

## Artificial Intelligence and Innovation

**Supervisors:** [Dr Despoina Filiou](#), Department of Strategy and Marketing, The Open University Business School and [Professor Arith Alani](#), Professor of Web Science and Leader of the Social Data Science Group at the Knowledge Media institute, The Open University

### Project Description:

This call invites proposals that explore the role of artificial intelligence (AI) in innovation. Existing research in business and management focuses on efficiency improvements from AI, such as achieving cost reductions and production efficiencies (e.g. Wu et al., 2020). A parallel stream of research looks at how AI shapes opportunities for co-production and personalisation of services in platforms, to create new sources of value for consumers and producers; accessing, processing and ownership of data underpin competitive advantage in such settings (Gregory et al., Forthcoming).

Literature in business and management argues that the use of AI in decision making imputes rationality in organisations and in strategic thinking, which call for more research on the ways that the technology is implemented during the innovation process and/or in exploratory research (Amabile, 2020; Verganti et al., 2020). The links between AI and innovation become clearer if one considers that AI can influence the way that complex problems are perceived, by supporting to shed light on dimensions that are newly understood. Some examples include the application of AI in drug discovery around less explored and undiscovered targets, or applications of AI to inform pathways to overcome persistent low attainment of students from low socio-economic and minority backgrounds in higher education.

The limitations of AI in informing decision making are being more widely acknowledged with emerging literature exploring how the properties and interpretative abilities of the technology could be improved (see Ntoutsis et al., 2020). One limitation is the potential of skewed outcomes from AI-informed decision making, due to limitations in both the representativeness of the data and the procedures underpinning AI (specifically ML).

Doctoral research project proposals in in this area could explore how AI and its applications in the innovation process influence organisational practices and processes for innovation and lead to broader organisational changes. Proposals are encouraged to focus on organisations that adopt AI in their innovation processes and incorporate the insights it generates in their decision-making processes. It is expected that projects will draw implications on the co-evolution of organisations and AI and their effective interaction for incorporating AI insights in problem-solving and decision-making processes.

## Methods:

The doctoral project can use a range of methods to suit its research questions. Indicatively, the doctoral research could employ case study research, comparative and longitudinal case study research (Eisenhardt, 1989) or mixed methods as appropriate and explained in the proposal, together with potential access to relevant organisations and data sources.

## About the Supervisors:

**Despoina Filiou's** research has focused on the role of external sourcing and exploitation of knowledge in firm innovation in sectors undergoing radical technical change, by looking at strategic alliances and open innovation. For more information:

<http://www.open.ac.uk/people/df5743#tab2>

**Harith Alani** is a Professor of Web Science and leader of the Social Data Science group at the Knowledge Media institute, The Open University. His work is mainly focused on applying data science methods and social media analytics to better model, understand and track various social phenomena on the web. Currently, Prof Alani is a Principal Investigator on multiple multimillion international projects, including HERoS; to study the dynamics of COVID19 related misinformation and fact-checks, Co-Inform; to analyse individuals' interaction with misinformation on social media, CIMPLE; to investigate knowledge-based explanations of AI misinformation detection techniques, and NoBias; a European Training Network on Bias in AI. He was also Coordinator of the €2M COMRADES and the €2M DecarboNet international R&D projects. Prof Alani published over 160 scientific papers, and the General Chair for the 2021 International Semantic Web Conference. For more information: <https://www.open.ac.uk/people/ha2294>

## References:

AMABILE, T. M. 2020. Creativity, artificial intelligence, and a world of surprises. *Academy of Management Discoveries*, 6, 351-354.

EISENHARDT, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14, 532-550.

GREGORY, R. W., HENFRIDSSON, O., KAGANER, E. & KYRIAKOU, H. Forthcoming. The role of artificial intelligence and data network effects for creating user value. *Academy of Management Review*. <https://doi.org/10.5465/amr.2019.0178>

NTOUTSI, E., FAFALIOS, P., GADIRAJU, U., IOSIFIDIS, V., NEJDL, W., VIDAL, M.-E., RUGGIERI, S., TURINI, F., PAPADOPOULOS, S., KRASANAKIS, E., KOMPATSIARIS, I., KINDER-KURLANDA, K., WAGNER, C., KARIMI, F., FERNANDEZ, M., ALANI, H., BERENDT, B., KRUEGEL, T., HEINZE, C., BROELEMANN, K., KASNECI, G., TIROPANIS, T. & STAAB, S. 2020. Bias in data-driven artificial intelligence systems—An introductory survey. *WIREs Data Mining and Knowledge Discovery*, 10, e1356.

VERGANTI, R., VENDRAMINELLI, L. & IANSITI, M. 2020. Innovation and Design in the Age of Artificial Intelligence. *Journal of Product Innovation Management*, 37, 212-227.

WU, L., HITT, L. & LOU, B. W. 2020. Data Analytics, Innovation, and Firm Productivity. *Management Science*, 66, 2017-2039.