

Fabian Damken

MASTER'S STUDENT IN COMPUTER SCIENCE

✉ fabian.damken@stud.tu-darmstadt.de | 🏠 fabian.damken.net | 📧 fdamken | 🌐 fdamken

Education

University of Toronto

Toronto, Canada

VISITING GRADUATE STUDENT

since 2023

- collaboration with Prof. Florian Shkurti as part of my master's thesis

Eindhoven University of Technology

Eindhoven, Netherlands

SEMESTER ABROAD

2022 – 2023

- notable courses: *Measure Theory*, *Software Engineering for Artificial Intelligence*
- GPA: Dutch 9.00 (German 1.00, US 4.00)

Technical University of Darmstadt

Darmstadt, Germany

M. SC. COMPUTER SCIENCE

since 2021

- expected graduation: June 2024
- specialization: machine learning, reinforcement learning
- thesis topic: Learning Admissible and Monotone A* Heuristics
- thesis supervisors: Prof. Florian Shkurti and Prof. Jan Peters
- collaborator: Prof. Sanjiban Choudhury
- notable courses: *Reinforcement Learning*, *Robot Learning*,
- directed research projects: *Integrated Project in Robot Learning*, *Expert Lab in Robot Learning*
- cGPA: German 1.0 (US 4.0)

Technical University of Darmstadt

Darmstadt, Germany

B. SC. COMPUTER SCIENCE

2016 – 2021

- specialization: machine learning, generative AI
- thesis topic: Variational Autoencoders for Koopman Dynamical Systems
- thesis supervisors: Joe Watson and Prof. Jan Peters
- notable courses: *Statistical Machine Learning*, *Foundations of Robotics*
- GPA: German 1.40 (US 3.60)

Experience

ACADEMIC

University of Toronto

Toronto, Canada

RESEARCH INTERN

since 2023

- work on differentiable task and motion planning
- implemented Diverse LGP as a baseline

NON-ACADEMIC

PRODYNA SE

Frankfurt (Main), Germany

SOFTWARE ENGINEER

2014 – 2023

- enterprise software development with the Spring Framework and MongoDB
- continuous integration and delivery with Jenkins, Atlassian Bamboo, and GitHub Actions

TEACHING

Technical University of Darmstadt

Darmstadt, Germany

TUTOR

2022

- graded exercises
- supported students for the course *Computational Engineering and Robotics*

Technical University of Darmstadt

Darmstadt, Germany

STUDENT ASSISTANT

2019, 2020, & 2022

- wrote lecture notes for the courses *Robot Learning* and *Functional and Object-Oriented Programming*
- created lecture slides for *Robot Learning*

Service

Faculty Board of the Department of Computer Science, TU Darmstadt

Darmstadt, Germany

ELECTED MEMBER

2021 – 2023

- student representative on the faculty board

Students Council for Computer Science, TU Darmstadt

Darmstadt, Germany

MEMBER

since 2016

- member of several professorial appointment commissions
- participation in designing new study programs

Projects

RESEARCH

Self-Paced Domain Randomization

INTEGRATED PROJECT ROBOT LEARNING

- transfer policies from simulation to real physical systems
- employ curriculum learning for domain randomization

Report

2020 – 2021

Random Fourier Series Features

EXPERT LAB IN ROBOT LEARNING

- enrich capacity of random Fourier features to random Fourier series features
- reduce computational complexity of GP inference

github.com/fdamken/rfsf

2021 – 2022

Variational Autoencoders for Koopman Dynamical Systems

BACHELOR'S THESIS

- lifting non-linear dynamical systems to a linear embedding
- allowing uncertainty-aware prediction

github.com/fdamken/vae4koop

2020

OTHER

SimuRLacra

LIBRARY FOR REINFORCEMENT LEARNING AND ROBOTICS RESEARCH

- development of reproducible distributed experiments and environment sampling

github.com/famura/SimuRLacra

2021

Lecture Summaries

LECTURE NOTES FOR TAKEN OR STUDIED SUBJECTS

- production of extensive lecture notes for all studied subjects
- notes are used by both fellow classmates and professors

fabian.damken.net/summaries

Writing

Decoding Multilingual Moral Preferences: Unveiling LLM's Biases Through the MME

K. VIDA*, F. DAMKEN*, A. LAUSCHER

- investigation of how biases of large language models differ in multilingual settings

AIES 2024

in print

STAMP: Differentiable Task and Motion Planning via Stein Variational Gradient Descent

Y. LEE, Y. HUANG, K. M. JATAVALLABHULA, A. LI, F. DAMKEN, E. HEIDEN, K. SMITH, D. NOWROUZSAHRAI, F. RAMOS, F. SHKURTI

- presentation of a task and motion planning algorithm called *STAMP* that finds multimodal solutions using Stein variational gradient descent
- contribution: baseline implementation

CoRL – LEAP Workshop, 2023

11/06/2023

Variational Autoencoders for Koopman Dynamical Systems

F. DAMKEN

- introduction of the novel *Koopman inference* algorithm establishing a probabilistic view on learning Koopman dynamics
- grounded on approximate expectation-maximization

Bachelor's Thesis

11/20/2020

Certifications & Awards

2022 **ERASMUS+ Scholarship**, Awarded by Technical University of Darmstadt

2014 **Java SE 7 Programmer**, Oracle Certified Associate