The Alan Turing Institute

Women in Data Science and AI Overview Report - Executive Summary

Artificial Intelligence (AI) affects almost every aspect of our daily lives. Yet there is a troubling under-representation of women employed in the sector, designing and developing these AI systems.

The lack of diversity in the technology industry, in particular in the data science and AI fields, in turn shapes the resulting technologies, setting up a feedback loop. As technology inevitably reflects the values and experience of its developers, these emerging technical products are being coded with social biases, such as that produced by the gender data gap. Yet algorithms are presented as 'neutral' and objective decision-making systems. It is imperative that we tackle this issue now. Otherwise AI risks reproducing and even amplifying existing gender inequities.

This introductory report provides a comprehensive mapping of women's participation in data science and AI. Although precise figures for women in the workplace across these areas do not exist for the UK (a problem in itself), according to most estimates women comprise 17% of the broader technology sector. As such, the UK lags behind the US and parts of mainland Europe, where women represent 25%. Globally, women represent only 22% of AI professionals.[1]

In this report we present new research from online data science platforms that indicate women are represented at a remarkably consistent, and low, 17-18%. We also find that 20% of UK data science and AI researchers with Google Scholar profiles are women, and that this drops to below 15% among those with the highest citations.

We begin by outlining why closing the gender gap in the AI workforce matters. Alongside the recent emergence of gender-biased AI and machine learning, there are significant ethical, economic and governance-related issues which must be addressed through an intersectional lens. Next, we present a brief history of women in technical fields, showing how systemic discrimination shifted the gender makeup of the computing industry in the UK.

The report then presents the current landscape of women across industry and academia in the data science and AI fields internationally, offering new insights from online platforms. Following this, we examine the gendered nature of technical culture, exploring how the leaky pipeline in STEM education, masculine defaults, 'chilly' workplace climates, persistent stereotypes, and cultural associations around technology are key factors in women's and minorities' under-representation in technological pursuits.

Finally, we describe some existing initiatives to bridge the gender gap within technology, specifically the data science and AI arenas, and we lay out four central research themes around which our future work will focus: demographics; career trajectories; workplace cultures; and gendered design.

Our aim is to motivate research and policy towards achieving gender equality at this important juncture in the development of data science and AI.

Visit **turing.ac.uk/WiDSAI** for more information.

[1]Figures in order: Inclusive Tech Alliance (2019) Women in Tech Briefing: A new call to arms; Honeypot (2018) Women in Tech Index; World Economic Forum (2018) The Global Gender Gap Report.