

# Marko Tešić

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## Research Experience

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- 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

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- 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

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- 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

## 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?** (under review).

**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<sup>th</sup> Annual Intelligence Community Academic Research Symposium, USA
- Experimental Psychology Society, UK

September 15, 22, 29, 2021

July 8–9, 2021

**Sequential diagnostic reasoning with independent causes**

- International Conference on Thinking, Paris, France
- CogSci 2019, Montreal, QB, Canada

June 21–25, 2021

July 24–27, 2019

**The propensity interpretation of probability and diagnostic split in explaining away**

- International Conference on Thinking, Paris, France
- SPUDM, Amsterdam, The Netherlands
- Causal Cognition in Humans and Machines, Oxford, UK

June 21–25, 2021

August 18–22, 2019

June 3–4, 2019

**Explanations in Bayesian networks**

- International Conference on Thinking, Paris, France
- Third Wave AI workshop, Human-like computing, Imperial College, London, UK

June 21–25, 2021

April 26, 2019

## Teaching Experience

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**Visiting Lecturer** for the M.A. course *Cognitive and Economic Science of Rational Choice* Oct. 2020 – Dec. 2020

Department of Psychology and Department of Economics  
City, University of London

**Seminar leader** for the M.A. courses *Neuroscience, Individual Differences, Social Psychology, and Developmental Psychology* Feb., Nov. 2020; Feb. 2021

Department of Psychological Sciences  
Birkbeck, University of London, UK

**Tutor** for the B.A. course *Logic and Discrete Structures* Summer 2017

Computer Science Department  
Ludwig Maximilians University, Munich, Germany

**Teaching assistant** for the M.A. course *Central Topics in Philosophy of Science* Winter 2016

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

**Tutor** for the B.A. course *Logic 1* Winter 2016

Faculty of Philosophy  
Ludwig Maximilians University, Munich, Germany

## Honors and Awards

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**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

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### 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)
- **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)