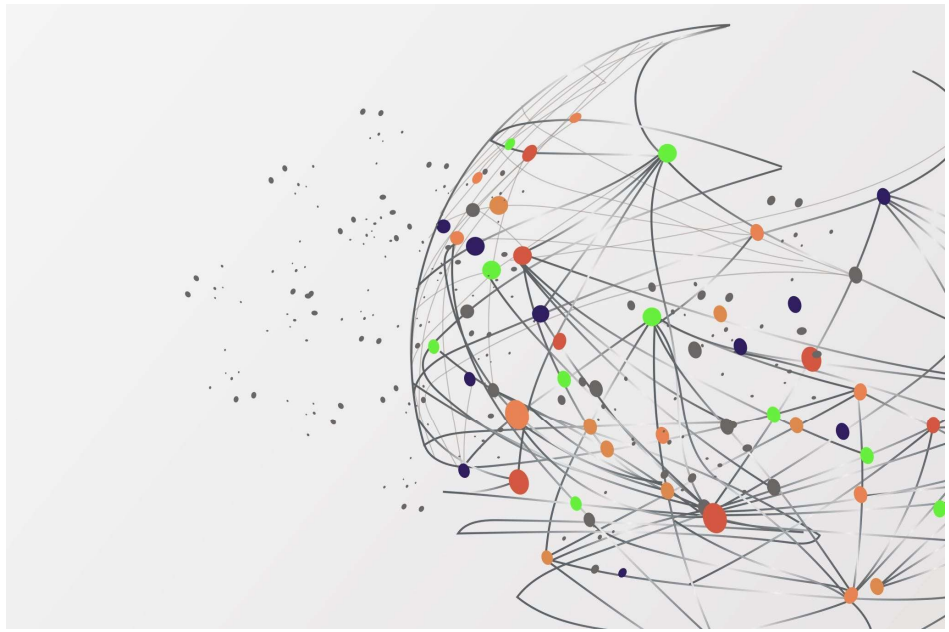
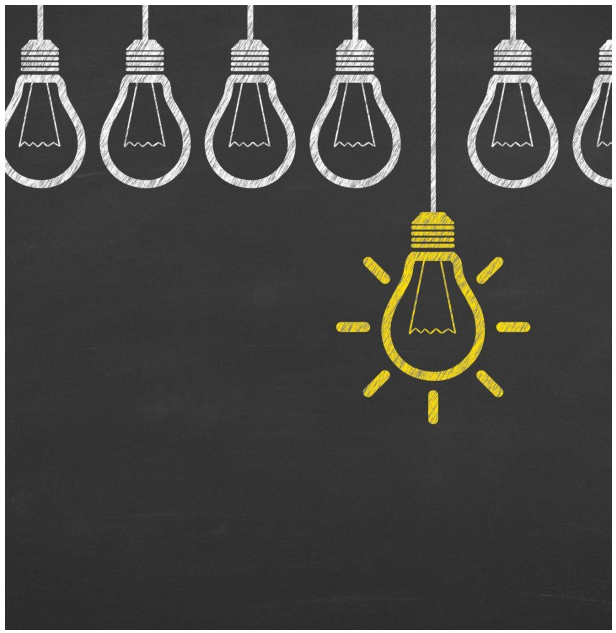


