Faseeh **Ahmad**

Skills

Specialised skills

- Autonomous systems, AI, and machine learning.
- Proficient in Python and C++ for robotics and AI development.
- Control theory and path planning with robots
- Hands-on experience with autonomous systems
- Integration testing of autonomous systems

Transferable skills

- Project management
- Taking initiative
- Problem-solving and analytical thinking
- Collaboration and teamwork
- Adaptability
- Critical thinking and innovation

Technical Skills

- **Programming Languages:** Python, C++, MATLAB
- **Robotics Frameworks:** ROS, SkiROS2, MuJoCo, DART, Gazebo, Pybullet
- **Machine Learning Libraries:** TensorFlow, PyTorch, Transformers, Scikit-learn, OpenAI, Gym, GPyTorch
- **Version Control and Development Tools:** Git, GitHub, GitLab, CMake, Docker
- **Data Analysis and Visualization:** NumPy, Pandas, Matplotlib, Seaborn
- **Design and CAD Tools:** SolidWorks, AutoCAD, PTC Creo, SolidEdge, OpenGL

Contact details

@ **faseeh.ahmad@cs.lth.se**

+46 735534831

✉ Lund University, Sweden

Website: faseeh-ahmad.com

LinkedIn: Faseeh Ahmad

Google Scholar: Faseeh Ahmad

About me

I am a dedicated and curious researcher with a real passion for autonomous systems, robotics, and artificial intelligence. My work revolves around developing intelligent robotic systems, especially in areas like robot learning, autonomy, and behavior modeling.

I have always been self-motivated and enjoy working independently, a strength I relied on throughout my PhD. But I also love collaborating with others, and I have had the chance to work with diverse teams on research papers and software projects. I am committed to doing quality work and often find myself going the extra mile to make sure everything is done right.

I approach my work with a mix of practicality and creativity. I balance working on shared projects with coming up with new, innovative ideas. I like to stay flexible and adaptable, which helps me tackle challenges and keep moving forward in fast-paced research environments

Education

2020–present — **Ph.D. in Computer Science**,
Lund University, Sweden
Behavior Trees and Motion Generators (BTMG) for robotic skills, extended with machine learning and reinforcement learning.
Supervisor: Prof. Volker Krueger.

2016–2019 — **M.Sc. in Mechatronics Engineering (3.91/4)**,
Sabanci University, Turkey
Thesis: "Robot Construction Problems as an application of answer set programming."
Supervisors: Prof. Volkan Patoğlu and Prof. Esra Erdem.

2011–2015 — **B.Sc. in Mechatronics and Control Engineering (3.965/4)**,
University of Engineering and Technology, Pakistan
Thesis: "Construction of a Search and Rescue Robot."
Supervisor: Assoc. Prof. Dr. Ali Raza.

Work Experience

2020–present — **Teaching Assistant**,
Lund University, Sweden
Courses:
◇ EDAP01 - Artificial Intelligence, 2024
◇ EDAN96 - Applied Machine Learning, 2023
◇ IAS - Intelligent Autonomous Systems, 2020 and 2021

2016–2019 — **Graduate Researcher (Masters)**,
Cognitive Robotics Lab, Sabanci University, Istanbul, Turkey
- Worked on solving computationally NP-hard problems using Answer Set Programming, including robot construction problems.
- Conducted simulations with ROS gazebo and Pybullet physics engine, focusing on machine learning applications.

2016–2019 — **Teaching Assistant**,
Sabanci University, Turkey
- Served as a teaching assistant for multiple courses,
◇ Calculus I, 2016
◇ Calculus II, 2016 and 2017
◇ Probability and Statistics, 2017 and 2018
- Responsible for solving questions in recitations, conducting quizzes, and grading exams.

2015 — **Teaching Assistant**,
Lahore University of Management Sciences, Pakistan
- Focused on industrial machines like CNC and lathe machines, contributing to research in the field of forestation.
- Conducted quizzes and facilitated students' grasp of theoretical concepts.

Awards and Achievements

2016–2019 **Masters Full Scholarship with Stipend**,
Sabanci University, Turkey
Full scholarship including a tuition waiver.

2011–2015 **Gold Medalist**,
University of Engineering and Technology, Pakistan
Ranked 1st in the department with the highest CGPA.

List of Publications

Ahmad, F., Mayr, M., Suresh-Fazeela, S., & Kreuger, V. (2024). Adaptable Recovery Behaviors in Robotics: A Behavior Trees and Motion Generators (BTMG) Approach for Failure Management. *arXiv preprint arXiv:2404.06129*.

Ahmad, F., Mayr, M., & Krueger, V. (2023). Learning to adapt the parameters of behavior trees and motion generators (btmgs) to task variations. In *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 10133–10140). IEEE.

Mayr, M., **Ahmad, F.**, & Krueger, V. (2023). Flexible and Adaptive Manufacturing by Complementing Knowledge Representation, Reasoning and Planning with Reinforcement Learning. In *Proceedings of the 2023 IROS Robotics & AI in Future Factory Workshop*.

Ahmad, F., Patoglu, V., & Erdem, E. (2023). Hybrid planning for challenging construction problems: An Answer Set Programming approach. *Artificial Intelligence, 319*, 103902. Elsevier.

Ahmad, F., Mayr, M., Topp, E. A., Malec, J., & Krueger, V. (2022). Generalizing behavior trees and motion-generator (btmg) policy representation for robotic tasks over scenario parameters. In *Proceedings of the 2022 IJCAI Planning and Reinforcement Learning Workshop*.

Mayr, M., **Ahmad, F.**, Chatzilygeroudis, K., Nardi, L., & Krueger, V. (2022). Skill-based multi-objective reinforcement learning of industrial robot tasks with planning and knowledge integration. In *Proceedings of the 2022 IEEE International Conference on Robotics and Biomimetics (ROBIO)* (pp. 1995–2002). IEEE.

Mayr, M., **Ahmad, F.**, Chatzilygeroudis, K., Nardi, L., & Krueger, V. (2022). How to Set Up & Learn New Robot Tasks with Explainable Behaviors? In *Proceedings of the European Robotics Forum*.

Mayr, M., **Ahmad, F.**, Chatzilygeroudis, K., Nardi, L., & Krueger, V. (2022). Combining planning, reasoning and reinforcement learning to solve industrial robot tasks. In *Proceedings of the 2022 IROS Trends and Advances in Machine Learning and Automated Reasoning for Intelligent Robots and Systems Workshop*.

Mayr, M., Chatzilygeroudis, K., **Ahmad, F.**, Nardi, L., & Krueger, V. (2021). Learning of parameters in behavior trees for movement skills. In *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 7572–7579).

Ahmad, F., Erdem, E., & Patoglu, V. (2019). A formal framework for robot construction problems: A hybrid planning approach. *arXiv preprint arXiv:1903.00745*.

Ahmad, F., Erdem, E., & Patoglu, V. (2018). Revisiting robot construction problems as benchmarks for task and motion planning. In *Proceedings of RSS*.

Languages

English: Fluent

Swedish: Beginner (A1, A2)

Urdu: Native

Hobbies

Outdoor: Swimming, hiking, sports in general.

Indoor: Reading books, board games, computer games.