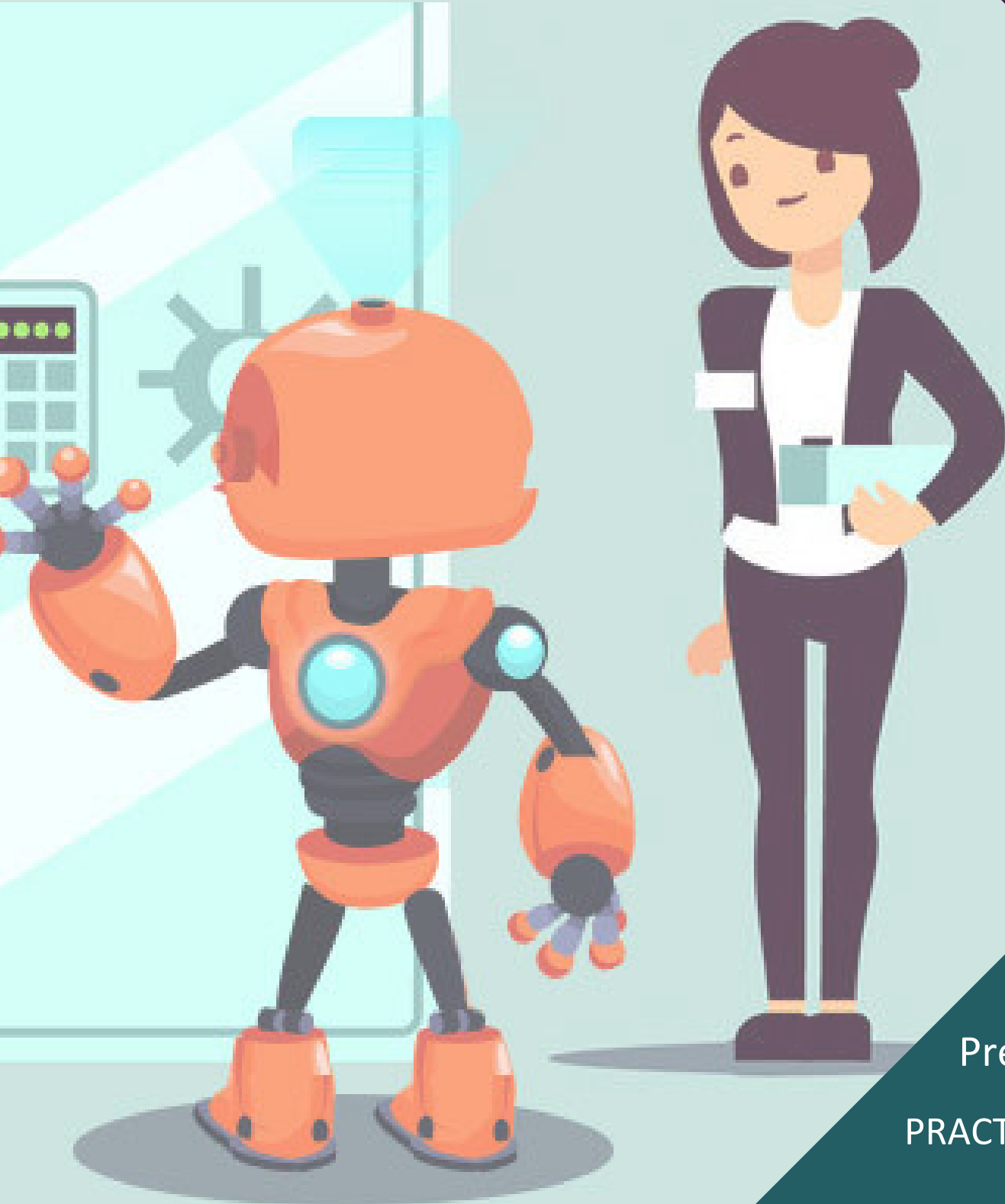


# ARTIFICIAL INTELLIGENCE: RISKS & OPPORTUNITIES

**BRUNEL**  
Pension Partnership



Prepared By:

PRACTICE TRACK:

GROUP 32

UNIVERSITY OF BATH

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# EXECUTIVE SUMMARY

This report investigates the opportunities, risks, and public policies associated with the application of Artificial Intelligence (AI) in various within Brunel's portfolio, including IT, healthcare, energy, and finance. The report emphasizes the need of addressing AI bias, possible economic inequalities, environmental issues, societal hazards, and sector-specific difficulties. It also emphasizes the significance of understanding and adhering to governmental norms and regulations pertaining to AI.



