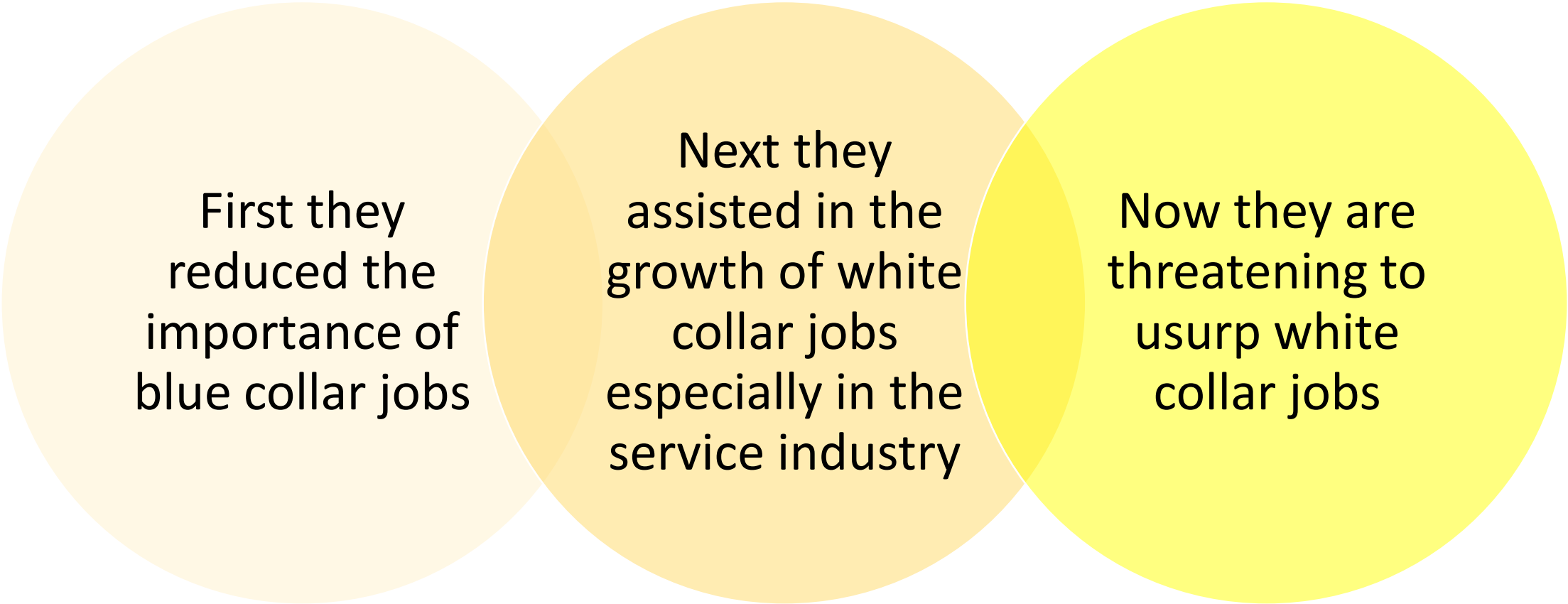
First they reduced the importance of blue collar jobs

Luddite

a member of any of the bands of English workers & craftsmen who destroyed machinery, especially in cotton and woollen mills, that they believed was threatening their jobs (1811–16).

http://www.wnyc.org/story/when-luddites-attack-destroying-machines-to-save-their-jobs/

So what? We always have had machines! (Part 2)



Lee Beardmore - Chief technology Officer of Capgemini's

In the same way computer automation **has done away with lots of blue collar** jobs over recent decades, AI and robotic process automation will have a **similar impact on white-collar roles** in areas ranging from **HR to Finance**.
(Personnel Today, 2015).

AI will have a dramatic impact on the workforce, resulting in staff having to be trained and **up-skilled to work in higher value areas.**

HR jobs most at risk

A new Softchoice study (2017) of 1000 North American office workers reveals one in four is worried their job will be replaced by technology within five years –

they believe human resources is one of the most at-risk jobs

alongside accounting, administration, sales and IT.

http://www.hrmonline.ca/hr-news/hr-technology/can-ai-really-replace-humans-in-hr-230898.aspx

The future of employment study

About **47 per cent** of current jobs in the USA are at high risk of computerization over the **next 20 years**, according to a study by researchers at Oxford University (Frey and Osborne, 2013).

