Lennart Wachowiak

London, UK

✉ lennart.wachowiak@kcl.ac.uk | ⌂ lwachowiak.github.io | ⌨ github.com/lwachowiak | 🎓 Google Scholar

Personal Profile

I am a PhD candidate at the Center for Safe and Trusted AI at KCL and Imperial College, researching how to make AI agents explainable. In my work, I integrate both neural and symbolic components into robots, using tools such as ROS, PyTorch, or HuggingFace. To assess users' explanation needs, I design human–robot interaction experiments and conduct large-scale online questionnaire studies. Moreover, I investigate the abilities of LLMs and VLMs in regard to phenomena from embodied cognition. Among others, my work has been published at ACL, COLING, and HRI.

Education

PhD Candidate at the Center for Safe and Trusted AI
UK

King's College London, Imperial College London
Oct 2021 - Present

- Received training in making AI reliable and trustworthy, responsible research and innovation, and public engagement
- Secured competitive funding for four years

Joint MSc in Cognitive Science, Graduated with Distinction
Austria/Slovenia

University of Vienna, University of Ljubljana, Grade average 1.2
Oct 2018 - Jan 2021

- Highly selective master's program with a focus on AI and linguistics
- Lab internships at the Austrian Research Institute for AI, MedUni Vienna Institute for AI and Decision Support, and Ljubljana AI Lab

BSc in Computer Science
Germany

University of Paderborn, Grade average 1.6
Oct 2014 - Oct 2017

Work Experience

Teaching Assistant and Internship Supervisor
UK

King's College London, Department of Informatics
Sep 2022 - Present

- Introduction to Robotics: led tutorials and practical labs, graded exams, and assembled robots
- Supervised two undergraduate research interns over the summer, leading to a publication
- Facilitated and developed workshops for underrepresented students interested in research

Predoctoral Researcher in Natural Language Processing
Austria

University of Vienna, Department of Translation Studies
Jul 2020 - Sep 2021

- Developed a knowledge base extraction system using state-of-the-art NLP techniques, published five papers
- Successfully made the system available to the public by deploying it on the European Language Grid and open-sourcing the models

IT Project Management Intern for VR Applications
Germany

Audi AG Ingolstadt
Nov 2017 - May 2018

- Led an agile software project within the Scrum framework in the field of virtual reality and game-based learning
- Responsible for requirements management, test management, reporting to the management, and coordination of 10+ employees

Selected Research Projects

Language Models and Concepts from Embodied Cognition
UK

Collaborations with Ludwig Maximilian University of Munich, University of Vienna, and Shanxi University
Oct 2020 - Present

- Investigated the abilities of LLMs/VLMs in regard to embodiment phenomena, e.g., conceptual metaphors
- Error and capability analysis of language models, such as LLaMA or GPT, using statistical methods as well as LIME and clustering
- Engaged in international collaborations leading to publications at ACL, COLING, and workshops at EMNLP and KR

Designing an Explainable Robot Architecture
UK

King's College London
Oct 2021 - Present

- Researched how different XAI modules can be integrated into a robot engaging in collaborative scenarios (in progress)
- Designed experiments to identify when people need explanations, trained ML models on multimodal affective data (published at RO-MAN)
- Conducted a PRISMA scoping review and a large-scale questionnaire study to establish what user explainability needs exist (published at HRI)

Outreach and Professional Service

Public Engagement
UK

- Coordinator of participatory workshops on the use of robots in care homes, leading a team of 5 researchers
- Organizer and developer of an interactive robotics exhibition at the KCL AI Festival

Service *UK*
- Journal reviewer for IEEE Transactions on Affective Computing, Elsevier Computers & Education: Artificial Intelligence
- Conference and workshop reviewer for ACL Rolling Review, COLING, LREC, ICRA, RO-MAN, Explainable Robotics WS, MEi:CogSci Conf.
- Conference volunteer at ICRA 2023 for the Physically Assistive Robot Challenge
- Co-organizer and contributor to reading groups on topics in safe and trusted AI, AI ethics, and social robotics

Skills

Programming Languages	Python, C#, Java
AI/Robotics Libraries	PyTorch, HuggingFace, ROS, Scikit-learn, fast.ai, NumPy, Matplotlib, Pandas, NLTK, etc.
Miscellaneous	Unity3D, LaTeX, Microsoft Office Suite, IDEs (e.g. VS Code), Jupyter Notebook, Linux, Shell, Git
Languages	German (Native), English (Fluent), Portuguese (Intermediate), French (Beginner), Latin