Topic 3: The Impacts of Automation

This week's focus is on the following core learning objectives



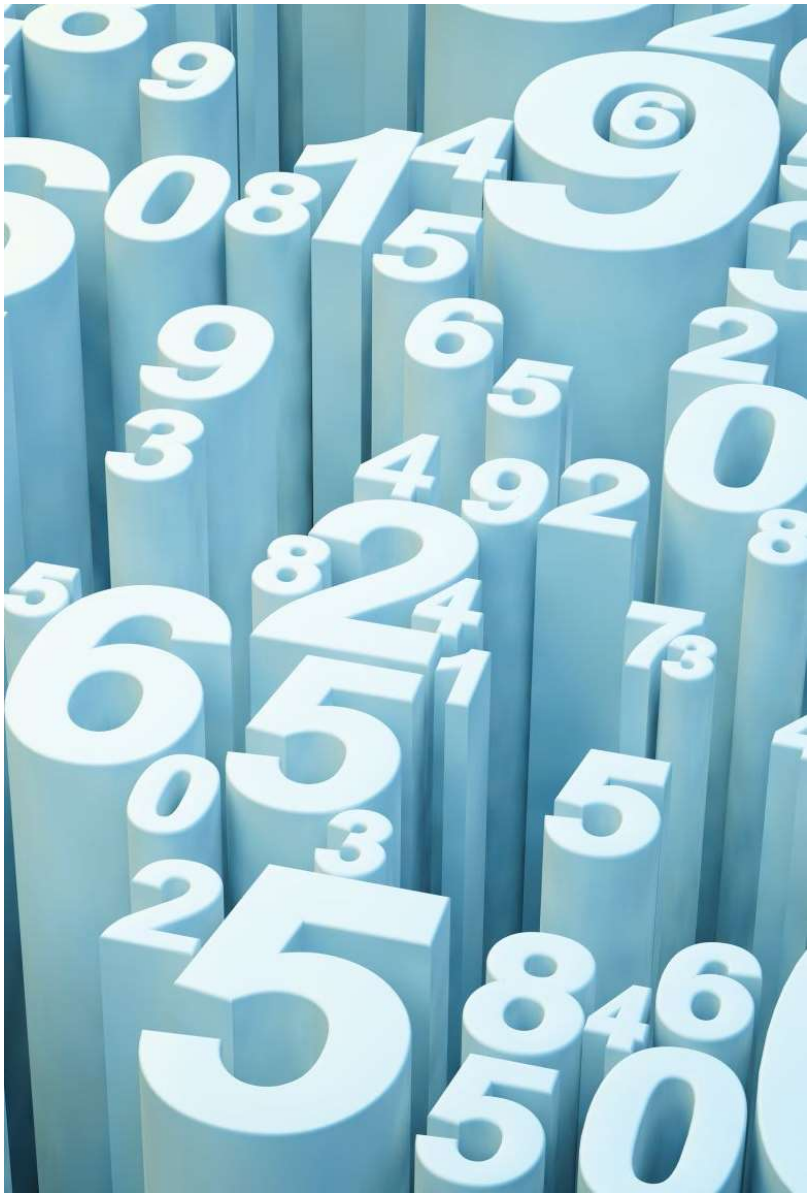
Recognising basic principles of automation

Understanding the advantages and disadvantages of automation

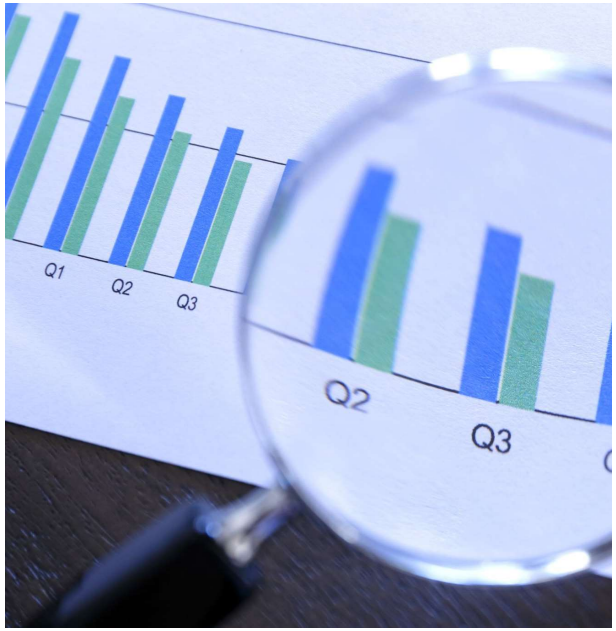
Understanding the importance of fairness, equity, and discrimination in automated decision making

