Momina Rizwan

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Ph.D. researcher at the Computer Science Department

Lund Technical Hogskola, Lund University

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Personal website: mominarizwan.com

Work experience

- **Lund University**
  Lund, Sweden
  Ph.D. researcher, 80 %
  2020-current
  Collaborated on interdisciplinary research projects, managed project timelines
  and resources, and presented research at international conferences like ICSE, ICRA.
  Mentored undergraduate research assistants.

- **Lund University**
  Lund, Sweden
  Teaching Assistant, 20 %
  2020-current
  Reviewing code and fixing robot technical problems during the lab sessions.
  Courses:

  – Discrete Structures
  – Intelligent Autonomous Systems
  – Artificial Intelligence

- **Sabanci University**
  Istanbul, Turkey.
  Teaching Assistant
  2016-2019
  Took recitation sessions and joined Academic Development Program (ADP)
  to help students understand basic concepts.
  Courses:

  – Calculus I
  – Calculus II
  – Introduction to Differential Equations
  – Introduction to Probability
  – Mechatronics System Design

- **Bulleh Shah Packages Ltd.**
  Kasur, Pakistan.
  Trainee Engineer at Maintenance Planning Department
  2015 - 2016
  Scheduled maintenance jobs for paper machines.

- **Packages Ltd.**
  Lahore, Pakistan.
  Summer Intern at the BU-FC Department
  2014
  Optimized packing process, implemented 5S on machine floors, horizontal
  replicated Kaizen and OPL(One Point Lesson) on machines.

- **Petrosel Lubricants Ltd.**
  Lahore, Pakistan.
  Project Internship, a Company Sponsored Competition.
  2014
  Designed and Developed a Run-of-the River Turbine.

- **Descon Integrated Projects Ltd.**
  Lahore, Pakistan.
  Summer Intern at the Instrumentation and Control Department.
  2013
  Designed instrumentation and pipe maps for the client industries.

Education

- **Lund University**   Lund, Sweden
  Ph.D. Computer Science   2020-current
  Research Lab: Software Development and Environments and Robotics Semantics and Systems
  Advisor: Christoph Reichenbach and Volker Krueger
  Project: Domain-Specific Robot Programming for Reliability, Safety, and Availability

- **Sabanci University**   Istanbul, Turkey
  MSc. Mechatronics Engineering   2016-2019
  Research Lab: Cognitive Robotics
  Advisor: Volkan Patoglu and Esra Erdem
  Project: A formal approach to human robot collaborative assembly planning under uncertainty

- **University of Engineering and Technology**   Lahore, Pakistan
  BSc. Mechatronics and Control Engineering   2011-2015
  Advisor: Ali Raza
  Project: Homogeneous Swarm Robots

Publications

- Rizwan, Momina, Ricardo Caldas, Christoph Reichenbach, and Matthias Mayr. "Ezskiros: A case study on embedded robotics dsls to catch bugs early." In 2023 IEEE/ACM 5th International Workshop on Robotics Software Engineering (RoSE), pp. 61-68. IEEE, 2023.

- Rizwan, Momina, Christoph Reichenbach, and Volker Krueger. "ROSSMARie: A Domain-Specific Language To Express Dynamic Safety Rules and Recovery Strategies for Autonomous Robots." In Second Workshop on Quality and Reliability Assessment of Robotic Software Architectures and Components. 2023.

- Rizwan, Momina, Volkan Patoglu, and Esra Erdem. "Human robot collaborative assembly planning: An answer set programming approach." Theory and Practice of Logic Programming 20, no. 6 (2020): 1006-1020.

- Rizwan, Momina, Volkan Patoglu, and Esra Erdem. "Human-Robot Collaborative Assembly Planning using Hybrid Conditional Planning." Proc. FAIM/ISCA Workshop on Artificial Intelligence for Multimodal Human Robot Interaction, 2018.

- Rizwan, Momina, Volkan Patoglu, and Esra Erdem. "A Formal Model for Human Robot Collaboration using Hybrid Conditional Planning." RSS Workshop on Models and Representations for Human-Robot Communication, 2018.

- Rizwan, Momina, Volkan Patoglu, and Esra Erdem. "Addressing Challenges of Theory of Mind using Hybrid Conditional Planning." RSS Workshop on towards a framework for Joint Action: What about theory of mind?, 2018.

Awards, Grants & Honours

Best Application Paper Award in TPLP 2020. 2020
Full Graduate Scholarship with Tuition waiver 2016-2019

Professional Service

- Program Committee Member, 7th International Workshop on Robotics Software Engineering (RoSE 2025), co-located with ICSE 2025. Duties include reviewing 1-2 papers, participating in discussions, and contributing to the workshop's academic program.

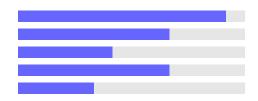## Technical Skills

Computer Programming

Python

C++

Kotlin

Java

Scala

Software Development: Version Control (e.g., Git), Software Testing and Debugging, Object-Oriented Design (OOD), Design Patterns

Software Tools and Frameworks: Integrated Development Environments (IDEs) (e.g., Visual Studio, Eclipse), Docker and Containerization, MATLAB/Simulink (for simulation and modeling)

Robot software tools and skills: Robot Operating System (ROS), Embedded Systems Programming (e.g., Arduino, Microcontrollers), MATLAB for Robotics, C/C++ for real-time systems, Gazebo for Robot Simulation, V-REP/CoppeliaSim, Mechatronics system design (integration of mechanical, electrical, and software systems)

References

Christoph Reichenbach
Senior Lecturer at Software Development and Environments, Lund University
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Volker Krueger
Professor at Robotics and Semantic Systems, Lund University
volker.krueger@cs.lth.se