**Postgraduate education in Computer Science – a reflection on personal and societal benefits**

Although an emerging filed within Computer Science, Artificial Intelligence (AI) is already taking centre stage globally across business and science. Harnessing its full potential will require training highly-skilled professionals, who will be best placed to succeed in a world already being disrupted by AI.

**The AI revolution is here**

I am an academic clinician working in large-scale randomised trials and data science, and an incoming student in the PGDip in AI. AI is a rapidly growing discipline with the potential to dramatically transform society, from healthcare to entertainment, industry to law (Department for Science, Innovation and Technology, 2023). Indeed, AI is already present in everyday life, as shown by the rapid uptake of generative AI tools such as ChatGPT (Milmo, 2023) and widespread use of AI algorithms within healthcare, e-commerce, and entertainment (Marr, 2023a). In the UK alone, AI was estimated to employ over 50,000 people and to have generated £10.6 billion in revenue in 2022 (Department for Science, Innovation and Technology, 2023). By employing powerful computing capabilities to harness large, complex, disparate data, AI can help to increase efficiency and accelerate innovation (Elias et al., 2024). For example, AI identified the anti-inflammatory drug baricitinib as a potential treatment for COVID-19 (Richardson et al., 2020), and this signal of benefit later confirmed in clinical trials (RECOVERY Collaborative Group, 2022). AI is also being used to combat climate change by monitoring deforestation in the Amazon (Google, 2018) and track Arctic sea ice levels (The Alan Turing Institute, ND). Nonetheless, AI may also pose significant threats, including entrenching biases and inequalities, lack of transparency and/or model explainability, and security risks (Marr, 2023b). As a result, AI has been the subject of intense public debate, and several recent policy documents from bodies such as the UK and Chinese governments (Costigan, 2024; Department for Science, Innovation and Technology, 2024) and the European Union (Gibney, 2024).

**Staying relevant in a shifting world**

Concerns have also been raised that AI might soon eliminate many jobs, with forecasts of 83 million positions potentially lost by 2028 (World Economic Forum, 2023a). Of note, some highly-skilled - and generally well-paid - professions might be particularly exposed to such disruption, including psychologists, economists, management consultants, and business analysts (Department for Education, 2023). However, within the same period AI might contribute to create 69 million new jobs, in what may constitute job “churn” or disruption rather than net destruction (World Economic Forum, 2023a). In other words, “AI may not replace humans, but humans with AI will replace humans without” (Lakhani, 2023; World Economic Forum, 2023b). These observations highlight the importance of continuous professional development to preserve employability, namely via postgraduate education. Contrary to undergraduates, postgraduate students are encouraged to move beyond grasping of basic theoretical concepts towards developing practical know-how and critical reasoning. This helps provide them with the skills needed to lead and innovate, therefore increasing employability (UK Government, 2016). From my experience, pursuing a PhD in data science has equipped me with both specialist knowledge in my field of study but also highly-translatable skills, namely by expanding my technical toolkit and my capacity to work autonomously and tackle complex problems by combining creativity and critical thinking. Postgraduate training in Computer Science is indeed an invaluable opportunity, especially for undergraduates like myself who started their education in other areas. Moreover, a multifaceted education helps place such individuals in a privileged position to combine different disciplines and bridge the gaps between them, fostering innovation and enhancing performance (Taylor and Greve, 2006; Wang and Wang, 2012).

**A stepping stone to positive societal impact**

As a clinical researcher and data scientist, I believe AI offers great promise to help design and deliver faster, more efficient clinical trials, accelerating the development and deployment of new drugs and procedures (Hutson, 2024). I also expect AI may contribute to increase healthcare productivity, and potentially improve patient outcomes, as highlighted in the UK Government 2024 Spring Budget (UK Government, 2024). Nonetheless, the potential risks and pitfalls of AI must first be appropriately understood and evaluated before widespread implementation, especially within healthcare. This will require not only further technical developments in AI, but also close collaboration with clinicians experienced in testing new interventions using robust scientific methodology (Liu, Rivera, Moher, Calvert and Denniston, 2020). I expect therefore that this program will provide me with in-depth knowledge of the theoretical principles of AI, as well as hands-on experience with the practical aspects of their implementation. These will support my vision to help design, test, and implement AI tools that aim to address important societal challenges, particularly in healthcare, by contributing to and leading innovation across disciplines.

In conclusion, AI presents a tremendous opportunity, both at a personal and a society level. Pursuing postgraduate education in this field will support training of individuals capable of bringing together different knowledge areas, laying the groundwork needed to drive innovation and affect wider positive change.

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