WILL ROBOTS TAKE YOUR JOB?

THE PREREQUISITES FOR ARTIFICIAL INTELLIGENCE

With the rise of automation, careers that we take for granted today may well become obsolete in the future. But is all the scaremongering in the media merely hype? Is it really that easy to replace the human brain?

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FOR MANY INFORMATION WORKERS, THE media hype surrounding their replacement by artificial intelligence (AI) is disconcerting. However, if you consider what is necessary to take the immense power of the human brain out of the equation, you start to realise just how much information we process, how many assumptions we make and how much risk is taken on by businesses relying on the human computer.

Many businesses operate with a lot of uncertainty in decision making. The human computer processes that ambiguity, can fill in the blanks, make decisions and recommendations based on directly relevant knowledge and experiences already held. It can then apply the lessons learned to current situations; it is also wired to take some risk.

If you ask an artificial intelligence expert what the goal of AI is, many of them will tell you it is not to replicate the human brain. They say the human brain makes mistakes, that humans make errors of logic, and sometimes we go with our gut, instead of basing our decisions on the facts presented to us.

Is artificial intelligence going to displace human intelligence, or is it simply going to be another tool to help humans complete a broader analysis of the data they are presented, leading to better business decisions?

Whichever way it turns out, the one thing that needs to be recognised about any information processing system comes back to the adage, "garbage in, garbage out".

Let's take the example of a global liquid pipeline. The liquid is produced in one country, transported by pipeline to port-based storage tanks where it is loaded onto container ships and transported to distant lands. The ships drop off various volumes of the liquid at different ports to satisfy the orders placed by international customers. Liquid may be then transported by either pipeline or truck to its final destination, where it is consumed. Logistics require careful coordination to ensure production volumes can be maintained; tanks don't overflow, there is sufficient product within the tanks to ship when the ship arrives in port, that the customer tanks never run dry, and that customers are continuously satisfied.

The logistics specialists who perform all this coordination will use a variety of tools to help them manage the information they need, and then they will combine that with their own personal experience to ensure the best possible outcomes to the business. The types of subjective information that affects this pipeline might include political influences, competition, weather events and even the tides and the draught of the ships carrying the product. Logistics companies often deploy decision support systems to run multiple scenarios as quickly as possible to determine the most cost-effective routing of a ship. But the final routing is often determined by a human who takes into consideration inputs that are (currently) not possible to include in decision support models.

This example highlights a key issue around data quality - "fitness for purpose". Many characteristics can be ascribed to data: accurate, complete, reliable, relevant, timely, verifiable, accessible and secure being the most common. In any given business situation, the quality of the data is determined by how it is used.

Using the shipping analogy, tide and draught are well known and predicted with certainty. Arrival and departure times are planned for but can be changed for any number of reasons during a trip. The weather is mostly predictable close to an event but can change completely while cargo is en route. If all of these factors are used in a decision support system, then timeliness, accuracy and reliability of weather information become significantly more important. To ensure that decisions are made using the best information available at the time, logistics companies procure the most advanced meteorological services available. It just wouldn't work glancing out of the office window and predicting the weather yourself. To prevent "rubbish in", it seems probable that a logistics company moving ships around the world will pay for the most timely and accurate weather information.

When looking at the potential for automation, apply the same principles to your own business and try to identify which data inputs currently operate at a quality level that you're happy with, and which don't. Is the data made available to decision-makers quickly enough? Is it timely? Is your data consistent? Do your staff trust the data they are presented with? Do you often hear disparaging comments regarding the reliability of information presented in your reports? Do your staff make decisions based on poor quality information?

If any of those questions above seem familiar, it is unlikely that the implementation of any form of AI project will be successful until they are resolved.

Often the first step in resolving these issues is to create enterprise data models. An enterprise data model is an integrated view of the data produced and consumed across the company. The model provides a strategic view of data and is independent of the existing systems. It represents what is important to the organisation and the rules that govern them. An enterprise data model is essential for data quality because it exposes discrepancies in the data and identifies quality metrics that are important to the organisation.

When you're considering a project, it pays to recognise the amount of data that an AI solution is able to consume and that data quality is a significant project consideration. You can choose to remedy your data quality concerns during your AI implementation project, or you can start now, and begin working on data quality initiatives in preparation for the day that an opportunity to leverage AI presents itself.

In the meantime, perhaps the human brain's ability to process data that is not perfect and make good decisions is still one of our biggest strengths.