

Anthropomorphic learning: Bridging behavioural science and data science to predict human behaviour

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Abstract: Understanding and modelling human behaviour is one of the major tasks facing industry and academia of the future. This task is especially important when we consider interactions between humans and technology. Decision support systems, suggestion systems, automation, etc. – all these technologically intense aspects of human life require accurate predictions of what people like, what people prefer, and where people need help of algorithms and automated agents. Under these circumstances, recent advances in computer science, statistics, and mathematics offer several methods which try to model human behaviour. Specifically, the methodology of machine learning and, more recently, deep learning allows us to generate predictions useful for many different facets of human life. Yet, there are many aspects of human life and decision making where machine learning and deep learning fail to provide reliable and accurate results. One of the most notorious examples is suggestion systems: many of us regularly shop online using different platforms (such as Amazon) and receive suggestions for future purchases. Yet, very few of us find these suggestions helpful. One of the reasons why AI fails in many cases to correctly anticipate human behaviour is that AI algorithms tend to ignore existing insights from decision theory and behavioural science.

By combining behavioural science models with AI algorithms, we are able to significantly improve and simplify predictions of human behaviour in a wide variety of contexts. The resulting methodology which we label *anthropomorphic learning* allows us to develop more functional systems which better understand humans. This methodology is explainable, traceable, requires smaller training sets and, generally, outperforms existing algorithms by generating more accurate predictions.

Anthropomorphic learning is one of the methods of *behavioural data science*, a new interdisciplinary field, which emerges as a direct response to the need for studying behaviour “in the wild”, outside the “sterile” laboratory setting and controlled environments. The field’s ambition is to identify ways to embed human values into the heart and operation of AI systems, establishing methods to verify their integrity, accountability, and resilience thereby ensuring that they, and the data which feeds them, ultimately operate in the service of successful, democratic, digitally empowered yet human-centred communities. This can only be achieved through rigorous, problem-oriented research, which goes hand-in-hand with practice.

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