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*

- 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 (as of October 9, 2023) (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)

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 — *ongoing*

- 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