HOTdocs

# ARTIFICIAL INTELLIGENCE AND DOCUMENT AUTOMATION

# PURPOSE OF THIS EBOOK

In recent times, attitudes towards AI systems have evolved from being associated with science fiction on the silver screen, to being viewed as the next big thing that will revolutionise how businesses operate.

A number of companies have made headlines with advances in AI for various reasons, however, the driving force behind such innovation is usually to generate publicity. These are usually inspired by the self-driving cars or loveable robots seen in films. Mark Zuckerberg has even created an Iron Man-style Jarvis AI as his very own personal virtual butler. But AI is no longer a gimmick companies invest in to appear ahead of the curve, the technology is very real and has tangible applications.

With the rise of automation came the ability to systematically replicate and execute basic recurring human tasks. AI, on the other hand, understands natural commands such as speech, learns to imitate human tasks and executes its own responses.

# THE RISE OF AI

A combination of elements including massive distributed computing power, the decreasing cost of data storage and the rise of open-source frameworks is helping to accelerate the adoption of AI. Recent advances in the technology have encouraged a number of companies to turn to AI,  with a major influencer being machines' increasing ability to communicate with humans naturally.

As with the many reasons to use the technology that came before it, the driving factors behind implementing AI systems, include increasing efficiency, reducing costs and improving customer experience - all while decreasing reliance on human resources. This is evidenced in a report by Accenture, which shows AI could double economic growth rates and boost labour productivity by up to 40% by 2035.

Financial services businesses, particularly global banks, manage high volumes of data to comply with security, safety and regulation. To achieve this efficiently, organisations streamline business functions by making processes as uniform and as systematic as possible. In a world where technology removes the need for humans to perform recurring tasks, such processes are prime candidates for Robotic Process Automation (RPA).

# HOW DOES AI WORK?

AI is primarily made up of a group of three related technologies and continual advancements in these technologies are allowing AI to develop at an accelerated rate. These technologies are:

- Natural Language Processing (NLP)
  NLP is committed to improving interactions between computers and natural languages. Previous iterations of this technology simply scanned data for keywords and outcomes were determined based on the action associated with the keyword.

  NLP allows AI to break down and understand language by recognising the subtleties, idiosyncrasies and ambiguities inherent in common human language.

- Machine learning
  Machine learning includes computer programs that can "learn" when exposed to new data by discovering and displaying the patterns in the data. This allows applications to become more accurate in predicting outcomes, without being explicitly programmed.

- Expert systems
  This includes software programs that provide advice that helps machines sense, comprehend and act in ways similar to the human brain.

# HOW WILL AI AFFECT BUSINESSES?

Many kinds of AI have existed for some time. They come in the form of Recommendation Engines within websites like Amazon, that use purchase data to suggest similar products, to technology that can land planes or analyze X-Rays in hospitals.

In business, AI could eventually carry out entire reporting and disclosure processes in real time. This would enable organisations to identify issues and make strategy adjustments much sooner, increasing accuracy and eliminating the need for emergency action at the end of the quarter.

Over the next few years, AI will revolutionise the central functions of many industries and will develop the capabilities to perform strategic functions, such as:

- Customer service
- Personalisation
- Earnings reports
- Financial analysis
- Asset allocation
- Forecasting

# STRUCTURED VS UN-STRUCTURED DATA

With AI, computing is now departing from command-based, on-screen interactions to natural human language. This represents a tectonic shift, as previous systems followed a rigid, decision tree approach and required structured data, rules and logic to perform tasks.

An example of this would be uploading a spreadsheet with defined fields and programming an automation system to communicate with a customer based on the information in those fields. AI or "Cognitive" systems, on the other hand, are able to perform tasks based on commands from unstructured data (which is 80% of data today). This allows AI to make more complex and evidence-based decisions from commands using natural human language, such as speech.

AI achieves this by observing and interpreting data before formulating a course of action, as it is able to understand the peripheral data points around the input associated with available information, such as:

- Content
- Context
- Intent
- Culture

# THINKING LIKE A HUMAN

AI solves problems the way people do and mimics the same cognitive processes that the human brain goes through experiences. When a human endeavours to understand a problem, they go through the four stages below:

- Observe
  The machine, like a human, digests the available content supplied and looks beyond the surface to understand the information that is presented. Similar to how the human brain does not require data to be in a structured format, the machine can understand unstructured data, such as natural human language.

- Interpret & Evaluate
  AI simplifies complex thinking and translates the unstructured data into usable data before generating a hypothesis. The machine does this by finding relationships between terms and concepts in the data.

- Decide
  At this point, the machine now understands the command or the customer at a deeper level. This allows the machine to evaluate the pros and cons and reach a solution.

- Learn
  The machine learns from every interaction and will evolve to handle the situation more efficiently should a similar query recur.

# APPLICATIONS IN FINANCE

Retail banking, in particular, is taking advantage of the benefits of AI in the form of Chat Bots (computer programs that conduct conversations with customers via auditory or textual methods) or AI Assistants.

**Applications include:**

- Virtual Agents
  A virtual, computer-generated character which serves as an online customer service agent. Virtual agents often use anthropomorphic features, such as a human male or female voice, and have the ability to lead an intelligent conversation with customers, respond to questions and advise on a range of subjects. RBS, Swedbank and Bank of America have all recently launched their own virtual agents.

- Identity Analytics
  This includes solutions that combine big data and advanced analytics to help manage user access and certification. This technology can analyse and understand large amounts of data much faster than a human being.

- Recommendation Systems
  Recommendation systems are based on algorithms that help to match users and providers of goods and services. These systems have already transformed the ways in which companies look at the overall customer experience.

# APPLICATIONS IN LAW

**Research**
Machines have been performing tasks in law firms and legal departments, such as highlighting keywords in legal documents, for many years now. According to the Australian Financial Review, 10 major law firms have recently implemented Ross, a robotic attorney powered in part by IBM's Watson.

AI can help keep attorneys much more informed about the law and provide quick access to information and solutions that would have previously required knowledge gained through years of experience.

**Predict case outcomes**
Legal firm, Cameron Huff states there is a high demand for better outcome prediction technology. This technology uses AI to identify and analyse variables within a body of evidence and  statistically predict the direction a case will go.

**Robo-Lawyers**
Chat Bots providing legal advice have already been created and exist for customers to use. An example of this is DoNotPay, a free website online parking ticket dispute chat bot that asks a series of questions about the user's case and supplies advice to help fight a fine.

# APPLICATIONS IN LAW

**Sentencing**
According to The Atlantic, many judges use software to help set bail and decide whether to grant parole. The software uses a survey to obtain data with more than 100 questions that covers information, such as a defendant's gender, age, criminal history, and personal relationships, to predict whether the defendant is a flight risk or likely to re-offend.

**Contract Analysis**
Systems such as Kira, allow legal firms to automatically, summarise, extract and uncover insights within documents quickly. HotDocs recently integrated with Kira on a project that enabled one of our clients to generate more than 6,000 documents per month. Kira automatically extracted claims information from an internally developed case management system, and then pushed the key information to HotDocs, which then generated the documents.

HotDocs also integrated with Leverton, a system that develops and applies disruptive deep learning technologies to extract, structure and manage data from corporate documents.

# APPLICATIONS IN TECHNOLOGY

AI can help businesses dramatically improve operational efficiency, enhance the quality of customer service and gain a much clearer understanding of business metrics.

HotDocs has been the market leader in document automation for more than 20 years and throughout this time we have continually adapted to integrate with many technologies.

Contact us today to learn more about HotDocs and the ways it can integrate with your AI systems.

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