

Marko Tešić

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Research Experience

- Research Associate** at **Leverhulme Centre for the Future of Intelligence, University of Cambridge** July 2023 – Present
- Evaluating AI capabilities (with the focus on LLMs) and exploring how these capabilities relate to the specific job task demands. Work done in collaboration with the **OECD**.
- Royal Academy of Engineering UK IC Postdoctoral Research Fellow** at Birkbeck, University of London Mar. 2021 – Feb. 2023
- Exploring the effects of explanations of AI predictions on human beliefs
- Researcher** on *The Bayesian Approach to Robust Argumentation Machines* project at MCMP, LMU, Munich & Birkbeck, University of London Sep. 2021 – Feb. 2023
- Automated argument generation and evaluation from Bayesian network models
- Data Study Group (DSG) Principal Investigator** at the **Alan Turing Institute** Oct. 2022 – April 2023
- Scoping a data science challenge in collaboration with the data provider, the Department for Transport
 - Supporting DSG participants and acting as quality control on code and challenge solutions
 - Writing the final report on the outcomes of the data challenge to be published on the Turing website
- DSG Facilitator** at **AI UK showcase, the Alan Turing Institute** March 23, 2022
- Led a group of researchers in analyzing climate change data
- DSG Researcher** at **the Alan Turing Institute and LIDA, University of Leeds** July 5–23, 2021
- Optimizing Morrisons supermarkets' supply chain as part of a DSG team
 - Analyzed data & trained gradient boosting tree models to predict future supplies
- Research Intern** at **BlackRock, Factor Based Strategies Group** Oct. 2019 – Mar. 2020
- (Causal) Bayesian modeling of investment factors and ESG criteria
- Member of the Translation Team UK** on the project *Bayesian Argumentation via Delphi (BARD)* within **IARPA** at Birkbeck, University of London & UCL Oct. 2017 – Nov. 2018
- Created intelligence gathering-inspired situations
 - Built Bayesian network models of these situations
 - Fully designed, ran, and analyzed experiments testing people's evidential, causal, and probabilistic reasoning
- Member of the Research Team** on the project *Scientific Reasoning and Argumentation* at the **Center for Advanced Studies**, LMU, Munich Oct. 2016 – Sep. 2017
- Worked on explicating an inference pattern called 'Inference to the Best Explanation' (IBE) in Bayesian terms

Education

- Ph.D. in Psychology** 2020
Department of Psychological Sciences, Birkbeck, University of London, UK
Thesis title: *Explanation and Argument*
Areas of research: causal-probabilistic reasoning, Bayesian networks, psychology of explanations
Supervisors: **Ulrike Hahn** and **David Lagnado**
- M.A. in Logic and Philosophy of Science** 2016
Munich Center for Mathematical Philosophy, Ludwig Maximilian University, Munich, Germany
- B.A. in Philosophy** 2014
University of Belgrade, Serbia

Publications

Rafael Fuchs, **Marko Tešić**, & Ulrike Hahn (2024). **Testing the maximum entropy approach to awareness growth in Bayesian epistemology and decision theory**. *Proceedings of the 46th Annual Meeting of the Cognitive Science Society*.

Marko Tešić & Ulrike Hahn (2023). **The impact of explanations as communicative acts on belief in a claim: The role of source reliability**. *Cognition*, 240(105586).

Ulrike Hahn & **Marko Tešić** (2023). **Argument and Explanation**. *Philosophical Transactions of the Royal Society A*, 381(2251). Theme issue on *Cognitive Artificial Intelligence*.

Marko Tešić & Ulrike Hahn (2022). **Can counterfactual explanations of AI systems' predictions skew lay users' causal intuitions about the world? If so, can we correct for that?** *Patterns*, 3(12).

Data Study Group team. (2022). Data Study Group Final Report: Morrisons. Zenodo. <https://doi.org/10.5281/zenodo.6498140>.

Marko Tešić (2021). On the transferability of insights from the psychology of explanation to explainable AI. **Human Centered AI workshop at NeurIPS 2021**.

Marko Tešić & Ulrike Hahn (2021). **Explanation in AI systems**. In S. Muggleton & N. Chater (Eds.), *Human-Like Machine Intelligence* (pp. 114–136). Oxford University Press.

Marko Tešić*, Alice Liefgreen*, & David Lagnado (2020). **The propensity interpretation of probability and diagnostic split in explaining away**. *Cognitive Psychology*, 121.

Alice Liefgreen & **Marko Tešić** (2020). **Explaining away and the propensity interpretation of probability: The case of unequal priors**. In C. Dutilh Novaes, H. Jansen, J. A. van Laar, & B. Verheij (Eds.), *Reason to dissent. Proceedings of the 3rd European Conference on Argumentation, Vol. III* (pp. 385–403). College Publications.

Nicole Cruz, Saoirse Desai, Stephen Dewitt, Ulrike Hahn, David Lagnado, Alice Liefgreen, Kirsty Phillips, Toby Pilditch & **Marko Tešić** (2020). **Widening access to Bayesian problem solving**. *Frontiers in Psychology*, 11, 660.

Marko Tešić & Ulrike Hahn (2019). **Sequential diagnostic reasoning with independent causes**. In A.K. Goel, C.M. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (pp. 2947–2953). Montreal, QB: Cognitive Science Society.

Alice Liefgreen*, **Marko Tešić***, & David Lagnado (2018). **Explaining away: Significance of priors, diagnostic reasoning, and structural complexity**. In T. T. Rogers, M. Rau, X. Zhu, & C. W. Kalish (Eds.), *Proceedings of the 40th Annual Meeting of the Cognitive Science Society* (pp. 2047–2052). Austin, TX: Cognitive Science Society.