AI's opportunities include increasing economic growth rates, increased productivity, personalised services, and better decision-making. However, risks include biased outcomes, expanding economic differences, societal inequality, employment displacement, cybersecurity threats, and environmental consequences.

Companies in Brunel's portfolio that are at risk due to their involvement with AI include Samsung, ZTE, Apple, Amarco, Reliance Industries, Novartis, Johnson & Johnson, Aviva, and Barclays. The report emphasizes occurrences and possible hazards linked to each organization, emphasizing the importance of effective implementation, risk management, and ethical issues.

AI-related public policies involve strong coordination among key agencies such as the UK government, the Financial Conduct Authority, the central bank, and the Prudential Regulation Authority. The public policy strategy includes stakeholder engagement, regulatory advice, an AI regulatory roadmap, and a regulatory sandbox.

The report concludes by presenting critical questions for firms within Brunel's portfolio around AI bias, fraud detection, environmental sustainability, ethics, cybersecurity, and staff training related to data breaches.

Brunel Pension Partnership should actively monitor public policies, communicate with stakeholders, and ensure that the organisations in its portfolio adapt to the possible consequences of AI while addressing related risks and ethical issues in order to navigate the growing environment of AI.



# 01 INTRODUCTION

AI harnesses the potential of machine learning, a field within computational statistics that focuses on creating algorithms capable of automatically and iteratively constructing analytical models from fresh data, without the need for explicit programming. Machine learning acts as a predictive tool, utilizing existing information to fill in gaps and make accurate predictions. Over the past decade, machine learning has seen widespread adoption, evident in its use by platforms like Pandora for personalized music recommendations, Google for multilingual content translation, and Facebook for targeted advertising. Computer vision, a prominent area of research, plays a pivotal role in applications ranging from image analysis for tagging and moderation to enabling autonomous vehicles and efficient retrieval of specific visual content from databases.

# 02 PROBLEM STATEMENT

While the Internet is developing steadily, the era of AI has quietly arrived. The rapid growth of AI has brought many opportunities and benefits to people, but it has also brought many challenges. In Brunel's portfolios, many companies have applied AI technology. It is inevitable that Brunel needs to identify the AI risk in its portfolio, which includes not only specific companies but also different sectors. If not taken seriously, it may cause significant economic loss to the company. While analyzing AI risks, this report will also provide some micro & macro suggestions for reference.

## 03

RISKS & OPPORTUNITIES  
PRESENTED BY AI

## Sector

## Opportunities

## Risks

## ECONOMY



- AI will double global economic growth rates by 2035 through increased labour productivity, a virtual problem-solving workforce, and cross-industry innovation (Zekos, 2021).
- AI which employs IoT data to enable automation and personalization has the potential to increase global GDP by 14% (\$15.7 trillion) by 2030 (Zekos, 2021).

- Could expand divide between countries, with AI leaders receiving 20-25% higher economic gains, whilst developing countries gaining just 5-15% (Bughin et al., 2018).
- AI benefit distribution: frontrunner companies might see doubling of cash (6% yearly increase), while nonadopters could see a 20% drop (Bughin et al., 2018).

## SOCIETY



- AI is being used to address critical difficulties in fields such as material science, medical research, and climate science.
- For eg, Geisinger lowered cerebral haemorrhaging diagnostic time with an algorithm, and George Washington University uses machine learning to improve climate model accuracy for the Intergovernmental Panel on Climate Change (Manyika & Sneider, 2018).

