+49 178 607 9703 Bremen, Germany kristina-nikolovska.netlify.app kristina.nikolovska6@gmail.com EU Citizen

Kristina Nikolovska

ROBOTICS ENGINEER | HUMAN–ROBOT INTERACTION

Research Profile

Robotics engineer and PhD candidate working at the intersection of human–robot interaction, adaptive autonomy, and intelligent robotic systems. My research integrates experimental HRI, behavior modeling, and system-level robotic implementation to develop embodied agents that adapt to complex human-centered environments.

Research Interests

Adaptive and learning-based control · Reinforcement learning for embodied agents · Human-aware autonomy · Robotics in construction and agriculture · Socially intelligent systems

Education

2023 – Present
Expected defense: July 2026

Constructor University, Bremen, Germany
PhD in Robotics

Research focus: Development and experimental validation of socially aware navigation architectures for mobile robots operating in shared human environments.

2020

Robotcloud UG, Munich, Germany
Erasmus for Young Entrepreneurs – Robotics Start-up Exchange

Six-month exchange focused on robotics innovation, technology validation, and early-stage product feasibility.

2016 – 2019

Faculty of Electrical Engineering, University of Ljubljana, Slovenia
M.Eng. in Robotics

Thesis: *Development of motion-planning algorithms for autonomous vehicle parking*.

2012 – 2016

Faculty of Electrical Engineering, University of Ljubljana, Slovenia
B.Sc. in Electrical Engineering

Major: Control Systems and Automation.

Research experience

2022 – Present

Constructor University, Bremen, Germany
Research Associate

- Designed and implemented modular navigation and behavior adaptation frameworks for mobile robots.
- Developed adaptive motion strategies and validated behavioral impact through controlled experimental studies.
- Conducted quantitative statistical analysis of user perception and system performance.

2020 – 2021

Faculty of Electrical Engineering, University of Ljubljana, Ljubljana, Slovenia
Research Associate, ROBOLAB

- Investigated effects of robot speed and end-effector configuration on perceived safety and collaboration.
- Designed experimental protocols and performed statistical modelling of user data.

2018 **Faculty of Electrical Engineering, University of Ljubljana**, Ljubljana, Slovenia
Research Project, Autonomous Landing System – Safe Landing Zone Identification

- Contributed to a ministry-funded UAV landing zone identification project in collaboration with industry partners.
- Conducted sensor evaluation and supported multi-sensor integration.
- Co-authored and presented results at an international engineering conference.

2017 – 2018 **Epilog d.o.o.,** Ljubljana, Slovenia
Research Engineer – Autonomous Vehicle Systems

- Designed motion-planning algorithms for warehouse AGVs.
- Integrated planning modules into real-world industrial robotic systems.
- Contributed to next-generation industrial robot development.

Teaching experience

2026 **Constructor University,** Bremen, Germany
Lecturer, AI & Data Science Winter School

- Designed and delivered an intensive short-format course (~25–30 participants) introducing core concepts in machine learning and applied artificial intelligence.
- Covered supervised learning, data preprocessing pipelines, model evaluation, and practical implementation in Python.
- Developed lecture materials and hands-on programming exercises.

2025 **Constructor University,** Bremen, Germany
Lecturer, Robot–Intelligent Systems (RIS Project)

- Designed and delivered lectures on robotic perception, localization (AMCL), and navigation architectures for autonomous mobile robots.
- Supervised hands-on implementation of ROS-based perception–planning pipelines using Duckietown platforms.
- Mentored student teams and evaluated technical project milestones and final system demonstrations.

Bachelor's Students Advised:

- Bisera Janevska, "Assessment of Mental Workload in Human-Robot Interaction: A Multi-modal Analysis Comparing ECG Measurements with Subjective Assessments at Varying Cobot Speeds."
  → Awarded Best Bachelor's Thesis (2025)
  Mariam Machaidze, "Teleoperate a rolling robot accurately using only pointing gestures." (2026)

Publications

2023-2026

Conference Publications (Peer-Reviewed)

- Nikolovska, K., Pohl, J., Hommel, B., Kappas, A., & Maurelli, F. "User Perception of Robot Behavior as a Function of Previous Experience with Robots." *Proceedings of the 16th International Conference on Human System Interaction (HSI)*. IEEE, 2024, pp. 1–7.
- Nikolovska, K., Pohl, J., Hommel, B., Maurelli, F., & Kappas, A. "It's the Way You Move: Efficient Movement Shapes Robot Perception Across Embodiments." *Proceedings of the International Conference on Social Robotics (ICSR)*. Springer, 2025, pp. 295–308.
- Nikolovska, K., Pohl, J., Hommel, B., Kappas, A., & Maurelli, F. "The Impact of Social Inter-Robot Encounters on User Perception." *Proceedings of the 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. IEEE, 2024, pp. 238–243.
- Nikolovska, K., Kappas, A., & Maurelli, F. "Bridging the Gap with PRoMo: What Users Expect from Robot Navigation in Shared Environments." *Proceedings of the 34th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. IEEE, 2025, pp. 1902–1908.

2023-2025

Journal papers

- Pohl, J., Nikolovska, K., Maurelli, F., Kappas, A., & Hommel, B. (2025). Selfhood-attribution in a social context: Further evidence for a Pars-Pro-Toto account. Frontiers in Psychology, 16, 1528172.

2026

Journal Manuscripts Under Review

- Nikolovska, K., Kappas, A., & Maurelli, F., "From Perception to Planning: Embedding Human Social Norms into Robot Navigation via Modular ROS Costmap Layers." Submitted to *IEEE Robotics and Automation Letters (RA-L)*, 2026.
- Nikolovska, K., Kappas, A., & Maurelli, F., "Navigation as Social Signaling: The Impact of Adaptive Robot Navigation Behavior on Human Perception." Submitted to *Frontiers in Robotics and AI*, 2026.

Workshops and invited talks

2025

Workshop Chair
"Movement Matters: A Turing Test for Robot Interaction"
IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), Eindhoven, Netherlands

2025

Invited Lecturer
AI and Robotics in Entrepreneurship, Young Entrepreneur Summit, Bremen, Germany

2024

Invited Panelist
"Coded Youth Futures", International Youth Conference, Kruševo, North Macedonia

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Professional service

2024 – Present

Peer-Reviewed Articles for:
Frontiers in Robotics & AI

IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)

IEEE International Conference on Human–Robot Interaction (HRI)

IEEE International Conference on Robotics and Automation (ICRA)

Project Leadership & Coordination

2023 – 2024

International 8-Country Partnership
Project Coordinator — DigiPath (Erasmus+)
Coordinated national activities and managed cross-sector collaboration within an international EU project.

2019 – 2020

Work Package Lead — DIVE 3 (Erasmus+)
Led a national work package, supervised a multidisciplinary team, and coordinated project deliverables within a European partnership.

Languages

Slovenian (Native) · **Macedonian** (Native) · **English** (C1) · **German** (B1)

Skills

Technical

Python · C++ · MATLAB · ROS · Ubuntu Linux · LaTeX
Autonomous Mobile Robots · Pepper / NAO · Duckietown · UR5
Motion Planning · Navigation Architectures ·· Statistical Analysis · Human–Robot Interaction

Professional

Project Coordination · Technical Leadership · Research Project Management · Experimental Design · Scientific Communication