Some insights into this study follow

White collar jobs likely to be replaced…

This research concludes that of 702 occupations that it assessed, the following white-collar jobs as most likely to be replaced by AI based on breakthroughs in machine learning and mobile robotics:

Human resource assistants, surveyors, judicial law clerks, cost estimators, market research analysts and marketing specialists, civil engineering technicians, electrical and electronics drafters, medical transcriptionists, technical writers, tax examiners, collectors, and revenue agents, accountants and auditors, paralegals and legal assistants, gaming dealers, cashiers, file clerks, credit authorizers, checkers, and clerks, claims adjusters, examiners, and investigators, credit analysts, loan officers, data entry keyers, and insurance underwriters.

Some examples…(1)

Law firms now rely on computers that can scan thousands of legal briefs and precedents to assist in pre-trial research. Sophisticated algorithms are gradually taking on a number of tasks performed by paralegals, contract and patent lawyers.

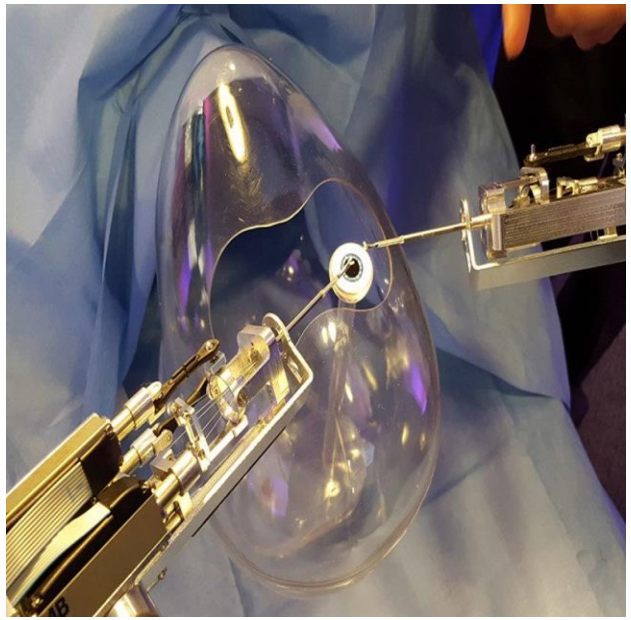
Computerized speech recognition provide advanced speech recognition using machine learning that improves conventional interactive voice response systems, realising cost savings of 60 to 80 per cent over an outsourced call centre attended to by human labor.

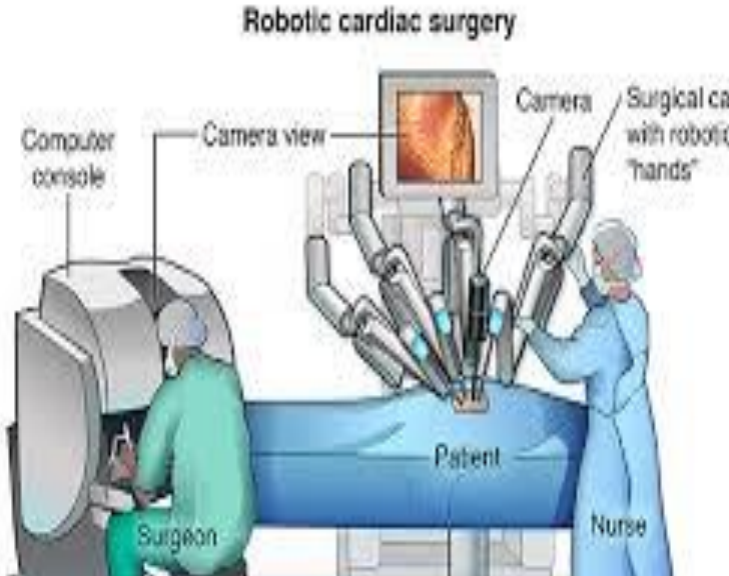
Some examples…(2)

Education is another labor-intensive sector that could soon be **served** by **AI**. The rise of massive open online courses has begun to generate large data sets detailing how students interact on forums, their diligence in completing assignments and viewing lectures, and their ultimate grades. Such information will allow for machine learning algorithms that serve **as interactive tutors**, with teaching and assessment strategies statistically calibrated to match individual student needs.

Oncologists at Memorial Sloan-Kettering Cancer Center are using IBM's Watson computer to provide chronic care and cancer treatment diagnostics. **Health care employees involved in diagnostic tasks are at risk of becoming redundant**.

Whose jobs will be affected in hospitals?