Honors and Awards

2022/23	**Dean's Commendation**, outstanding participation in the Associateship of King's College program	*UK*
2021	**Best Student Paper**, awarded at the 3rd Conference on Language, Data and Knowledge	*Spain*
2020	**1st Place in CogALex Shared Task**, best-performing ML model for multilingual relation classification	*Spain*
2019	**Performance Scholarship**, merit-based scholarship awarded by the University of Vienna	*Austria*

Publications

CONFERENCE PROCEEDINGS

When Do People Want an Explanation from a Robot?
Lennart Wachowiak, Andrew Fenn, Haris Kamran, Andrew Coles, Oya Celiktutan, Gerard Canal
19th Annual ACM/IEEE International Conference on Human–Robot Interaction, 2024

Does GPT-3 Grasp Metaphors? Identifying Metaphor Mappings with Generative Language Models
Lennart Wachowiak, Dagmar Gromann
61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers), 2023

Systematic Analysis of Image Schemas in Natural Language through Explainable Multilingual Neural Language Processing
Lennart Wachowiak, Dagmar Gromann
29th International Conference on Computational Linguistics, 2022

Analysing Eye Gaze Patterns during Confusion and Errors in Human–Agent Collaborations
Lennart Wachowiak, Peter Tisnikar, Gerard Canal, Andrew Coles, Matteo Leonetti, Oya Celiktutan
31st IEEE International Conference on Robot and Human Interactive Communication, 2022

Transforming Term Extraction: Transformer-Based Approaches to Multilingual Term Extraction Across Domains
Christian Lang*, Lennart Wachowiak*, Barbara Heinisch, Dagmar Gromann
Findings of the Association for Computational Linguistics, 2021

Towards Learning Terminological Concept Systems from Multilingual Natural Language Text
Lennart Wachowiak, Christian Lang, Barbara Heinisch, Dagmar Gromann
3rd Conference on Language, Data and Knowledge, 2021

BOOK CHAPTERS

A Novel Way of Extracting Full-fledged Terminologies from Multilingual Texts
Dagmar Gromann, Barbara Heinisch, Lennart Wachowiak, Christian Lang
Lexicographica: International Annual for Lexicography, 2023

Extracting Terminological Concept Systems from Natural Language Text
Dagmar Gromann, Lennart Wachowiak, Christian Lang, Barbara Heinisch
European Language Grid: A Language Technology Platform for Multilingual Europe. Cognitive Technologies, 2023

WORKSHOP PROCEEDINGS

A Survey of Evaluation Methods and Metrics for Explanations in Human–Robot Interaction (HRI)
Lennart Wachowiak, Oya Celiktutan, Andrew Coles, Gerard Canal
IEEE ICRA Workshop on Explainable Robotics, 2023

The Image Schema VERTICALITY: Definitions and Annotation Guidelines
Lennart Wachowiak, Dagmar Gromann, Chao Xu
7th Image Schema Day at the 20th International Conference on Principles of Knowledge Representation and Reasoning, 2023

Towards Autonomous Collaborative Robots that Adapt and Explain
Peter Tisnikar, Lennart Wachowiak, Gerard Canal, Andrew Coles, Matteo Leonetti, Oya Celiktutan
IEEE ICRA Workshop on Prediction and Anticipation Reasoning in Human–Robot Interaction, 2022

Drum Up SUPPORT: Systematic Analysis of Image-Schematic Conceptual Metaphors
Lennart Wachowiak, Dagmar Gromann, Chao Xu
EMNLP 3rd Workshop on Figurative Language Processing, 2022

Multilingual Extraction of Terminological Concept Systems
    Dagmar Gromann, Lennart Wachowiak, Christian Lang, Barbara Heinisch
    Workshop on Deep Learning and Neural Approaches for Linguistic Data, 2021

CogALex 2.0: Impact of Data Quality on Lexical-Semantic Relation Prediction
    Christian Lang, Lennart Wachowiak, Barbara Heinisch, Dagmar Gromann
    NeurIPS Data-Centric AI Workshop, 2021

CogALex-VI Shared Task: Transrelation — A Robust Multilingual Language Model for Multilingual Relation Identification
    Lennart Wachowiak, Christian Lang, Barbara Heinisch, Dagmar Gromann
    Workshop on the Cognitive Aspects of the Lexicon, 2020

EXTENDED ABSTRACTS

Semi-automatic Extraction of Image Schemas from Natural Language
    Lennart Wachowiak
    MEi: CogSci Conference, 2020

Grounded Language Learning in Robots — An Information-Theoretic Approach to Adjective Learning
    Rebecca Varga, Lennart Wachowiak
    MEi: CogSci Conference, 2019