This week's topic is relevant to Assignment 1, and Assignment 2

3.1 Introduction



Applications of AI-Based Systems



Banking: Automating financial transactions and fraud detection

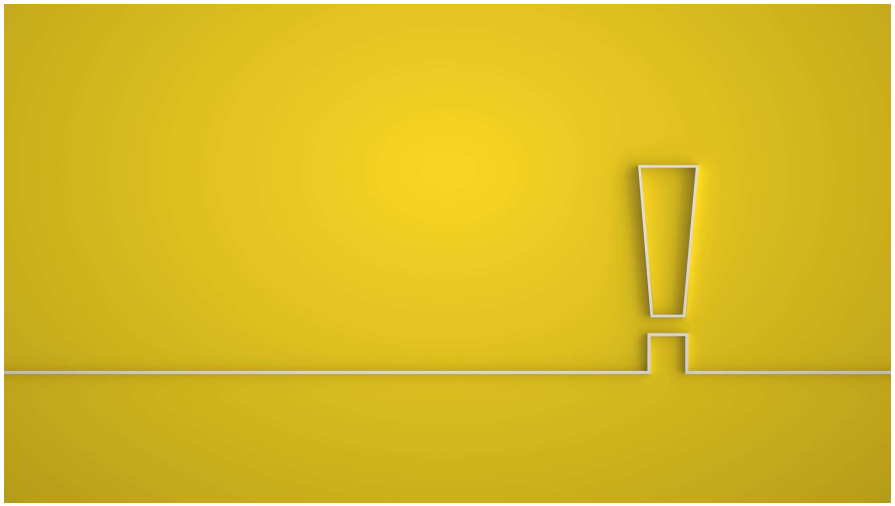
HR: Screening job applicants and managing employee databases

Legal Services: Analyzing legal documents and predicting case outcomes

Retail: Providing individualized online purchasing recommendations

Health and Wellness: Monitoring physical health through wearable technology

Smart Homes: Controlling lighting, temperature, entertainment systems, and appliances



Challenges of AI-Based Systems

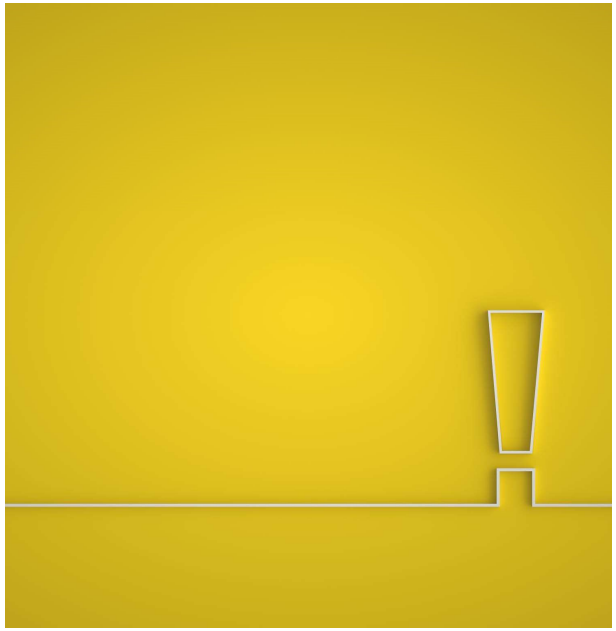
Algorithm Biases and Discrimination: Predictive models in justice, search engines, and healthcare have shown biases

Privacy Concerns: Invasions of privacy through excessive data collection and analysis

Unexplainable Outcomes: AI decisions without clear rationale, complicating trust and understanding

Lack of Accountability: Difficulty in holding AI systems or their creators responsible for errors and harms

Ethical Implications and Case Studies



Case Study 1: Netherlands' Child Benefit Scandal - 40,000 families suffered due to flawed AI in tax fraud detection

Case Study 2: Australia's Robodebt Scandal – Hundreds of thousands victims

Ethical Considerations: The need for AI systems to align with moral standards of justice and fairness, avoiding harm

Solutions: Implementing transparent, accountable AI practices and addressing biases to prevent discrimination and ensure fairness

Activity 1: Read

In Australia, we had a similar situation with Centrelink's so called Robodebt scheme

The Robodebt scheme failed tests of lawfulness, impartiality, integrity and trust

