Marko Tešić

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Research Experience

Royal Academy of Engineering UK IC Postdoctoral Research Fellow at Birkbeck, University of London — *Mar. 2021 – Present*

- Exploring a psychological take on the issues of explainability and trust in AI

Researcher on *The Bayesian Approach to Robust Argumentation Machines* project at MCMP, LMU, Munich & Birkbeck, University of London — *Sep. 2021 – Present*

- Automated argument generation and evaluation from Bayesian network models

Data Study Group (DSG) Facilitator at AI UK showcase, the Alan Turing Institute — *March 23, 2022*

- Led a group of researchers in analyzing climate change data

Data Study Group (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
- Empirically tested people's evidential, causal, and probabilistic reasoning with and without the help of a Bayesian network modeling tool

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

PhD 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

MA in Logic and Philosophy of Science — *2016*

Munich Center for Mathematical Philosophy, Ludwig Maximilian University, Munich, Germany

BA in Philosophy — *2014*

University of Belgrade, Serbia

Publications

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*

Work in Progress

Marko Tešić & Ulrike Hahn. The impact of explanations as communicative acts on belief in a claim: The role of source reliability (under review).

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

Marko Tešić, Ulrike Hahn, Jason Burton, & Kirsty Phillips. (Un)interesting correlations: What are the chances that correlations lead to causation? (in prep.).

Marko Tešić, Benjamin Eva, & Stephan Hartmann. Confirmation by explanation: A Bayesian justification of IBE.

Recent Presentations

On the transferability of insights from the psychology of explanation to explainable AI
- Human Centered AI workshop at NeurIPS 2021 — *December 13, 2021*

The impact of explanations as communicative acts on belief in a claim: The role of source reliability
- 7^{th} Annual Intelligence Community Academic Research Symposium, USA — *September 15, 22, 29, 2021*
- Experimental Psychology Society, UK — *July 8–9, 2021*

Sequential diagnostic reasoning with independent causes
- International Conference on Thinking, Paris, France — *June 21–25, 2021*
- CogSci 2019, Montreal, QB, Canada — *July 24–27, 2019*

The propensity interpretation of probability and diagnostic split in explaining away
- International Conference on Thinking, Paris, France — *June 21–25, 2021*
- SPUDM, Amsterdam, The Netherlands — *August 18–22, 2019*
- Causal Cognition in Humans and Machines, Oxford, UK — *June 3–4, 2019*

Explanations in Bayesian networks
- International Conference on Thinking, Paris, France — *June 21–25, 2021*
- Third Wave AI workshop, Human-like computing, Imperial College, London, UK — *April 26, 2019*

Honors and Awards

The Royal Academy of Engineering UK IC Postdoctoral Research Fellowship — *Mar. 2021 – Present*

Ph.D. studentship from the Department of Psychological Sciences, Birkbeck, UoL — *2018 – 2020*

Ph.D. studentship from the BARD project — *2017 – 2018*

Dositeja scholarship for graduate studies *2017/18; 2015/16; 2014/15*
BAYHOST scholarship for graduate studies *2015/16; 2014/15*

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**

Online courses and further training:

- Machine Learning (Coursera)
- Neural Networks and Deep Learning (Coursera)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization (Coursera)
- Structuring Machine Learning Projects (Coursera)
- 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)