



# Department of Computing & Informatics



The Social Implications of Artificial intelligence: The Curious  
Case of Large Language Models like ChatGPT  
Dr. Nicholas Mavengere



# Bournemouth & Social Life





# The Social Implications of Artificial intelligence: The Curious Case of Large Language Models like ChatGPT

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# Nicholas

- Senior Lecturer,  
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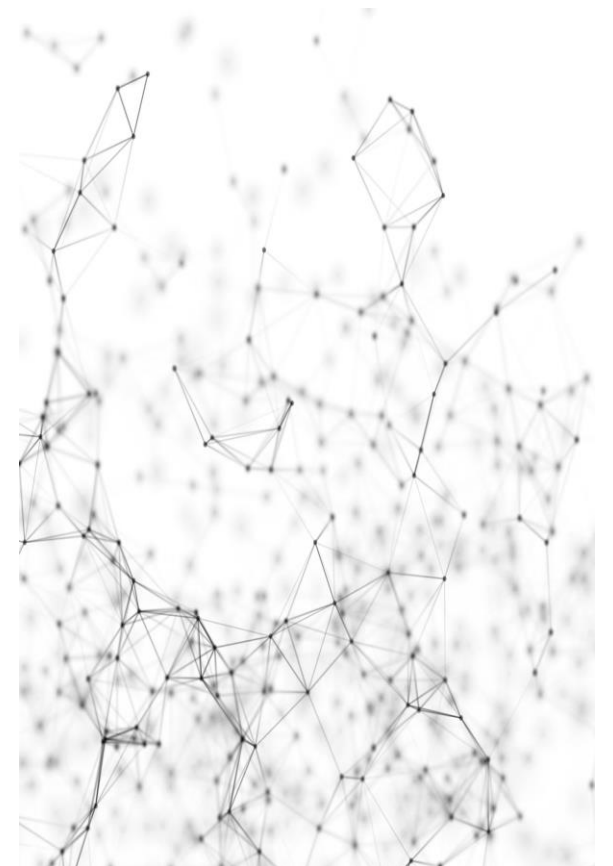
- Background - Artificial intelligence
- Large Language Models like ChatGPT
- Social Implications - focus is on education, business and society

# Background

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- Artificial Intelligence (AI) has **significantly impacted** organisations, societies, and individuals.
- When AI was in its formative years, the focus of algorithms was generally restricted to
  - **supervised learning** – type of machine learning that involves training a model to make predictions or decisions based on labeled data e.g. spam detection.
  - **unsupervised learning** - type of machine learning in which the model is trained on a set of unlabeled data. The model learns to find patterns in the data without any guidance from labels.
- whereby it borrowed inspiration from biological organisms and physical properties of nature and **established these properties computationally to solve data intensive problems**

Dwiverdi et al. (2023); Kar, (2016)

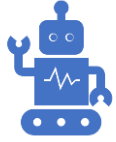


# Background – “newer AI algorithms”

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- It offers
  - systematic **capabilities of reasoning based on inputs and learning** via the differences of expected outcomes as
  - it **predicts and adapts to changes** in its ecosystems and
  - stimulus that the system receives from its **external environment.**
- Dwiverdi et al. (2023); Kar, (2016)





# Background - AI evolvemement

- However, **traditional AI algorithms needed structured data** for both model building and information processing. These older and more established AI algorithms such as neural networks, decision trees, random forests, k-means clustering and many more were somewhat **restricted in their capabilities due to these limitations**. (Duan et al., 2019)
- **Newer AI algorithms have evolved over time and can now process data in their natural form**, hence mining unstructured data such as raw text and images is feasible. AI algorithms such as deep learning and reinforcement learning have now evolved where specific algorithms such as convoluted neural networks and recurrent neural networks have gained prominence for being able to analyse images, audio, and even video (LeCun et al., 2015).
- Furthermore, **industrial needs** involving text mining and natural language processing (NLP) have grown in **demand** triggering the development and growth of algorithms which could run on unstructured data. Algorithms such as *Bidirectional Encoder Representations from Transformers* (BERT), *Long short-term memory* (LSTM) and language models have gained prominence for industrial automation

Dwiverdi et al. (2023);



# Why AI evolvment

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Many of these algorithms were heavily dependent on two resources:

(1) **abundant data** for the algorithms to train and operate upon, and

(2) very elaborate **computational resources** to deploy and run the algorithms

(3) In parallel to the **ongoing development of AI algorithms**, the literature has seen an increased level of chatbot related studies (Lokman and Ameen, 2018).