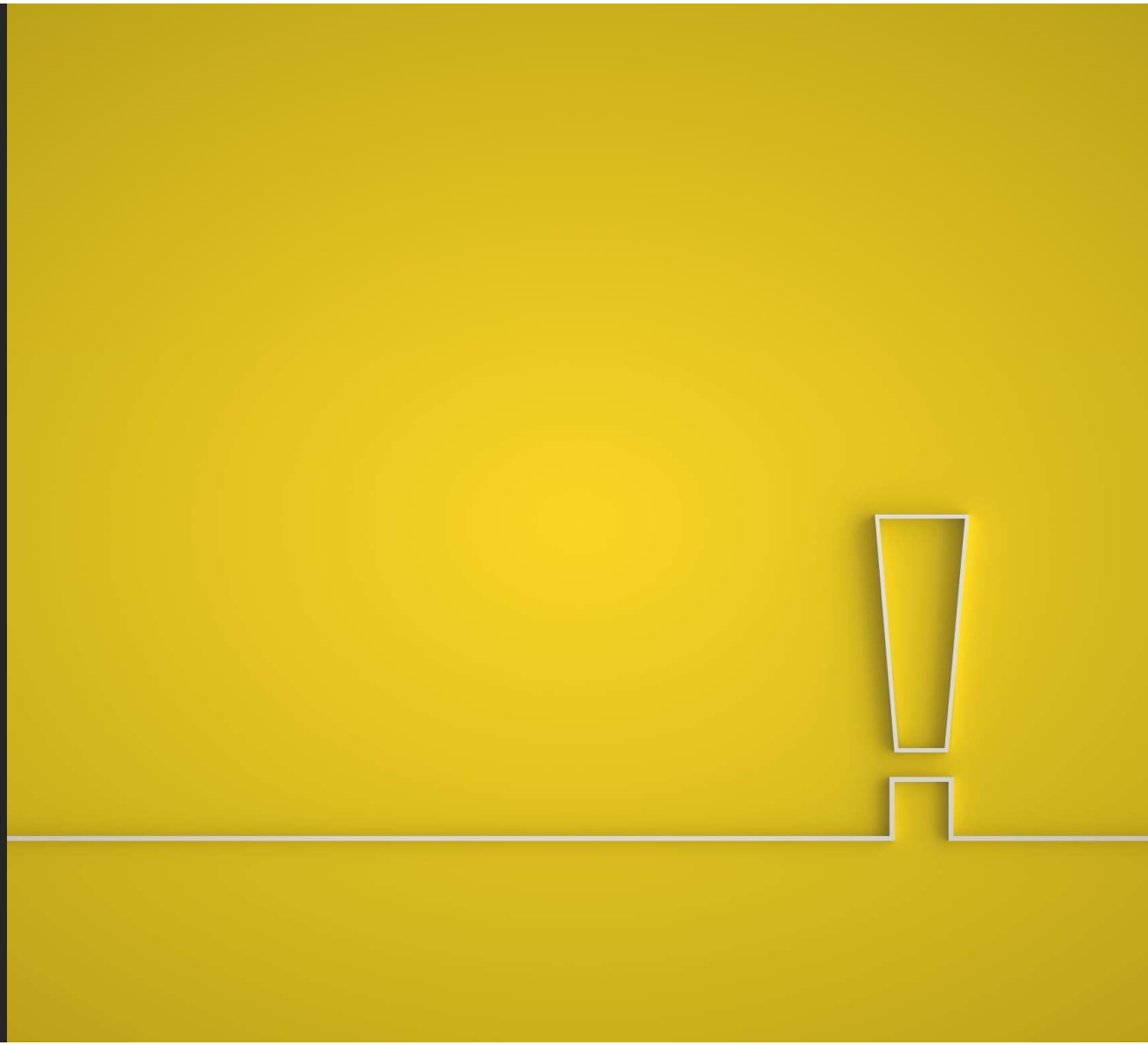
What lessons we can learn from what happened?

Activity 2: Consider

Google and Alexa are other famous AI based systems that's used around the world

We now seem to rely on machines to make judgements for us, which causes us to progressively replace human judgement with data-driven calculations

Do you think that this runs the risk of fundamentally, and possibly irreversibly, altering our morality?



3.2. What is Automation?

In a digital world dominated by computers, automation is increasingly common

Automation refers to technology applications that minimize human input, replacing manual labour with machines

One key advantage of automation is the elimination of the need for human intervention

For instance, consider automating your sales funnel: employing a chatbot enables automated monitoring of phone conversations and website updates, eliminating the need for manual site monitoring