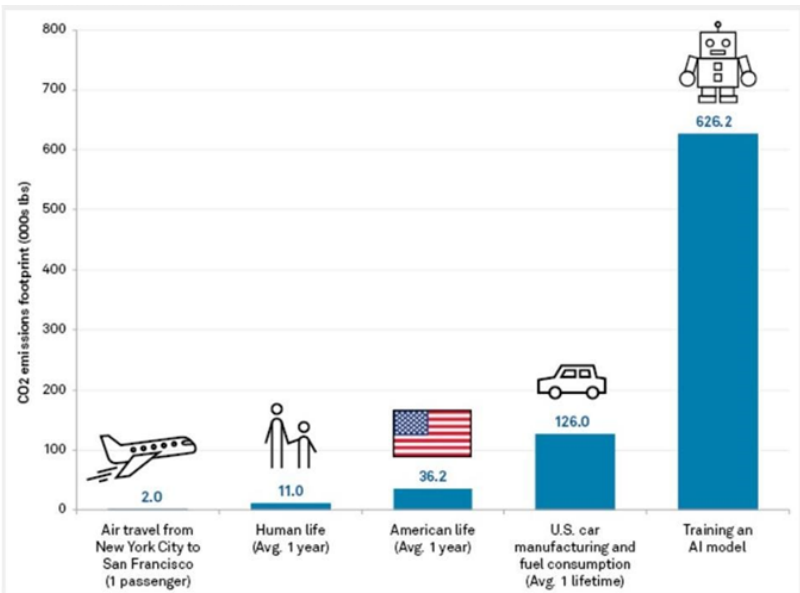
- Data privacy, criminal usage, and security concerns
- Automation of jobs will affect employment responsibilities in a variety of industries (Manyika & Sneider, 2018).
- Synthetic media or 'Deepfakes' has the potential to spread misinformation, commit crimes, manipulation (Whitaker, n.d.).

PENSION  
FUNDS  
(FINANCE)

- Improved risk management through real-time analysis
- Enhanced investment strategies by identifying market patterns and trends
- Personalized retirement planning tools for informed decision-making
- Fraud detection systems to prevent financial loss, and administrative efficiency through streamlined operations and AI-powered chatbots for routine member inquiries (Masters, 2022).
- AI/ML-based decisions made by financial institutions may not be easily explainable, which can raise concerns about transparency and accountability
- The adoption of AI/ML in finance introduces new cyber risks and privacy concerns.
- The use of AI/ML in finance raises ethical questions regarding the integrity and safety of the financial system

# 04

## ENVIRONMENTAL & SOCIAL RISKS OF AI



**ENVIRONMENTAL RISKS:** While AI mitigates climate change impacts, it also is a significant carbon emitter.

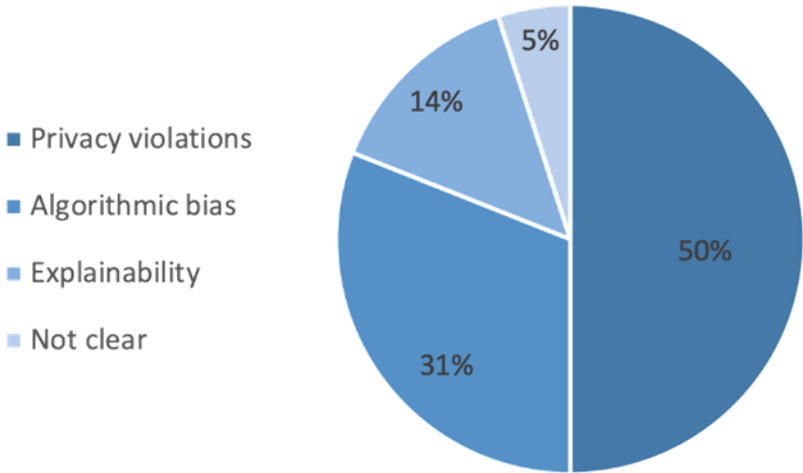
According to one study by the University of Massachusetts, training AI models to do Natural Language Processing (NLP), can produce the carbon dioxide equivalent of 5X the lifetime emissions of the American car, or the equivalent of 300 round-trip flights between San Francisco and New York (Gow, 2022).



Additional emissions disproportionately harm marginalised groups living in severely polluted locations, increasing their vulnerability to health risks (Jones & Easterday, 2022).

**SOCIAL RISKS:** There is evidence that human biases have made their way into artificial intelligence systems (Walsh, 2021). The so-called "intelligence" is based on large data sets with biases favouring dominant viewpoints, which may be harmful to marginalised communities. This means that AI may reinforce the dominance of a white, male, wealthy perspective centered on the United States and Europe (Harris, 2023). As AI, algorithms, and automation alter the workforce, it leads to a growing separation between employees who have access to higher education, leadership mentoring, and professional experience – and those who do not (Walsh, 2021).

