Dr. Annika Schuster

Academic experience

10/2023 – present
Post-doctoral Research Fellow
Research Project "Scientific Understanding and Deep Neural Networks"
University of Dortmund, Germany

01/2016 – 11/2019
Research Fellow
Research Project: "The structure of representations in language, cognition, and science"
Heinrich-Heine-University Düsseldorf, Germany

10/2012 – 12/2015
Student Assistant
Chair for Theoretical Philosophy
Heinrich-Heine-University Düsseldorf, Germany

Education

2016 – 2022
Doctoral Studies in Philosophy
Title of dissertation: Prototype Frames – A probabilistic account of typicality
Heinrich-Heine-University Düsseldorf, Germany

2015 – 2016
Master of Arts (M.A.) Philosophy
Heinrich-Heine-University Düsseldorf, Germany

2012-2016
Biochemical Engineering
completed 89 credits towards a B. Sc.
University of Dortmund, Germany

2011-2015
Bachelor of Arts (B. A.) Philosophy
Minor: Linguistics
Heinrich-Heine-University Düsseldorf, Germany

Publications

Schuster, A. (manuscript, under review): Understanding protein folding with machine learning? The case of AlphaFold2.

Boge, F., Schuster, A. (forthcoming): How can we trust opaque systems? Criteria for robust explanations in XAI. Accepted for publication in *Proceedings of IJCNN2025*. *Preprint*

Schuster, A., Poth, N. (forthcoming): Mental, Scientific, and Artificial Representations, Accepted for publication in *Philosophy of AI*.

Schuster, A. (thesis) Prototype Frames – A probabilistic account of typicality. Link

Strößner, C., Schuster, A., Schurz, G. (2021). Modification and Default Inheritance. In: Löbner, S., Gamerschlag, T., Kalenscher, T., Schrenk, M., Zeevat, H. (eds) Concepts, Frames and Cascades in Semantics, Cognition and Ontology. Language, Cognition, and Mind, vol 7. Springer, Cham.

Schuster, A, Strößner, C, Sutton, P. & Zeevat, H. (2020) Stochastic frames. In: Proceedings of the Probability and Meaning Conference (PaM 2020), ACL Anthology. Link

Dapprich, J. P., Schuster, A. (2016): Philosophy and Logic of Quantum Physics, Philosophical Foundations of the Sciences and their Applications, vol 5, G. Schurz (ed.), Peter Lang, Frankfurt am Main.

Conferences & Workshops (Selection)

2025

Mental, Scientific, and Artificial Representations? (with Nina Poth)
German Analytic Philosophy (GAP) conference, Düsseldorf, Germany.

How can we trust opaque systems? Criteria for robust explanations in XAI (with Florian Boge)
IACAP conference, Enschede, Netherlands.

SHAPley values – subjective objectivity in XAI
Philosophy of Machine Learning Workshop, Tübingen, Germany.

A New Pathway to Scientific Understanding
- Lamarr Lab Visits, Interdisciplinary Area "AI in the Life Sciences", Dortmund, Germany.
- GWP conference, Erlangen, Germany.

2024

From Objectual to Explanatory Understanding with AlphaFold2,
- AI and the Future of Science Conference, Hong Kong.
- IACAP Conference, Oregon, USA.
- Philosophy of Science and Epistemology Conference, Hong Kong.

Understanding without Understanding (with Frauke Stoll)
Philosophy of Machine Learning Conference, Tübingen, Germany.

Pathways towards Scientific Understanding with Deep Neual Networks (with Frauke Stoll)
Philosophy of Science Conference, Dubrovnik, Croatia.

Understanding Deep Learning Geometrically – Conceptual Spaces in Deep Neural Networks
- Rationality and Cognition Workshop, RUB, Bochum, Germany.
- 6th SURe Workshop, LSE, London, UK.

2023

Probabilistic Prototypes and Default Inheritance (with Corina Strößner)
Progic 2023, Utrecht, Netherlands

2022

Typicality and Probability
- Concepts and Reasoning Workshop, Ruhr Universität Bochum, Germany.
- Paris-Berkeley Workshop on Probability and Meaning, Institut Jean-Nicod, Paris, France.

2018

Mentalized Frames (with Leda Berio)
Roots of Pragmasemantics Workshop, Szklarska Poręba, Poland.

Stochastic frames (with Corina Strößner, Peter Sutton, Henk Zeevat)
Uncertainty in Meaning and Representation in Linguistics and Philosophy Workshop, Jelenia Góra, Poland.

2017

Prototype frames (with Corina Strößner)
Probabilistic Approaches to (Prototype) Concepts Workshop, SOPHiA 2017, Salzburg, Austria.

Organisation

2025

Satellite Workshop: Similarity after Carnap, co-organized with Corina Strößner, Nina Poth, Matías Osta Velez, GAP.12, Düsseldorf, Germany.

Workshop: Machine Learning Meets Scientific Understanding, co-organized with Florian Boge and Frauke Stoll, Dortmund, Germany.

2024

Lecture Series: Philosophy of Science and Machine Learning, co-organized with Florian Boge and Frauke Stoll, Dortmund, Germany.

Workshop: Epistemological Issues of Machine Learning in Science, co-organized with Florian Boge and Frauke Stoll, Dortmund, Germany.

2017

Probabilistic Approaches to (Prototype) Concepts Workshop, co-organized with Corina Strößner, SOPHiA 2017, Salzburg, Austria.

Teaching

2025

The concept of science in the course of time (German)
Foundation seminar, University of Dortmund, Germany.

2024/2025

Explanation and understanding in science (German)
Foundation seminar, University of Dortmund, Germany.

2024

Theories of concepts (German)
Foundation seminar, University of Dortmund, Germany.

2023/2024

The concept of understanding in science (English)
Advanced / Master's seminar, University of Dortmund, Germany.

2017/2018

Logic 1 exercise (German)
Seminar accompanying the lecture, Heinrich-Heine-University Düsseldorf, Germany

2017

Theories of concepts in philosophy of language and mind (English)
Advanced / Master's seminar, co-taught with Leda Berio, Heinrich-Heine-University Düsseldorf, Germany

2012-2014

Tutorials accompanying the lectures on philosophy of science and epistemology, Heinrich-Heine-University Düsseldorf, Germany

Programming

R
Python

Languages

German	native speaker
English	excellent
French	advanced