Watch

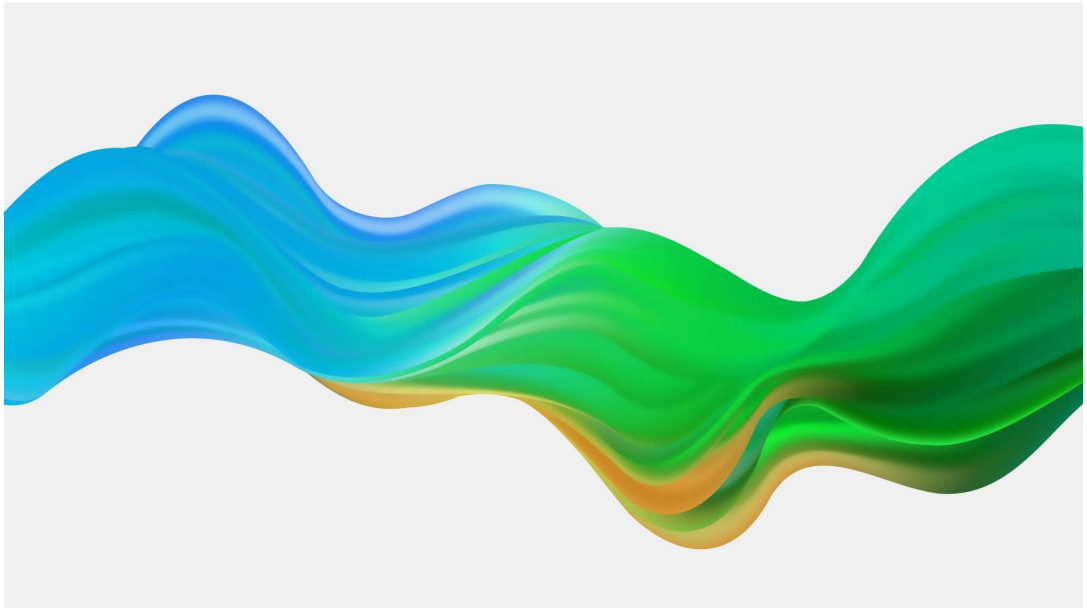
Automation can be classified into various types:

- Robotics
- Enterprise software
- Artificial Intelligence
- Intelligent automation

In this video by Erik Kimberling, CEO of Third Stage Consulting, these different types of automation and their roles in facilitating digital transformation are explained

While automation is convenient, there can be uncertainty regarding its impact on business, organizational implications, and understanding its full scope

Click the plus (+) symbols in the following interactive to explore more details on these concepts.



3.3 Benefits of automation

Automation aids ***businesses***

- Increasing outputs
- Reducing errors
- Saving time and resources
- It serves as a cost-saving tool that boosts productivity and profits, particularly during economic challenges
- Effective technology deployment can yield positive outcomes for individuals, companies, and society

According to PwC, AI's potential contribution to the global economy could reach up to $15.7 trillion by 2030

The Benefits of Technology and Automation for ***Organisations***

Employees are freed up to work on tasks that are more useful than those that can be done by machines by automating repetitive business procedures.

AI technologies are also enabling employees and machines to work collaboratively in novel ways to fulfil customised orders and handle fluctuations in demand.

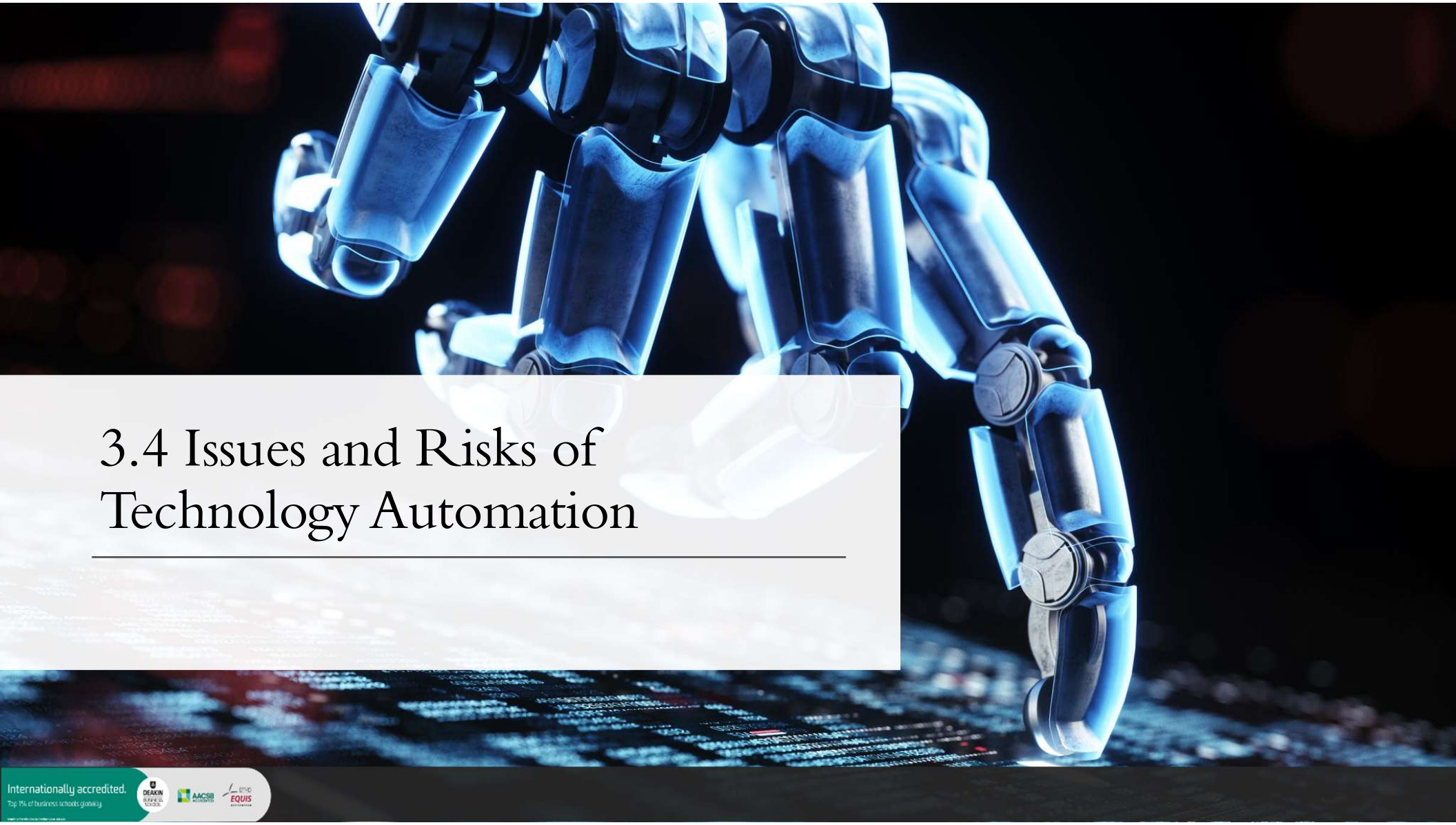
AI technologies are also performing certain tasks autonomously which are unable or dangerous to do by employees, for example, complex tasks like driving a car in all conditions remain tantalizingly out of reach.

