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Artificial Intelligence: A Critical Study

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Abstract

Artificial Intelligence (AI) has occupied scientists for decades. But in 2023, it caught the attention of global businesses, policymakers and civil society alike. In the UK, King Charles III called it “one of the greatest technological leaps in the history of human endeavour”. The UN Secretary General described AI as “unprecedented” and even the Pope stated that AI “has the potential to contribute in a positive way to the future of humanity” before dedicating World Peace Day 2023 to the use of AI.

AI has gained significant attention in recent years – and especially in 2023 – but AI is not new and can trace its history back to the development of computers after the Second World War, with the Dartmouth Conference in 1956 bringing together researchers from multiple fields to explore “thinking machines”. This is widely considered the start of AI as a distinct field of study and where the term “Artificial Intelligence” was used for the first time by the visionaries at that conference.

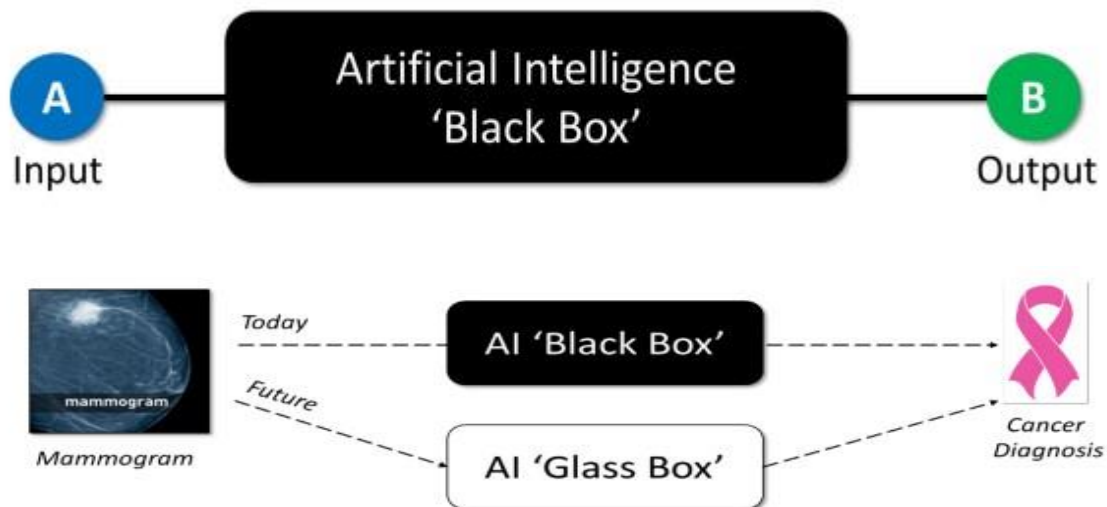
One of the most important aspects of AI is that it is a multi-use technology. Like electricity it can be applied in lots of different ways, to lots of different scenarios. There is no single, universally accepted definition for Artificial Intelligence, “the capacity of computers, or other machines, to exhibit intelligent behaviour”. This means AI systems appear to think, learn and act like humans and in some cases exceed the capabilities of humans. AI systems can analyse vast amounts of data, solve complex problems, make decisions and perform creative tasks.

Some AI technologies have been around for more than 50 years, but advances in computing power, the availability of enormous quantities of data and new developments in software algorithms have led to major AI breakthroughs in recent years. It is these three components of advanced algorithms, data and computing power that explain how machines can exhibit intelligent behaviour and why AI has suddenly exploded into our everyday lives.



ALGORITHMS : THE BRAINS OF AI

‘Traditional programming’ involves encoding human knowledge and experience into a set of precise rules that a computer can follow, step-by-step, which make the computer appear to respond intelligently.



TWO PRIMARY METHODS FOR HOW AN AI SYSTEM ‘LEARNS’ TO PERFORM A TASK

1. Machine learning
2. Deep learning

Machine Learning: Machine Learning (ML) systems can learn from huge amounts of data and continuously improve their performance over time when provided with more and/or better quality training data. With this ‘knowledge’ gained from training data, machine learning powered AI systems can then make predictions (such as for weather forecasting), or recognise patterns in data (such as for image and speech recognition).

Deep Learning: Deep Learning (DL) is a more sophisticated subset of Machine Learning and uses complex processes inspired by the human brain called Artificial Neural Networks (ANN). How neural networks function is beyond the scope of this ‘Introduction to AI’ report, but deep learning systems can excel at very complex tasks such as generating new works of art and medical drug discovery.

DATA: THE FUEL THAT DRIVES AI

“Data is the new oil” is a phrase often associated with the digital age. Data is the fuel behind modern computing and AI algorithms, allowing them to learn, find relationships in data and make informed predictions and decisions.

This volume of data is also leading to a significant rise in **Cloud Computing** and data storage centres, with the U.S. hosting 10x more data centres than any other country in the world (in 2023) . These extremely large and very complex datasets are often called ‘**Big Data**’ and are characterised by their volume, velocity, variety and veracity, commonly referred to as the 4 V’s.

COMPUTING POWER: THE MACHINES BEHIND AI

Training AI systems typically requires a lot of data. This data can be very large and very complex and needs to be processed very quickly, which requires a lot of computing power. For example, sophisticated AI chatbots (such as Google Bard, Microsoft Copilot) were trained on datasets that included hundreds of billions of words (for comparison the Bible contains fewer than one million words). To download this volume data on a typical home internet connection and then process it for AI training could take hundreds of years on a standard computer. This task therefore requires a special type of computing power.

References

1. **Abney, S. (2007).** Semisupervised Learning for Computational Linguistics. CRC Press.
2. **Bacchus, F., Grove, A., Halpern, J. Y., and Koller, D. (1992).** From statistics to beliefs. In AAAI-92, pp. 602–608.
3. **Breese, J. S. and Heckerman, D. (1996).** Decisiontheoretic troubleshooting: A framework for repair and experiment. In UAI-96, pp. 124–132.
4. **Featherstone, R. (1987).** Robot Dynamics Algorithms. Kluwer Academic Publishers.
5. **Joby, A. 2020.** ‘Artificial General Intelligence: Friend or Foe?’ Learning Hub [Online]. Accessed: <https://learn.g2.com/artificial-general-intelligence>.
6. **UNESCO. 2011.** Code of Ethics for the Information Society. <https://unesdoc.unesco.org/ark:/48223/pf0000212696>.
7. **United Nations. 1948.** The Universal Declaration of Human Rights. <https://www.ohchr.org/EN/UDHR/Pages/UDHRIndex.aspx>.
8. **Ai Group. 2016.** ‘Ai Group Leads High-level Industry 4.0 Apprenticeship Initiative’. AiGroup [Online]. <https://www.aigroup.com.au/policy-and-research/mediacentre/releases/apprenticeships-training-Sep5/>.