Fabian **Damken**

MASTER'S STUDENT IN COMPUTER SCIENCE

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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 9.0 (US 4.0)

Technical University of Darmstadt   *Darmstadt, Germany*
M. SC. COMPUTER SCIENCE   *since 2021*
- expected graduation: May 2024
- thesis topic: Learning Admissible and Monotone A* Heuristics
- thesis supervisors: Prof. Florian Shkurti and Prof. Jan Peters
- notable courses: *Reinforcement Learning, Robot Learning,* & *Quantum Computing*
- 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*
- 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)

Hochtaunusschule   *Oberursel, Germany*
FACHHOCHSCHULREIFE COMPUTER SCIENCE   *2014 – 2016*

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 commisions
- participation in designing new study programs

Projects

Research

Self-Paced Domain Randomization

Report

Integrated Project Robot Learning

2020 – 2021

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

Random Fourier Series Features

github.com/fdamken/rfsf

Expert Lab in Robot Learning

2021 – 2022

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

Variational Autoencoders for Koopman Dynamical Systems

github.com/fdamken/vae4koop

Bachelor's Thesis

2020

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

Other

SimuRLacra

github.com/famura/SimuRLacra

Library for Reinforcement Learning and Robotics Research

2021

- development of reproducible distributed experiments and environment sampling

Lecture Summaries

fabian.damken.net/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

Notable Papers

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

CoRL – LEAP Workshop, 2023

Y. Lee, Y. Huang, K. M. Jatavallabhula, A. Li, **F. Damken**, E. Heiden, K. Smith, D. Nowrouzezahrai, F. Ramos, & F. Shkurti

11/06/2023

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

Variational Autoencoders for Koopman Dynamical Systems

Bachelor's Thesis

F. Damken

11/20/2020

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

Certifications & Awards

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

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