Similarly, robots are performing narrow tasks autonomously in manufacturing settings.

The benefits of Technology and Automation on the *Workforce*

Similar to organisations, their workforce has also benefited by the deployment of technology and automation

As you explore this list reflect on how this might perhaps impact you as a current or future employee



3.4 Issues and Risks of Technology Automation

The Issues of Technology and Automation for *Organisations*

Integration with existing technology architectures and legacy infrastructure

Changes in business processes and organizational culture

Reskilling or upskilling of employees

Significant data engineering and approaches to organizational change management

Challenges Associated with Automation

- Worker displacement or acquiring sufficient human AI talent
- Large capital expenditure requirements
- Risk of redundancy
- Potential introduction of new safety hazards
- Continued requirement for human intervention
- Issues concerning customer privacy and data tracking
- Resistance from individuals towards interacting with chatbots and similar technologies, as indicated by AI surveys

The issues of Technology and Automation on the Workforce

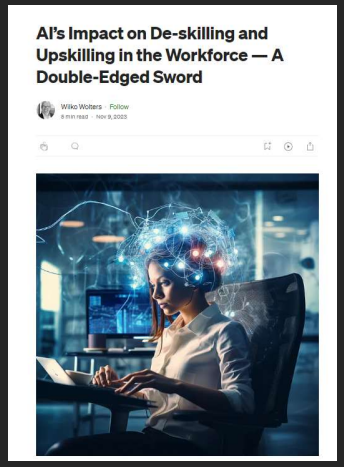
The impact of automation on employment is often considered in terms of whether it creates jobs or destroys them

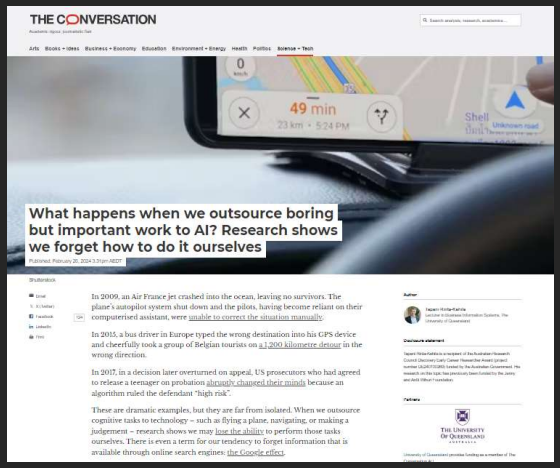
It might also have an impact on changes to employment and the wages paid to the workers who perform the jobs