# Chatbots evolution



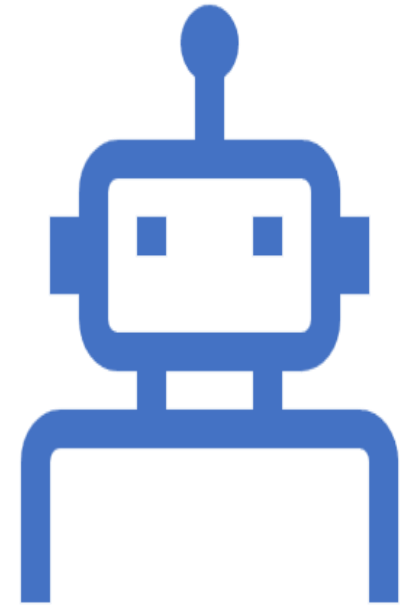
CHATBOTS TRADITIONALLY USED **NATURAL LANGUAGE PROCESSING (NLP)** TO RESPOND TO QUERIES RAISED BY THE USER, WHILE MAPPING IT TO THE **BEST POSSIBLE RESPONSE SETS AVAILABLE** IN THE SYSTEM **E.G. RURALVOICE PROJECT**



**THE RECENT LAUNCH OF OPENAI'S CHATGPT SIGNIFICANTLY EXTENDS THE CAPABILITIES OF CHATBOTS** VIA THE INTEGRATION OF DEEP LEARNING AND LANGUAGE MODELS BASED ON THE GENERATIVE PRE-TRAINING TRANSFORMER (GPT) ARCHITECTURE (RADFORD ET AL., 2018).

# Large language Models (LLMs)

- **ChatGPT uses a combination of unsupervised pre-training and supervised fine-tuning to generate human-like responses to queries and provide responses to topics that resemble that of a human expert.** Dwivedi et al. (2023)
- While current language models generally utilise deep learning with a focus on supervised learning, **future evolutionary models** may be built more on reinforcement learning (Uc-Cetina et al., 2022).



# LLMs offers

1. Natural language processing: Large language models are designed to understand natural language, making them useful for applications such as language translation, chatbots, and voice recognition.
2. Content creation: These models can generate high-quality text content in various formats, including articles, essays, poems, and even code.
3. Data analysis: Large language models can analyze and extract insights from vast amounts of text data, such as social media posts, customer reviews, and news articles.
4. Education: These models can assist in education by providing language learning tools and automated grading systems for written assignments.
5. Accessibility: Large language models can help improve accessibility for people with disabilities by providing assistive technologies such as speech-to-text and text-to-speech tools. - ChatGPT



# LLMs so what?

- What are the opportunities offered by LLMs in educational, business and society context?
- What are the challenges offered by LLMs in educational, business and society context?
- What are the social implications of LLMs adoption and use?



