

# Matteo Bortoletto

Ph.D. Candidate at the University of Stuttgart

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## EDUCATION

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### Ph.D. in Computer Science

2022 - Present

University of Stuttgart, Germany

Thesis: "Multi-Modal Collaborative 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

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**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 26th European Conference on Artificial Intelligence (ECAI)*, 2024.

Constantin Ruhdorfer, **Matteo Bortoletto**, Anna Penzkofer, Andreas Bulling. "The Overcooked Generalisation Challenge." *Preprint*, 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.

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

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.

## TEACHING EXPERIENCE

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**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

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

**Ruben Werbke**, 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

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<b>University of Padua</b> , Research Fellow	<i>Mar 2021 - May 2021</i>
<b>Piratech</b> , Software Developer Intern	<i>Mar 2021 - May 2021</i>

## SERVICES

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**Reviewer:** CHI'24  
**Student Volunteer:** AAAI'24

## AWARDS

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<b>Scholarship</b> AAAI'24	<i>2024</i>
<b>Best Student Paper Nomination</b> INTERACT'23	<i>2023</i>
<b>StartCup Veneto</b> Start up competition winner, TooBusy	<i>2021</i>
<b>Research Grant</b> , University of Padua, “Urban Big Data for Economic Development”	<i>2021</i>

## SKILLS

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**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<sup>A</sup>T<sub>E</sub>X, Microsoft Suite  
**Hobbies and activities:** Watercolour painting, playing the guitar, swimming, bodyweight exercise

Last update: July 4, 2024