

Matteo Bortoletto

Ph.D. Candidate at the University of Stuttgart

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EDUCATION

Ph.D. in Computer Science

2022 - Present

University of Stuttgart, Germany

Thesis (tentative): "Modelling and Interpreting Machine Theory of Mind" (Advisor: Andreas Bulling)

M.Sc. in Physics of Data, *cum laude*

2019 - 2021

University of Padua, Italy

Thesis: "Study of performances for Restricted Boltzmann Machines" (Advisor: Marco Baiesi)

B.Sc. in Physics

2016 - 2019

University of Padua, Italy

Thesis: "Oscillations in stochastic population dynamics models" (Advisor: Samir Suweis)

PUBLICATIONS

Matteo Bortoletto, Constantin Ruhdorfer, Lei Shi, Andreas Bulling. "Explicit Modelling of Theory of Mind for Belief Prediction in Nonverbal Social Interactions." In *Proceedings of the 27th European Conference on Artificial Intelligence (ECAI)*, 2024.

Constantin Ruhdorfer, **Matteo Bortoletto**, Anna Penzkofer, Andreas Bulling. "The Overcooked Generalisation Challenge." *arXiv:2406.17949*, 2024.

Matteo Bortoletto, Constantin Ruhdorfer, Lei Shi, Andreas Bulling. "Benchmarking Mental State Representations in Language Models." In *ICML Workshop on Mechanistic Interpretability*, 2024.

Matteo Bortoletto, Constantin Ruhdorfer, Adnen Abdessaied, Lei Shi, Andreas Bulling. "Limits of Theory of Mind Modelling in Dialogue-Based Collaborative Plan Acquisition." In *Proceedings of the 62nd Annual Meeting of the Association for Computational Linguistics (ACL)*, 2024.

Matteo Bortoletto, Lei Shi, Andreas Bulling. "Neural Reasoning About Agents' Goals, Preferences, and Actions." In *Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI)*, 2024.

Ekta Sood, Lei Shi, **Matteo Bortoletto**, Yao Wang, Philip Müller, Andreas Bulling. "Improving neural saliency prediction with a cognitive model of human visual attention." In *Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci)*, 2023.

Guanhua Zhang, **Matteo Bortoletto**, Zhiming Hu, Lei Shi, Mihai Băce, Andreas Bulling. "Exploring Natural Language Processing Methods for Interactive Behaviour Modelling." In *Proceedings of Conference on Human-Computer Interaction (INTERACT)*, 2023. 🏆 Best Student Paper Nomination

TEACHING EXPERIENCE

Course Organiser and Teaching Assistant, Machine Perception and Learning

WS 2024

Course Organiser and Lecturer, Computational Theory of Mind and Cognition

SS 2024

Teaching Assistant, Machine Perception and Learning

SS 2022, WS 2022, WS 2023

MENTORING

Jonas Allali, M.Sc. Thesis: "Probing for Theory of Mind in the Multi-Agent Cooperation Game Yokai"

Jann-Philip Thewes, M.Sc. Thesis: "Multimodal LLM for Theory of Mind Modelling in Collaborative Tasks"

Ruben Werbkke, B.Sc. Thesis: "Inferring Other Agents' Goal in Collaborative Environments Using Graphs"

Constantin Ruhdorfer, M.Sc. Thesis: "Into the Minds of the Chefs: Using Theory of Mind for Robust

Collaboration with Humans in Overcooked" 🏆 Rul Gunzenhäuser Award

John Pravin Arockiasamy, M.Sc. Research Project: "Transformer Based Architecture for Belief Prediction in Object-Context Scenarios"

Michael Erdemann, M.Sc. Thesis: "Recreating False-Belief Tests as Visual Question Answering Tasks"

WORK EXPERIENCE

University of Padua, Research Fellow

Mar 2021 - May 2021

Piratech, Software Developer Intern

Mar 2021 - May 2021

SERVICES

Reviewer: CHI'24

Student Volunteer: AAAI'24 📄, ACL'24

AWARDS

Scholarship AAAI'24 📄, ACL'24

2024

Best Student Paper Nomination INTERACT'23

2023

StartCup Veneto Start up competition winner, TooBusy

2021

Research Grant, University of Padua, "Urban Big Data for Economic Development"

2021

EVENTS AND PRESENTATIONS

ELLIS CoGenAI Summer School (Aalto University, Finland) 📄

2024

ELLIS Unit Stuttgart Summer Symposium

2024

ELLIS Unit Stuttgart Kickoff Symposium

2023

Dagstuhl Seminar on Anticipatory Human-Machine Interaction

2022

SKILLS

Languages: English (fully proficient), Italian (native), Spanish (good), German (basic)

Programming: Python, Bash, R, HTML, C++, Fortran

LLMs: PyTorch, Huggingface, NNSight, LangChain

Software & Tools: Linux, MacOS, Git, L^AT_EX, Microsoft Suite

Hobbies and activities: Watercolour painting, playing the guitar, swimming, bodyweight exercise

Last update: August 7, 2024