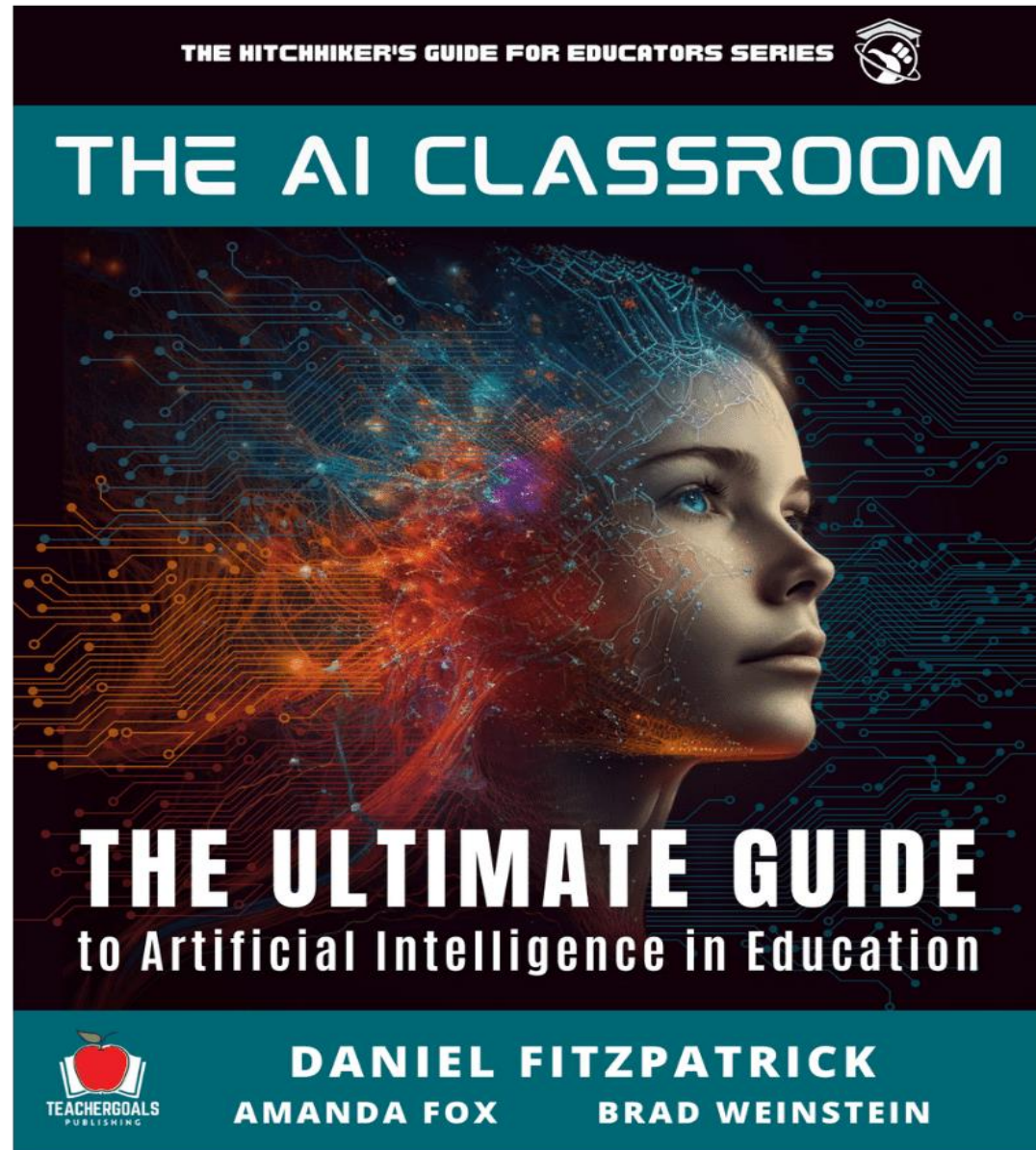
# LLMs educational implications

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- However, it has also raised a number of concerns related to the **difficulty in differentiating human versus AI authorship** within academic and education communities, and renewed debate on the role of traditional human endeavours (Else, 2023; Stokel-Walker, 2023).
- LLMs can be extensively used for NLP tasks such as text generation, language translation, and generating answers to a plethora of questions, engendering both **positive and adverse impacts**.



Others  
scholars  
embracing AI



Others  
scholars  
blocking AI

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# Education for AI, *not* AI for Education?!

- As of 2021, more than 30 countries have released national artificial intelligence (AI) policy strategies.
- Schiff (2022) noted that the use of AI in education is **largely absent from policy conversations**
- **instrumental value** of education in supporting an AI-ready workforce and training more AI experts is overwhelmingly prioritized.

