

Jonathan Hellwig

PROFILE

As an industrial mathematics graduate with a deep interest in robotics and machine learning, I am eager to work and innovate on real-world systems. My experiences indicate my motivation to explore new areas of study and apply my mathematical background to them.

SKILLS

Machine learning

Deep learning with PyTorch, image classification, object detection and reinforcement learning

Optimization and Numerical Methods

Iterative closest line algorithms and Numerical methods for differential equations

Robotics and Control

Robot kinematics and dynamics, sensor fusion

Soft Skills

Excellent analytical, problem-solving, and communication skills, with a passion for learning new technologies and working collaboratively

TECHNICAL

Languages Python, Rust, R

Tools PyTorch, NumPy, SciPy, Matplotlib, Scikit-learn, LaTeX, Git

EXPERIENCE

Robotics Software Developer

Jun 2021 - Present

RoboCup SPL team HULKS e.V.

[Hamburg, Germany](#)

- Developed and implemented localization, object detection, and sensor fusion algorithms for a RoboCup Standard Platform League team
- Participated in GORE 2022, RoboCup 2022, and GORE 2023
- Utilized agile software development methodologies with Rust programming language
- Collaborated with team members and managed project workflow using GitHub

Group tutor for Numerical Methods in Geosciences

Apr 2022 - Sep 2022

University of Hamburg

[Hamburg, Germany](#)

- Conducted tutorial sessions for a group of 20 students on numerical methods in geosciences using Python

Research assistant

Jan 2022 - Jun 2022

University of Hamburg

[Hamburg, Germany](#)

- Conducted research on shallow water wave simulation in cooperation with Prof. Dr. Jörn Behrens
- Refactored existing code base to improve readability, maintainability, and performance
- Implemented novel test cases to verify the correctness of the simulation

Internship at actuarial department

Feb 2021

SIGNAL IDUNA

[Hamburg, Germany](#)

- Assisted with estimation of loss reserves for insurance policies
- Implemented state-of-the-art models in R to improve accuracy of loss estimation

Group tutor for Optimization

Apr 2019 - Sep 2019

University of Lübeck

[Lübeck, Germany](#)

- Assisted in teaching optimization course to a group of 20 students
- Prepared and led tutorial sessions and graded assignments

Group tutor for Linear Algebra

Oct 2017 - Sep 2019

University of Lübeck

Lübeck, Germany

- Assisted in teaching linear algebra course to a group of 30 students
- Conducted exercises, supervised exams and provided feedback to students

EDUCATION**Industrial mathematics (M.Sc.)**

Oct 2020 - Mar 2023

University of Hamburg

Hamburg, Germany

- Thesis topic: Relations between variants of stochastic gradient descent and stochastic differential equations
- Advisor: Dr. Jens-Peter Zemke
- Average grade: 1.29 (Excellent)

Computational Life Science (B.Sc.)

Oct 2016 - Sep 2019

University of Lübeck

Lübeck, Germany

- Award for best graduate 2019
- Thesis topic: Multilevel Monte Carlo simulations
- Advisor: Prof. Dr. Andreas Rößler
- Average grade: 1.3 (Excellent)

**VOLUNTEER
WORK****Co-organizer of Machine learning workshop****Technical University of Hamburg**

Hamburg, Germany

- Co-organized and conducted a workshop on machine learning for highschool students
- Topics: Support vector machines and neural networks
- Programming language: Python

Organizing Committee Member for GORE 2023**RoboCup SPL team HULKS e.V.**

Hamburg, Germany

- Coordinated with the PR teams of DESY, TUHH, and UHH to advertise GORE 2023, an international competition for soccer-playing robots
- Organized a photoshoot to promote the event