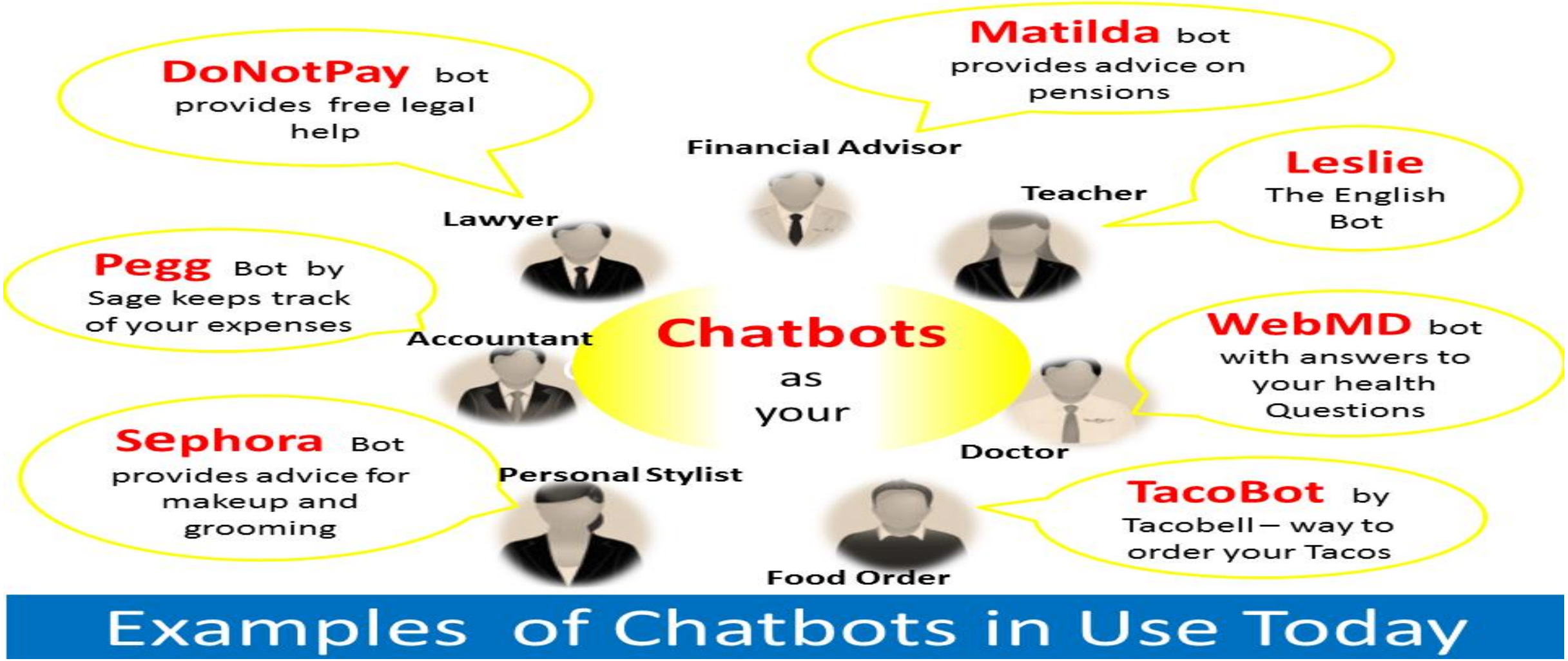
Technology is constantly challenging industry assumptions of what HR can and can't do.

Richard Lobo, executive vice-president and head, HR, Infosys. "Robotics, as a technology, is slowly making inroads into HR and one of the forerunners are chatbots.

Following automation and analytics, robots -- more specifically software bots -- are considered the future of HR, with a growing number of organisations acknowledging their vast potential.

http://www.rediff.com/business/report/will-robots-take-over-hr/20170727.htm

Chatbots in action



https://medium.com/@humansforai/exploring-chatbots-they-are-here-to-stay-916d0fca498a

Robotic Process Automation (RPA)

Bots as a form of AI don't necessarily take up physical space. Instead, they are programs, stored on a desktop or a cloud, that have the ability to learn and adapt to different situations as opposed to earlier programs that were more rigid. Because of their learning capabilities, these bots can perform tasks that were deemed impossible by earlier programmers: Robots can write stories, they can understand human speech, and they can diagnose a patient better than their own doctor can.