# Education for AI

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- ***Training AI Experts:*** discussion of developing future AI practitioners, such as computer scientists and engineers.
- ***Preparing the Workforce for AI:*** discussion of education and training efforts to help workers adapt to labor disruption due to AI.
- ***Public AI Literacy:*** discussion of the need to educate the broader public about AI.

Schiff (2022)

# AI for Education

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- ***Teaching and Learning:*** discussion of AI-based teaching and learning tools such as intelligent tutoring systems, pedagogical agents, and predictive assessments.
- ***Administrative Tools:*** discussion of AI used to support administration in educational systems, for example, to make admission, promotion, or graduation decisions.

Schiff (2022)

# LLMs business implications

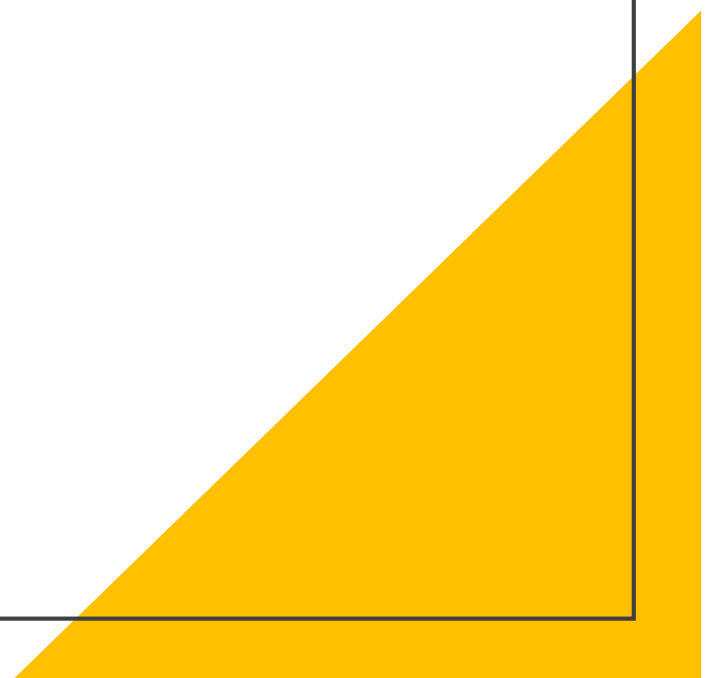
- The concept of Artificial Intelligence (AI) as a **business-disruptive technology** has developed in academic and professional literature in a chaotic and unstructured manner
- AI adoption aimed at driving competitiveness, reengineering products or services, or rethinking business strategies

Sestino and De Mauro (2022)

# 5 Practical Business Use Cases for Large Language Models

1. Chatbot/Virtual Assistants
2. Fraud detection
3. Translation
4. Content creation
5. Data/business analysis
6. etc

Open Data Science (2023)



# LLMs business implications



- Content Creation and Marketing – **increased competition**
- Customer Service – chatbots use as virtual assistant – **improved customer services?**
- Personalization - personalized product recommendations, marketing messages and etc – **ethical dilemma vs improved services/products**
- Data analysis – large unstructured data, such as social media data – **better decision making?**

# LLMs negative business implications

- **Bias and misinformation:** LLMs learn from existing data, which may contain biases and inaccuracies. If not carefully monitored and controlled, LLMs can perpetuate and amplify existing biases or spread misinformation.
- **Ethical concerns:** LLMs raise ethical concerns regarding ownership, privacy, and consent. Businesses must ensure that the data used to train the models is obtained and used in an ethical manner, and that user privacy and data security are maintained.
- **Job displacement:** The automation potential of LLMs can lead to job displacement in certain sectors. Tasks that were previously performed by humans, such as content creation or customer service, may be automated, leading to potential job losses.
- **Dependence on external platforms:** LLMs are often hosted on cloud-based platforms, which means businesses may become dependent on these platforms for access to the models. This dependence can introduce risks related to service availability, reliability, and cost - ChatGPT

