

Firas Al-Hafez

🏠 Darmstadt, Germany

🐦 [Twitter](#)

🎓 [Google Scholar](#)

🔄 [GitHub](#)

✉ fi.alhafez@gmail.com

🌐 www.firasalhafez.com

EDUCATION

Ph.D. in Computer Science field Robot Learning

Technische Universität Darmstadt, Germany

since November 2021

Intelligent Autonomous Systems Lab

Supervisor: [Jan Peters](#)

Key Interests: Reinforcement learning, Inverse Reinforcement Learning, Latent State Space Models, Humanoid Robotics

Master of Science

Technische Universität Braunschweig, Germany

October 2017 – April 2021

Electronic Automotive and Aerospace Systems

Thesis*: “Comparing reinforcement learning algorithms and evolution strategies on robot manipulation tasks using redundancy resolution”

Master of Science

Technische Universität Braunschweig, Germany

April 2017 – December 2019

Mechanical Engineering field Automotive Engineering

Thesis**: “Development of a tactical maneuver planner for automated driving systems in urban areas using reinforcement learning”

Bachelor of Science

Technische Universität Braunschweig, Germany

October 2013 – May 2017

Industrial Engineering field Mechanical Engineering

Thesis***: “Assessment of the energy balance in electrified powertrains using fuel cells in comparison to conventional powertrains”

EXPERIENCE

Institute of Robotics and Process Control @ TU Braunschweig

August 2020 - April 2021

*Research Assistant (2nd Master Thesis)**

Braunschweig, Germany

- Enhanced safety and applicability of reinforcement learning policies for robot manipulation tasks by incorporating action-bias generated through redundancy resolution and secondary objectives, facilitating straightforward zero-shot transfer from simulated training to real-world execution on the Franka Emika Panda robot arm. (lead to [Publication in Conference on Robot Learning 2021](#))

Volkswagen Group

April 2019 - December 2019

*Research Intern, Machine Learning (1st Master Thesis)***

Wolfburg, Germany

- Development of a tactical maneuver planner using DQN and MCTS, and comparison to dynamic programming-based approaches. (lead to patent [US20210263526A1](#))

Volkswagen Group

Software Engineering Intern

October 2018 - March 2019

Wolfburg, Germany

- Developed a modular simulation environment for tactical maneuver planning in urban contexts, integrating OpenDRIVE-modeled road networks and evaluating its efficacy with a sampling-based maneuver planning approach.

Daimler Group

Simulation Engineering Intern (Bachelor Thesis)^{***}

September 2016 - April 2017

Stuttgart, Germany

- Thermodynamic energy analysis of fuel cells for hybrid drivetrains.

AWARDS

Robotic Talents Award 2021 [\[read more\]](#)

December 2021

Granted by the Ministry of Economic Affairs, Labour, and Digitalization

- Received for the best Master's thesis in field of robotics in Lower Saxony

PUBLICATIONS

F. Al-Hafez and G. Zhao and J. Peters and D. Tateo. *Time-Efficient Reinforcement Learning with Stochastic Stateful Policies*. Preprint under review.

[\[paper\]](#)

F. Al-Hafez and G. Zhao and J. Peters and D. Tateo. *LocoMuJoCo: A Comprehensive Imitation Learning Benchmark for Locomotion*. Presented at the Robot Learning Workshop in Conference on Neural Information Processing Systems (**NeurIPS**), New Orleans United States, December 2023.

[\[paper\]](#) and [\[code\]](#)

F. Al-Hafez and D. Tateo and O. Arenz and G. Zhao and J. Peters. *LS-IQ: Implicit Reward Regularization for Inverse Reinforcement Learning*. Presented at the International Conference on Learning Representations (**ICLR**), Kigali Rwanda, May 2023.

[\[paper\]](#) and [\[code\]](#)

F. Al-Hafez and J. Steil. *Redundancy Resolution as Action Bias in Policy Search for Robotic Manipulation*. Presented at the Conference on Robot Learning (**CoRL**), London UK, November 2021.

[\[paper\]](#) and [\[project website\]](#)

PATENTS

M. Helbig, J. Hoedt, and **F. Al-Hafez**. *Method and Device for Supporting Maneuver Planning for an Automated Driving Vehicle or a Robot*. 2020.

Patent No.: [US20210263526A1](#)

TEACHING

Teaching Assist

Lecture: Robot Learning

since September 2023

Intelligent Autonomous Systems @ TU Darmstadt

- Lead teaching assist managing the lecture and exercise
- Lecturer: [Prof. Jan Peters](#)

Teaching Assist

Lecture: Computational Engineering and Robotics

Intelligent Autonomous Systems @ TU Darmstadt

- Assisting the lecture and exercises
- Lecturer: **Prof. Jan Peters**

April 2022 – March 2023

Teaching Assist

Lecture: Introduction to Machine Learning

Institute of Robotics and Process Control @ TU Braunschweig

- Assisting the lecture and exercises
- Lecturer: **Prof. Jochen Steil**

April 2020 – August 2020

OUTSIDE INTERESTS

Sports Bouldering, cycling, running

Hobbies Raspberry Pi and Arduino projects for home automation