It is true that automation can sometimes result in higher-paying jobs, but in most cases, it leads to lower wages

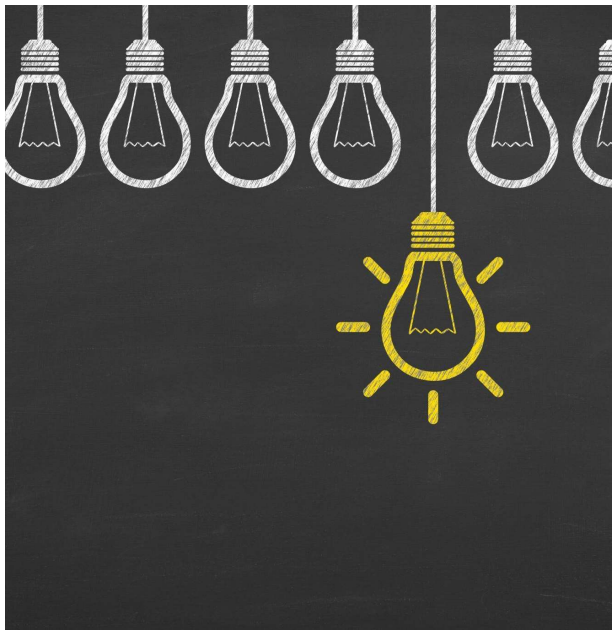
Create gaps for professionals by automating processes that had previously been used to acquire knowledge about customers or to develop expertise

This will eventually lead to changes in the knowledge base required for affected occupations and could potentially even trigger their restructuring