# LLMs society implications (positives)

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- **Improving production efficiency:** improved production efficiency and can quickly generate articles, news, and other text content. *Compared to traditional content creation methods, this technology can greatly shorten time and cost and improve production efficiency.*
- **Improving customer service:** intelligent customer service, significantly improving the quality and efficiency of customer service.
- **Promoting learning and research:** better support for learning and research. For example, in fields such as linguistics and computer science, etc
- **Improving social media censorship:** Social media is an important platform for people to engage in social communication, but it also has some negative effects, such as rumors and false information. ChatGPT and LLM can be used for automated content review on social media, identifying and filtering out some untrue or irresponsible content, thereby improving the social media environment and enhancing the user experience.

TNP Team (2023)

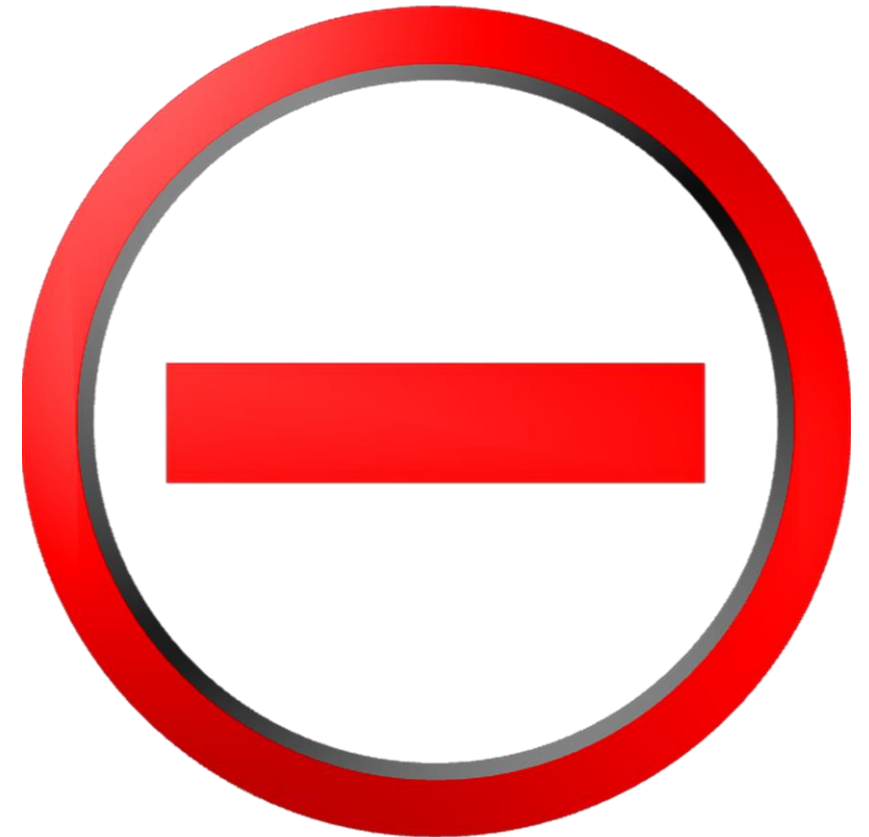




# LLMs society implications (negatives)

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- **Bias issues:** The way ChatGPT and LLM generate text is based on language model training, which may involve bias issues. For example, if the training dataset is biased, the generated text may be biased, resulting in discrimination and exclusion of certain groups or viewpoints.
- **Privacy issues:** The training of ChatGPT and LLM models require a large amount of personal data and privacy information. If this information is not properly protected and managed, there is a risk of privacy breaches, severely affecting personal privacy and data security.
- **Ethical issues:** With the development of ChatGPT and LLM, some ethical issues have also emerged. For example, this technology may affect the nature of human language and thinking, bringing some negative impacts on human development and progress.





# Department of Computing & Informatics

Thank you! Ndatenda!

If interested in collaboration

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