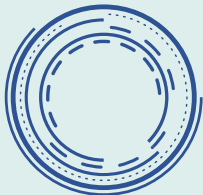
Additionally, workers in repetitive and low-digital-skill categories may see their salaries stagnate or fall (Bughin et al., 2018)



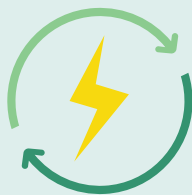
Major reasons for failure identified in the 106 cases involving AI controversy examined by Holweg et al. (2022)

# 05

## SECTORS & COMPANIES WITHIN BRUNEL'S PORTFOLIO AT RISK TO AI



TECHNOLOGY



ENERGY



HEALTH CARE



FINANCE

Artificial Intelligence (AI) has the potential to transform industries by enabling automation, advanced analytics, and decision-making capabilities. While AI presents significant opportunities, it also introduces risks and challenges. This report aims to assess why the IT, healthcare, energy, and financials industries are at risk when adopting AI technologies.

### INFORMATION TECHNOLOGY

Samsung Semiconductor allowed engineers to use ChatGPT, an AI writer, but it resulted in three incidents of employees leaking confidential information, including source code, meeting notes, and hardware data. ChatGPT retains user input, exposing Samsung's trade secrets to OpenAI. To prevent future breaches, Samsung is developing its own AI with limited prompts, but its effectiveness remains uncertain. This incident highlights the need for proper implementation and regulation of AI in the workplace.

## SAMSUNG

The US has banned Huawei and ZTE telecom equipment owing to data-security concerns. Concerns about national security prompted the prohibition of their import and sale. In the context of trade tensions, the step is part of a broader effort to limit Chinese telecom companies' participation in US networks.



Apple's co-founder warns that AI, such as OpenAI's GPT-4, may make fraud detection more difficult. AI programmes can converse, compose music, and summarise papers in the same way that humans do. Wozniak warns that AI's lack of emotion increases evil actors' persuasiveness, since complex language created by technologies like ChatGPT can appear incredibly clever.

## ENERGY

Integrating AI into power grids introduces dangers owing to control over vital infrastructure and vulnerability to cyberattacks. It also has an influence on the energy value chain, forcing staff adjustments and influencing stakeholder interests and employment



aramco



Along with natural disasters and physical threats, cyberattacks constitute a huge threat to **Saudi Aramco**. Aramco uses artificial intelligence to simulate Saudi Arabia's geology and deep learning technologies for precise subsurface data modelling. AI can help combat these growing assaults and improve security procedures.

The rising digital market domination of Reliance raises worries about monopoly and unfair competition. With access to massive consumer data and top enterprises, Reliance aspires to dominate the AI sector. Since 2008, Reliance has significantly surpassed competitors, purchasing firms like Haptik and Addverb, developing Jio Interact, and forging strategic collaborations.



## HEALTH CARE

Healthcare, a critical industry bolstered by COVID-19, invests extensively in AI but confronts new dangers. Major problems include data leaks and biased algorithms that result in inaccurate diagnoses. IBM Watson's lung cancer therapy suggestions were found to be incorrect. Strict laws in healthcare may impede AI commercialization and raise compliance expenses for Brunel's portfolio firms working in AI.



It has been using AI heavily in its drug development research. However, any bias in the research data

could lead to a misdiagnosis which can cause a detrimental effect to the patients which could expose the company to potential litigation and could cause damage to its reputation.





It has been investing into research towards perfecting robotic surgeries. There are certain risks involved as any malfunction could further complicate the surgery. If any invasive surgery is performed without the presence of a trained surgeon it could lead to patient risk.



## FINANCE

AI is important in the financial sector, especially in lending and credit decisions, yet biased data can lead to discrimination and unfair practises. The insurance industry's use of cloud servers to store consumer data raises the danger of hacks and data leaks. Without adequate regulation and supervision, online trading platforms in the financial market powered by AI-powered algorithms might contribute to market volatility and systemic concerns.



UK insurer Aviva partners with Tractable for AI-based motor claims estimation, but flawed AI models could result in significant losses and legal disputes. The use of AI in insurance has led to increased premiums and potential discrimination as the models are trained on biased data. This could impact Aviva's customer base as individuals seek alternative options.

