Marcel Binz

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Research Interests

Meta-Learning; Bounded Rationality; Machine Learning; Reinforcement Learning; Deep Learning; Bayesian Inference; Information Theory; Cognitive Science; Decision-Making; Exploration

Current Position

Max Planck Institute for Biological Cybernetics, Tübingen **2021 - present**
Postdoctoral Researcher (Computational Principles of Intelligence, Dr. Schulz)

Education

Philipps-Universität Marburg **2018 - 2021**
Doctoral Candidate (Theoretical Neuroscience, Prof. Endres)

KTH Royal Institute of Technology, Stockholm **2015 - 2018**
MSc. Machine Learning

Eberhard Karls Universität Tübingen **2012 - 2015**
BSc. Cognitive Science

Experience

Harvard University **09/2019 - 12/2019**
Research Visit (Computational Cognitive Neuroscience, Prof. Gershman)

Facebook Inc. **06/2016 - 12/2016**
Research Internship

Eberhard Karls Universität Tübingen **04/2015 - 08/2015**
Research Assistant (Cognitive Modelling, Prof. Butz)

Teaching

Bayesian Statistics and Machine Learning, Philipps-Universität Marburg **2020**
Lecturer, 3 Lectures, Deep Learning

Theoretical Neuroscience, Philipps-Universität Marburg **2019, 2020**
Lecturer, 3 Lectures, Reinforcement Learning

Deep Learning in Data Science, KTH Royal Institute of Technology **2017**
Teaching Assistant

Awards

German Academic Exchange Service (DAAD) Scholarship
Funding for a three month research visit at Harvard University.

DMV-Abiturpreis
Award for excellent performance in high school mathematics.

EuroCogSci 2019 Best Poster Award
Immunization Against Data in Resource-Constrained Observers

AAAI Video Competition 2015: People's Choice Award
Mario Lives! An Adaptive Learning Approach for Generating a Living and Conversing Mario Agent

Preprints

Binz, M., Gershman, S.J., Schulz, E. and Endres, D., 2020. Heuristics From Bounded Meta-Learned Inference.

Publications

Binz, M. and Endres, D., 2019. Where Do Heuristics Come From?. In CogSci (pp. 1402-1408).

Abstracts

Binz, M. and Endres, D., 2019. Emulating Human Developmental Stages with Bayesian Neural Networks. In CogSci.

Binz, M. and Endres, D., 2019. Immunization Against Data in Resource-Constrained Observers. In EuroCogSci.

Butz, M.V., Simonic, M., **Binz, M.**, Einig, J., Ehrenfeld, S. and Schrodt, F., 2016. Is it Living? Insights from Modeling Event-Oriented, Self-Motivated, Acting, Learning and Conversing Game Agents. In CogSci.

Binz, M., Otte, S. and Zell, A., 2015. On the applicability of recurrent neural networks for pattern recognition in electroencephalography signals. In Workshop New Challenges in Neural Computation (Vol. 2015, p. 85).

Talks

Max Planck Institute for Biological Cybernetics Tübingen **03/2021**
Joint Lab Retreat (Dr. Schuck, Dr. Schulz, Prof. Summerfield)

Max Planck Institute for Biological Cybernetics Tübingen **04/2020**
RLDM Colloquium

Eberhard Karls Universität Tübingen **01/2020**
1*st GK Doctoral Symposium on Cognitive Science*

Harvard University **10/2019**
Computational Cognitive Neuroscience Lab Meeting

Ruhr-Universität Bochum **09/2019**
Institute of Neuroinformatics Colloquium

Max Planck Institute for Human Development **06/2019**
Summer Institute on Bounded Rationality

KFZ Marburg **05/2019**
Science Slam

Supervision

Akshay Kumar Jagadish, Eberhard Karls Universität Tübingen, Master Thesis **2021**
Compositional Generalization in Meta-Reinforcement Learning

Gwen Hirsch, Philipps-Universität Marburg, Master Thesis **2020**
Comparing Meta-Learners with Human Performance in a Continual Learning Framework

Hauke Niehaus, Philipps-Universität Marburg, Master Thesis **2019**
Simulating Decision-Making Deficits in a Deep Meta-Reinforcement-Learning Agent