

# Jasper Gerigk

jaspergerigk.com ✉ jasper.gerigk@mail.utoronto.ca 🌐 Github 📍 Toronto, Canada

## PUBLICATIONS

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**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

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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 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**  
**Johannes Gutenberg-Universität** 📍 Mainz, Germany  
Supplementary courses taken at Technische Universität Darmstadt  
GPA: 3.8/4.0

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

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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	<b>Student Intern</b> <b>Excubo AG</b>  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	<b>Student Intern</b> <b>German Research Center for Artificial Intelligence (DFKI)</b>  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	<b>Student Intern</b> <b>PwC Experience Center</b>  Frankfurt, Germany Member of agile development team for Pepper robot Developed server-client system for future store demo using nodejs
2016/06	<b>Student Intern</b> <b>Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS)</b>  Sankt Augustin, Germany Introduction to machine learning using example of multiclass classification of geographic co-ordinates

## PROJECTS AND EXTRA-CURRICULAR

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2017/11–present	<b>Core Maintainer of Cosmos</b> <b>C# Open Source Managed Operating System</b> 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	<b>CSC494: Independent Computer Science Project</b> <b>University of Toronto</b>  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	<b>LearnAI Program</b> <b>University of Toronto</b>  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

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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)