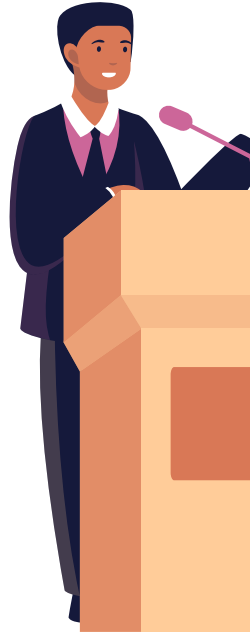
Barclays, a major UK financial institution, faces the risk of ransomware attacks as it increases its use of AI, which could result in financial loss, reputation damage, and pose a threat to the UK economy. The implementation of voice recognition for customer biometric verification through Nuance Communications introduces a potential breach of customer trust if the model is inadequately trained and easily bypassed.



# 06 PUBLIC POLICY RELATED TO AI

Looking into the public policies in relation to the use of AI, the relevant authorities are the UK government, Financial Conduct Authority, Central banks and Prudential Regulation Authority. These authorities have been working closely together on this topic and have produced papers regarding the regulation of AI. A discussion paper (Bank of England, 2022) produced by the FCA and the Bank Of England as well as a policy paper (GOV.UK, 2023) that was presented to parliament, highlights the aim for a balanced,

flexible approach to leadership and regulation in AI while also building public trust. Regulatory authorities plan to address the risks of AI technology's rapid progression by engaging closely with stakeholders and using their feedback to change their approach. Along with stakeholder engagement, they plan to create central functions, produce guidance, create a roadmap for AI regulation and make a regulatory sandbox



The House Of Lords Select Committee on Artificial Intelligence produced a report of Sessions 2017-19 "AI in the UK: ready, willing and able?" In this report the section 'Mitigating the risks of artificial intelligence' included the following (The Select Committee, 2017):

<b>Legal liability</b>	The risk of something was to go wrong with an AI system and it caused a form of harm. Due to this, companies should have clear principles for intelligibility and accountability.
<b>Criminal misuse of AI and data</b>	AI having the potential to be used for criminal purposes creates the needs for awareness of the ethical implications and what can be done to prevent such actions, should be communicated to organisations and institutions.
<b>Governments role in shaping artificial intelligence</b>	The government plan should provide a roadmap for stakeholders involved with the development and integration of AI into society globally. This plan will be used in coordination with various current institutions as well as the development of new ones. Brunel Pension Partnership should stay as up to date and involved with the governments pan for AI development.
<b>Regulation and regulators</b>	Currently it is the thought that existing sector-specific regulators are the best suited to consider the impact on their sectors rather than complete AI-specific regulation. Ensuring organisations are aware of who their sector regulators are and their guidance is key.
<b>AI code</b>	An AI code that addresses the wider ethical codes of conduct when using AI should be developed that is supported by the Centre for Data Ethics and Innovation and establish ethical advisory boards.



Brunel Pension Partnership should pay close attention to the guidance and actions related to AI from the government, FCA, Bank of England and Prudential Regulation Authority as they plan to have active involvement in the development and regulation of AI. Being cognisant of the latest information concerning AI, will be crucial to navigating the ever evolving public policies, so that the organisations in Brunel's portfolio can make the necessary changes to adapt to this developing technology that has potential to affect all areas of business.

## 07

QUESTIONS FOR COMPANIES IN  
BRUNEL'S PORTFOLIO

1. What are your views on the impact of automation of blue-collar and white-collar jobs, and how is the company addressing this issue?

2. How will the business intend to detect the fraud given that AI makes fraud detection more difficult?

3. When training AI models, what is the company's plan for addressing climate change? Will it rely on renewable or non-renewable resources?

4. Given the reliance of AI models on historical data, the presence of bias in the data can lead to biased outcomes. To ensure fair decision-making in areas such as banking loans, job applications, and healthcare, how does the company plan to address AI bias? For instance, in the context of job applications, AI may prioritize specific keywords, potentially overlooking candidates with diverse skill sets and valuable experiences. This presents a missed opportunity for the company.

5. Has the company incorporated any ethical policy for its employees? What steps does the organization take to address any unethical behaviors if it occurs?

6. What precautions has the company taken regarding cyber security and how do you aim to protect the data stored in the cloud server?

7. Are employees trained in relation to data breaches? What consequences will apply if an employee tries to misuse some data?

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