

# The Role of AI in Business

Transformation

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### Many people consider Artificial Intelligence (AI) to be a threat to jobs – something to replace humans. Automation has always made

manual processes more efficient but there is a human in the equation

Hybrid applications where a human handles complex tasks and a bot responds to clearly defined tasks and requests seems to be the more cost effective approach with today’s state of technology. As the system gains more experience by “observing” the human in complex conditions, increasingly difficult processes can be offloaded. This will be transformational in many industries.

#### TRAINING BOTS

Training data is always an important factor when it comes to AI systems. The type of training varies with the target problem being addressed. If the problem is anomaly detection the al- gorithm can just look at the data. But even then, the developer must have some idea of what

### someplace. There may be fewer people required for a given task or

process but automation tools free people up for more productive tasks. The problem with the so called “jobless recovery” in the US is that while efficiency has increased, more can be done with fewer workers. This trend will accelerate as AI and robots become more capable.

AI Powered Transformation: The Upside

In the short term, robots will not be able to handle complex business tasks that have unpre-

dictable elements, require creative problem solving or entail judgment based on significant

type of anomaly the AI is looking for. Training for cogni- tive applications – the ones that people will interact with

– is different than AI that looks for patterns in data or tries to identify images, move through complex environments or solve other problems that cannot be explicitly pro- grammed. A chat bot helping a banking customer needs the correct answer. It cannot learn from making mistakes or decide over time which content is most appropriate for the banking customer. There would be a lot of unhappy customers and regulators if that were the case.

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real world experience. Knowledge can be codified but use cases still need to be considered for most bot approaches. It is costly to account for edge use cases – they need to be considered through explicit examples or through large data sets for machine learning.

In fact, the training for large systems like Watson is the costliest aspect of deployment. The head of IBM marketing suggested when referring to cognitive computing and AI systems that, “these are not application development projects. These are information projects. That means

you need to define the problem you are trying to solve, find the information to solve that problem, get that information into the system, then develop the tool.” When speaking with vendors of chat bots or support applications, they typically expect that the client has data and knowledge to support the target application or process. In many cases, that is the fun- damental problem – that the knowledge is not codified or represented in a format that is easily consumable by the system. Here’s were transformation teams can help: training con- tent must be developed. The interesting insight is that good training content for bots is also good training content for humans. Therefore, making the content consumable for humans is a step toward training content for cognitive applications.

#### AI, COGNITIVE COMPUTING & PUBLIC SECTOR/ ECONOMY

AI/Machine Learning is creeping into our lives impacting the economy, our work life, consum- er products and services and public safety and government services. The impact will be felt in changing job roles and requirements, shifting skill sets and further continued economic disruption as more sectors are automated.

#### BETTER HEALTHCARE, IMPROVED EDUCATION, HIGH QUALITY SERVICES

The upside to AI will be in a variety of areas. In healthcare, machine intelligence will allow for faster and more efficient processing of research papers and clinical trial results with tools such as IBM’s Watson ingesting more knowledge at a faster pace. This will lead to advances in areas such as personalized medicine, where an individual’s genetic makeup will be factored into treatments. Robotic surgery will continue to make significant advances and artificial limbs will enable the disabled to have new levels of freedom and capability.

AI also promises a safer world through reduction of accidents caused by human error as we shift to self-driving cars, improved security through threat iden- tification and mitigation, more secure finances through “personal financial security guards” and better preparation for natural occurrences like extreme weather through more accurate forecasting.

Human welfare will be impacted in multiple areas as AI is embraced in behavioral health through cognitive therapy agents, personal health coaches, and psychiatric and social case management. Coaching, teaching, and training offer exciting possibilities as skill and knowl- edge development approaches are customized to leverage personal learning styles, specific knowledge gaps, and optimized emotional interaction and engagement.

Though improved machine approaches will reduce dependency on trained lawyers, access to legal research and advice will be more democratized through legal services agents.

AI approaches will improve the read of the overall pulse of society allowing for rapid re- sponses by the public and private sector to citizen and customer needs – bringing service to transformational levels of performance.

AI Powered Transformation: The Downside to AI

An example of AI’s promise is [Amelia](http://www.ipsoft.com/amelia/), IPsoft’s cognitive agent who can take on a variety of service desk roles, transforming the customer experience. But

the benefits to society from AI will also have significant costs – the primary one being that of job displacement. Forrester estimates that by 2025,

12-18% of jobs will be lost and those displaced will not have the skills needed in the advanced digital economy.