Marko Tešić (2017). **Confirmation and the generalized Nagel-Schaffner model of reduction: A Bayesian analysis**. *Synthese*, 196(3), 1097–1129. DOI: 10.1007/s11229-017-1501-1.

* indicates equal contribution

Selected Presentations and Workshops

Robust evaluation of Generative AI

- I presented a tutorial on evaluating large language models at the European Association for Data Science summer school on generative AI. June 20, 2024

AAAI-24 tutorial on Measurement Layouts for Capability-Oriented AI Evaluation

- Together with the team from the Centre for the Future of Intelligence, University of Cambridge, I organized a tutorial showcasing measurement layouts (Bayesian hierarchical models) for inferring the capabilities of AI systems. I presented my work on learning the capabilities of large language models and explaining and predicting their future performance. February 20, 2024

Can AI explanations skew our causal intuitions about the world? If so, can we correct for that?

- 8th Intelligence Community Academic Research Symposium (ICARS), USA September 14, 2022
- ONI National Intelligence Community Research Symposium, Canberra, Australia December 1, 2022

Workshop on Human Behavioral Aspects of (X)AI

- I organized a workshop bringing together cognitive scientist and machine learning researchers from academia, industry and government working on and with (explainable) AI. September 23–24, 2022

Supervision, Teaching & Admissions Experience

Managing a Postdoctoral Research Associate and a Research Assistant who work on evaluating core cognitive capabilities of AI with relevance to workplace tasks. This work is supported by Accenture . Leverhulme Centre for the Future of Intelligence University of Cambridge	<i>January 2024 – Present</i>
Postgraduate admissions for the MSt and MPhil courses in <i>AI Ethics & Society</i> and <i>Ethics of AI, Data & Algorithms</i> Leverhulme Centre for the Future of Intelligence University of Cambridge	<i>Spring 2024</i>
Marking dissertations for the MSt and MPhil courses in <i>AI Ethics & Society</i> and <i>Ethics of AI, Data & Algorithms</i> Leverhulme Centre for the Future of Intelligence University of Cambridge	<i>Spring 2024</i>
Research staff recruitment. Shortlisting and interviewing for Postdoctoral Research Associate and Research Assistant roles. Leverhulme Centre for the Future of Intelligence University of Cambridge	<i>Winter 2023</i>
Visiting Lecturer for the M.A. courses <i>Computational Approaches to Mind</i> and <i>Fundamental Debates in Cognitive Science</i> Department of Psychological Sciences Birkbeck, University of London Taught: Bayesian modeling, Agent-based modeling, and Marr's levels of explanation	<i>Jan. 2023 – Apr. 2023</i>
Visiting Lecturer for the M.A. course <i>Cognitive and Economic Science of Rational Choice</i> Department of Psychology and Department of Economics City, University of London Taught: Rationality as logic and as probability theory, Probabilistic fallacies, and Causal reasoning and modeling	<i>Oct. 2020 – Dec. 2020</i>
Seminar leader for the M.A. courses <i>Neuroscience</i> , <i>Individual Differences</i> , <i>Social Psychology</i> , and <i>Developmental Psychology</i> Department of Psychological Sciences Birkbeck, University of London, UK	<i>Feb., Nov. 2020; Feb. 2021</i>
Tutor for the B.A. course <i>Logic and Discrete Structures</i> Computer Science Department Ludwig Maximilians University, Munich, Germany	<i>Summer 2017</i>
Teaching assistant for the M.A. course <i>Central Topics in Philosophy of Science</i> Munich Center for Mathematical Philosophy Ludwig Maximilians University, Munich, Germany	<i>Winter 2016</i>
Tutor for the B.A. course <i>Logic 1</i> Faculty of Philosophy Ludwig Maximilians University, Munich, Germany	<i>Winter 2016</i>

Honors and Awards

The Alan Turing Institute Post-Doctoral Enrichment Award	<i>July 2022 – Jan. 2023</i>
The Royal Academy of Engineering UK IC Postdoctoral Research Fellowship (£200,000)	<i>Mar. 2021 – Feb. 2023</i>
Ph.D. studentship from the Department of Psychological Sciences, Birkbeck, UoL	<i>2018 – 2020</i>
Ph.D. studentship from the BARD project	<i>2017 – 2018</i>
Dositeja scholarship for graduate studies	<i>2017/18; 2015/16; 2014/15</i>
BAYHOST scholarship for graduate studies	<i>2015/16; 2014/15</i>

Skills

Software Skills:

- Text editing: \LaTeX
- Programming languages: R, Python, Matlab, NetLogo

Other:

- **Violinist** at **Paprika: The Balkan and East European Band** and **The Pico Players** (a symphony orchestra)
- **Xen-Do kickboxing**
- **Resident Advisor** at the University of London Halls of Residence (2019 – 2021)
 - Residents' welfare support
 - Academic assistance, peer-counseling
 - Emergency response (physical and mental first aid, fire emergency, Covid-19 related)

Online courses and further training:

- **Machine Learning** (Coursera)
- **Deep Learning** (DeepLearning.AI on Coursera): **Neural Networks and Deep Learning, Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models.**
- **Python Data Structures** (Coursera)
- **Science Policy Primer** (5-day course organized by The Royal Society, London, UK)
- **Business and Commercialization** (4-day course organized by The Royal Academy of Engineering, London, UK)
- **Media training** (full day course organized by The Royal Academy of Engineering, London, UK)