3.5 Fairness, Equity, and Discrimination in Automated Decision Making

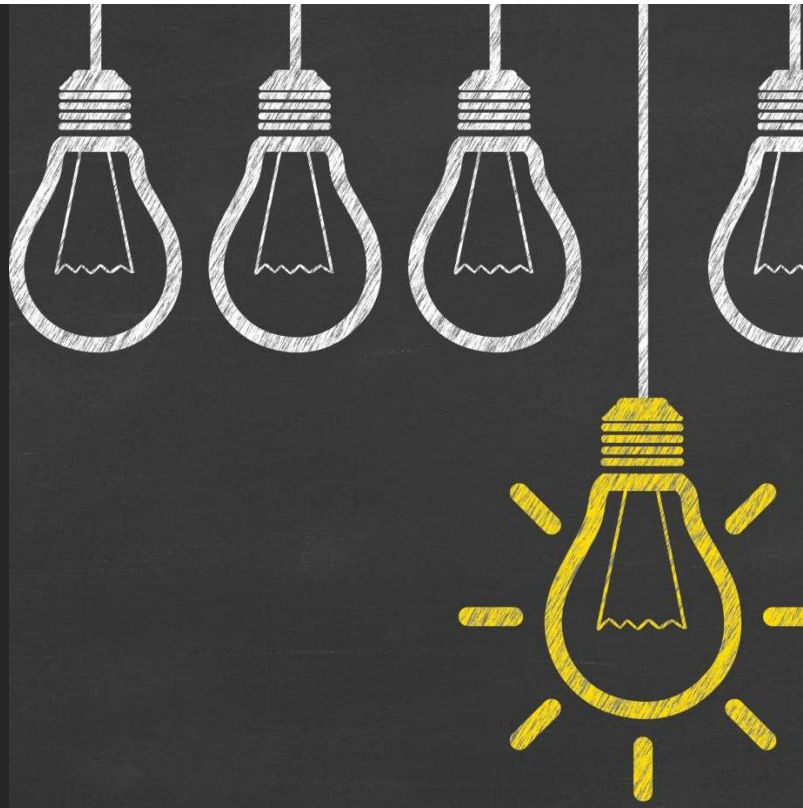


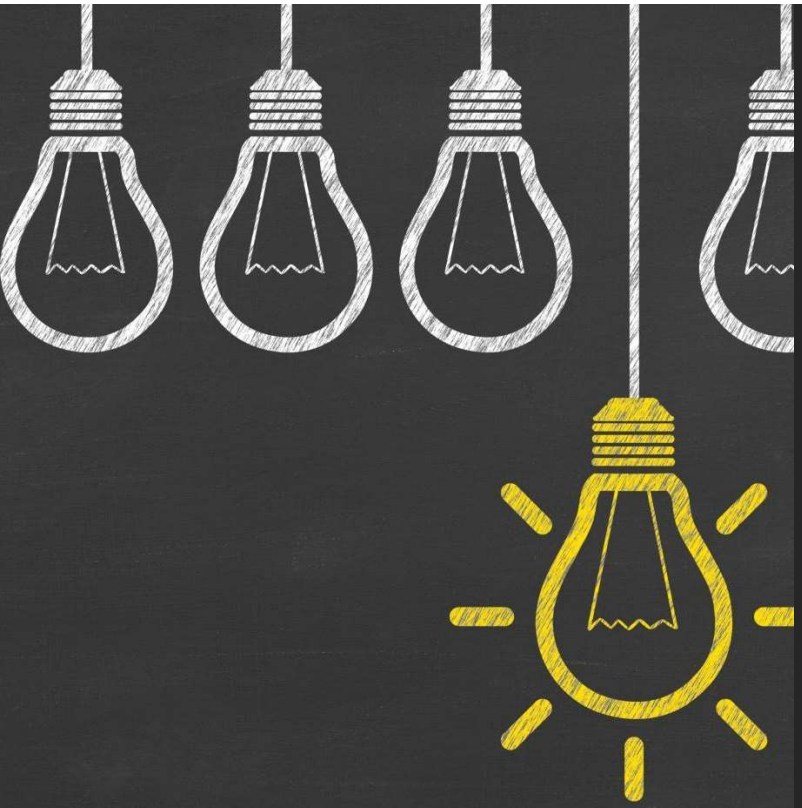
- The quality of algorithmic decision-making hinges on the historical input data, as algorithms learn from these examples
- If algorithms are trained on erroneous, biased, or unrepresentative data, they may produce discriminatory or biased outcomes
- Biased input data can lead algorithms to make or perpetuate biased decisions
- For instance, an algorithm designed for purposes like healthcare resource allocation and advertising inadvertently exhibited racial bias
- Similarly, if an algorithm for hiring decisions lacks racial or gender diversity in its training data, it could result in deception and discrimination

Activity: Consider the Following

An algorithm designed to target consumers most likely to purchase a company's product, which initially appears beneficial.

What if this model also factors in race, color, religion, and gender to identify consumers, it could result in digital redlining?

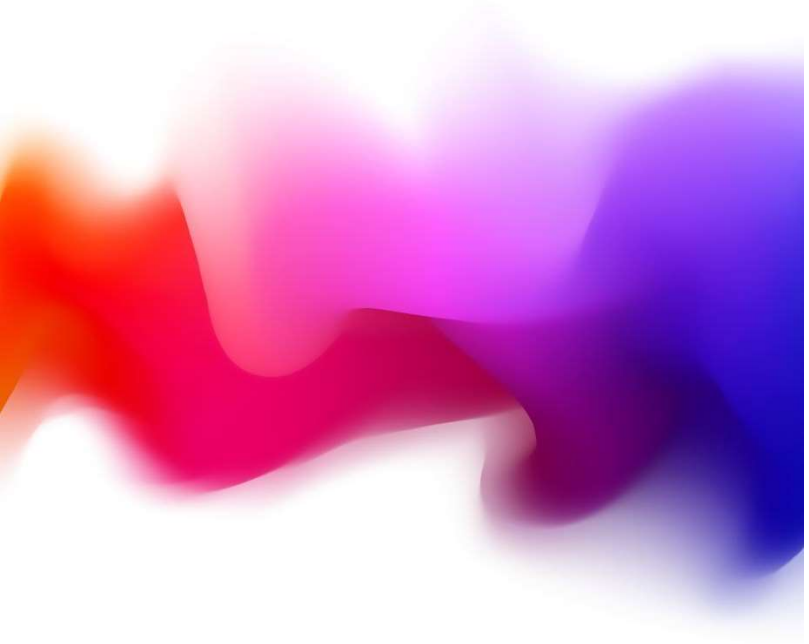




Activity: Consider

It's crucial to:

- Expand the dataset from the outset
- Incorporate data gaps into the model's architecture
- Implement limitations based on identified flaws
- Test algorithms before and periodically after use to ensure they do not discriminate based on race, gender, or other protected classes



Let's expand a bit more on this issue of ethics, bias and fairness in automation.

Watch the video about "Ethics, Bias, and Fairness in Machine Learning"

We will discuss this topic further in this week's seminars.

THANK YOU!