Naturally, these capabilities have not gone unnoticed by the business community, and there is currently talk about how these powerful machines can be integrated into the workplace. An example of software robots making their way into the business world and snagging up repetitive and predictable jobs is the use of robotic process automation (RPA).

https://hrtrendinstitute.com/2017/05/15/how-will-the-rise-of-robots-impact-hr/

Managing people in an AI future…

It is also highly likely that the trend towards a smaller payroll will continue as AI technologies will accelerate the number of tasks that can be performed by machines and robots.

The more jobs being automated however, the greater the skills that would be required to adequately perform the remaining tasks, for both the efficient operation of firms as well as for utilizing AI and other technologies in the best possible way.

This would require hiring talented employees and motivating them to get the most out of their performance in order to attain and maintain competitive advantages over other firms.

The major differentiator would therefore come from these talented individuals conceiving and implementing innovative ideas and winning strategies that would steer the organization onto a successful path.

Hiring, motivating and successfully managing talented individuals would probably be one of the most critical success factors for firms in the AI era and would also be impossible to put into an algorithm.

Infosys, HR Helpdesk, has implemented:

an interactive virtual agent through which employees can get instant resolutions to their queries on policies and processes cutting out the need to raise need meet an HR executive.

The company has created a huge knowledge repository that the interactive virtual agent uses to provide relevant responses.

Since, the launch of the virtual agent in May 2016, nearly 10,000 employees have used it.

http://www.rediff.com/business/report/will-robots-take-over-hr/20170727.htm

HR needs to move from administrative to strategic role

AI technologies can easily be adapted to assist HR administrative/clerical functions such as in recruitment.
AI-based machines being used to sift through CVs based on parameters pre-defined by recruitment personnel in order to boost productivity, save time and reduce errors.

Mundane tasks here will likewise be automated out of existence, the **HR function will continue to play a strategic role**

HR professionals need to reinvent themselves with greater focus on improving their business acumen, leading and managing change, nurturing leaders and building organisations that can respond to the needs of a multi generational workforce, while at the same time being adept at leading-edge technology like AI.

http://www.personneltoday.com/hr/artificial-intelligence-hrs-role-robot-takeover/

HR personnel need to integrate people and machines

Robots are infiltrating our everyday lives; there's no stopping them. The one question we need to ask ourselves is how do we adapt? **HR personnel need to scrutinise how this disruption** is affecting their respective industries and act accordingly. This involves **properly training and reskilling their current employees** as well as preparing them for this massive tectonic shift.

However, given the need for HR personnel **to help integrate people and machines**, HR must also **upgrade their technical expertise** and start engaging in constructive conversations with the entities working on the frontiers of this fascinating new technology.

Some interesting recent media headlines

- When your new co-worker is a robot
- Exit accountants, enter audit robots?
- Robo-Caregiving & Why You Might Delegate Your Loved Ones to a Robot.
- Teachers have 10 years before robots take over
- Can AI really replace humans in HR?
- Will Human Recruiting Survive in an AI Future?
- How hospitals can use AI to make hiring decisions
- Does AI herald the end for external recruitment agencies?
- Businesses are still failing to prepare for rise of AI
- AI May Soon Replace Even the Most Elite Consultants

Automation entering white-collar work
Video

Conclusion

Since the 1950s, huge investments in capital equipment caused sharp declines of American share of employment in manufacturing from 30 per cent to less than 10 per cent. During the same period, jobs in services soared, from less than 50 per cent of employment to almost 70 per cent.

(The Economist 2014)

Inevitable that firms would start to apply the same experimentation and reorganization to service industries – efficiency, effectiveness, innovation & competitive advantage.

HR departments could be served by AI:

help to serve the line manager as their "first port of call" HR advisor, provide them with real time HR information & recruitment that would make these line managers more effective.

HR Professionals need to focus on playing a strategic role as opposed to administrative roles and be aware of the role of AI in workplaces (AI/Robots as co-workers with humans).HR must upgrade their technical expertise & engage in constructive conversations with the entities working on the frontiers of this new technology.

Professor John Chelliah: Will AI Usurp White Collar Jobs? 2017, Human Resource Management International Digest.

- CNBC -John McCarthy, a math professor at Dartmouth College, proposed a summer research projectbased on the idea that "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it."https://www.cnbc.com/2017/06/17/what-is-artificial-intelligence.html
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- http://smallbusiness.co.uk/businesses-still-failing-prepare-rise-ai-2540562/
- https://hbr.org/2017/07/ai-may-soon-replace-even-the-most-elite-consultants
- https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/where-machines-could-replace-humans-and-where-they-cant-yet
- https://www.beckershospitalreview.com/artificial-intelligence/how-hospitals-can-use-ai-to-make-hiring-decisions.html
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