

Jasper Gerigk

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PUBLICATIONS

Jasper Gerigk, Steve Engels. Learning Various Strategies For Dominion Using Deep Reinforcement Learning. In *19th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, 2023. AIIDE-2023.






Marvin Klimke, **Jasper Gerigk**, Benjamin Völz, Michael Buchholz. An enhanced graph representation for machine learning based automatic intersection management. In *2022 IEEE 25th International Conference on Intelligent Transportation Systems*, Oct 2022, pp. 523–530. IEEE.

EDUCATION



- 2019/09–present **B.S. with Specialist in Computer Science and Mathematics Major**
University of Toronto 📍 Toronto, Canada
GPA: 3.96/4.0 2020 and 2023 Dean’s List Scholar
2019 Millard Scholarship (\$1208)
2023 University of Toronto Scholar (\$1500) - For outstanding academic performance
2023 Dr. James A. & Connie P. Dickson Scholarship In Science & Mathematics (\$500)
 Recognising best University College students in Science and Mathematics
2023 Nominated by the Department of Computer Science for CRA
 Outstanding Undergraduate Researcher Award
- 2020/11–2021/08 **B.S. Mathematics Major with Computer Science Minor**
Rhein-Main University Cooperation
Johannes Gutenberg-Universität 📍 Mainz, Germany
Technische Universität Darmstadt 📍 Darmstadt, Germany
GPA: 3.8/4.0 - Courses recognized as transfer credits by University of Toronto
- 2007/08–2019/06 **Bilingual Diploma of the International Baccalaureate**
Metropolitan School Frankfurt 📍 Frankfurt, Germany
Score: 43/45 with Higher Level Subjects: Mathematics, Physics, Chemistry

EXPERIENCE

- 2023/05–present **Student Researcher**
Toronto Intelligent Systems Lab 📍 Toronto, Canada
Work study position for research on Task Aware Object Segmentation
Initially worked as DSI SUDS Scholar and presented results at DSI SUDS Showcase
Methods: Python, PyTorch, JAX, SLURM
- 2022/03–2022/08 **Data Analytics Internship**
Mercedes Benz AG 📍 Böblingen, Germany
Member of the Fleet Learning for Automated Driving team
Analyzed lateral vehicle movement to improve comfort of lane following assistant using customer fleet data
Methods: Big Data using Spark, Frequentist and Bayesian statistics in Python

- 2022/10–2023/03 **Research Intern**
Robert Bosch GmbH  Renningen, Germany
 Member of BMWK-funded research project “Lokales Umfeldmodell für das Kooperative, Automatisierte Fahren in komplexen Verkehrssituationen”
 Development of multi-agent reinforcement learning algorithms for centralized planning of connected self-driving vehicles using graph neural networks
 Co-author of paper published at IEEE ITSC 2022
 Methods: DQN, TD3, RCGN, GAT implemented in Python using PyTorch
- 2020/06–2020/10 **Student Intern**
Excubo AG  Zug, Switzerland
 Designed and built functional software demonstration based on Server-Side Blazor (C#)
 Contributed to backend by integrating machine learning methods using Python
 Methods: Server-Side Blazor, C#, Python
- 2018/05 **Student Intern**
German Research Center for Artificial Intelligence (DFKI)  Kaiserslautern, Germany
 Created instructional material for AI undergraduate course at TU Kaiserslautern on Reinforcement Learning including Deep-Q learning for Brick Breaker using PyTorch
 Methods: Deep-Q learning, PyTorch, Python
- 2017/06 **Student Intern**
PwC Experience Center  Frankfurt, Germany
 Member of agile development team for Pepper robot
 Developed server-client system for future store demo using nodejs
- 2016/06 **Student Intern**
Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS)  Sankt Augustin, Germany
 Introduction to machine learning using example of multiclass classification of geographic co-ordinates

PROJECTS AND EXTRA-CURRICULAR

- 2017/11–present **Core Maintainer of Cosmos**
C# Open Source Managed Operating System
 Cosmos supports the development of operating systems in C# and includes a custom compiler, standard library and drivers
 Contributions include improving the file system and graphics driver, implement garbage collector, and various compiler enhancements including support for .Net 5.0 and 6.0
- 2023/01-2023/05 **CSC494: Independent Computer Science Project**
University of Toronto  Toronto, Canada
 Developed better RL agents for Dominion supervised by Professor Engels
 Published paper at AIIDE-2023
 Presented poster at AIIDE-2023 and UofT ARIA conferences
- 2019/09–2020/03 **LearnAI Program**
University of Toronto  Toronto, Canada
 Overview of deep learning methods and completion of project in a team using Tensorflow
 Presented at StartAI Conference, the largest undergraduate AI conference in Canada

SKILLS

Extensive experience developing on Linux and Windows, working with git and docker

Python: Deep learning with Pytorch, JAX, and Tensorflow, Data Science/Machine learning with Numpy, Scipy, PySpark, pymc and Pandas, OpenCV, Web server with Flask, GPU Programming using TorchScript and Numba, Cython

C#: Asp.Net and Blazor Server-Side Web Application, MSIL/.Net Internals, Game Programming with SFML and Unity, Operating System and Compiler Development

Javascript/Typescript: Frontend using Bootstrap/Material and React/Vue.js, Backend using Node.js and Express.js, WebGL shader development

Other: Java (OOP and Swing), MATLAB (Numerical Algorithms), C (Unix), R (Data Analytics and Statistics), Haskell, and SQL (MySQL, MariaDB)