As jobs are automated and workers are replaced, the remaining jobs will likely experience wage suppression. This trend will further the economic divide and potentially lead to a less stable society.

Since computer algorithms are behind much of what is called artificial intelligence, it will be important to understand how those algorithms function because they are based on assump- tions and judgments made by their programmers. Therefore, there can be hidden biases. The same problem can be attacked by algorithms with different core assumptions and lead to dif- ferent outcomes. They are not objective and it will be increasingly difficult to identify biases and the impact of assumptions as more AI’s work together or process inputs from other AI’s. This increase in complexity will make it more difficult to tease out or understand the impact of interactions and hidden biases.

One implication for federal and state government is that they will need to use unbiased inter- mediaries and objective AI benchmarking approaches to understand AI capabilities, evaluate approaches and develop policies related to AI.

On the economic front, there will be threats to the current structure and opportunities to improve economic outcomes. As simpler processes are automated and complex repetitive service requests are taken over by bots, jobs will inevitably be lost. At the same time, the same tools that will take over repetitive tasks will be used to advance skills and train workers to take on more complex tasks. Customized skill development programs will be able to adapt to an individuals’ learning approach and fill in missing knowledge as they build advanced knowledge and capabilities.

Creativity and problem solving will remain within the realm of human capabilities for the near term. The key will be to give people the means to pursue passions with more free time that will become available.

Trade jobs will remain in high demand since these skills will resist automation for the fore- seeable future. One of the challenges regarding displacement lies in the wide gap between what the education system provides and the emerging demands of industry. Though tradi- tional library science is in decline, library science integrated with knowledge engineering will be in very high demand. Universities are ill-equipped to adapt to the rapidly changing skill demands of industry. This means that industry will need to develop their own knowledge engineers and build knowledge engineering approaches optimized for various disciplines and domains.

Due to the nature and scale of disruption, the AI Revolution will be messy and painful – even more so than the industrial revolution.

#### IMPLICATIONS FOR POLICY DEVELOPMENT

Government policy needs to be developed pro-actively in several areas. When investigating or adopting tools and technologies, it will be important to have a mechanism for bench- marking functionality and detecting biases. Standard data sets and defined use cases can be developed for benchmarking purposes. Algorithms will require some level of auditing to understand the impact on a process. Many such algorithms are already in use – such as pre- dictive approaches used in criminal justice. As other applications become more widespread, a process for understanding the impact of outcomes will need to be in place.

On the regulatory side, state government will want to encourage innovation while monitoring public safety. The development of driverless cars is one example, adoption of tools to improve efficiencies within state government need to be encouraged, not limited through regulation.

Data, content and knowledge processes need to be properly managed to develop AI capabil- ities. This means that the government needs to get its own data house in order. Along these lines, state government needs to set an example around innovation by retraining workers to prepare for new jobs (perhaps in knowledge engineering and training robots). The entire system for delivering state services can be transformed through digital innovation and made smarter, faster, more effective and more efficient. Replacing routine, repetitive jobs with ma- chines (e.g., tolls) is just the tip of the iceberg. AI is replacing customer services, coaching, training, behavioral health case management and other jobs. Workers need to learn to part- ner with AI agents and bots.

The acceleration of job transformation and worker skill development needs to be increased with attention to and understanding of career paths during disruption. Rather than training people to execute a task, transformation efforts must include training how to think and solve problems.

For more information on government’s role in AI, read this blog: [https://www.whitehouse.gov/blog/2016/10/12/administrations-report-future-artificial-intellig](https://www.whitehouse.gov/blog/2016/10/12/administrations-report-future-artificial-intelligence)ence

For a case study on how AI is transforming customer interaction centers, download: [http://www.earley.com/knowledge/case-studies/allstate%E2%80%99s-intelligent-agent-reduc-](http://www.earley.com/knowledge/case-studies/allstate%E2%80%99s-intelligent-agent-reduces-call-center-traffic-and-provides-help) [es-call-center-traffic-and-provides-help](http://www.earley.com/knowledge/case-studies/allstate%E2%80%99s-intelligent-agent-reduces-call-center-traffic-and-provides-help)

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