Jasper Gerigk

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Education

September 2019 – ongoing (anticipated 04/24):

University of Toronto - St. George Campus; Toronto, Canada
Computer Science Specialist with Focus in Artificial Intelligence and Mathematics Major
GPA: 3.96/4.0

November 2020 – August 2021:

Johannes Gutenberg-Universität, Mainz; Germany
Bachelor of Science: Mathematics with Minor in Computer Science
GPA: 3.8/4.0
Supplementary courses taken at Technische Universität Darmstadt e.g.
- Statistical Machine Learning
- Natural Language Processing using Deep Learning

August 2007 - June 2019:

Metropolitan School Frankfurt; Frankfurt Am Main, Germany
Bilingual Diploma of the International Baccalaureate, June 2019
Final Score: 43/45 (Equivalent to 1.0 Abitur)
Higher Level Subjects: Mathematics (7/7), Physics (7/7), Chemistry (7/7)

Publications

Jasper Gerigk, Steve Engels (2023). Learning Various Strategies For Dominion Using Deep Reinforcement Learning. In *19th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. AIIDE-23.

Klimke, M., Gerigk, J., Völz, B., & Buchholz, M. (2022, October). An enhanced graph representation for machine learning based automatic intersection management. In *2022 IEEE 25th International Conference on Intelligent Transportation Systems* (ITSC) (pp. 523-530). IEEE.

Work Experience

May 2023 – August 2023:

DSI SUDS Scholar at Toronto ISL, Mississauga, Canada
- Researched Task Aware Object Segmentation as part of team
- Presented results in group and SUDS Showcase

March 2022 – August 2022:

Data Analytics Internship at Mercedes Benz AG; Böblingen, Germany
- Member of the Fleet Learning for Automated Driving team
- Analyze lateral vehicle movement to improve comfort of lane following assistant using customer fleet data
- Methods applied: Big Data using Spark, Frequentist and Bayesian statistics in Python

October 2021 – March 2022:

Corporate Research Internship at Robert Bosch GmbH; Renningen, Germany
- Member of BMWK-funded research project “Lokales Umfeldmodell für das Kooperative, Automatisierte Fahren in komplexen Verkehrssituationen” (https://www.projekt-lukas.de/)
- 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 (https://arxiv.org/abs/2207.08655)
- Methods applied: DQN, TD3, RCGN, GAT implemented in Python using PyTorch

June - October 2020:

Internship at 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

May 2018:

Student Internship at 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

June 2017:

Student Internship at PwC Experience Center; Frankfurt am Main, Germany
- Member of agile development team for Pepper robot
- Developed server-client system for future store demo using nodejs

June 2016:

Student Internship at Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS); St. Augustin, Germany
- Implemented linear least squares for multiclass classification of geographic co-ordinates

Projects and Extra-Curricular

November 2017 - ongoing:

Core Maintainer of Cosmos (C# Open Source Managed Operating System - www.gocosmos.org)
- 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

September 2019 - March 2020:

Participant in LearnAi program; University of Toronto, Canada
- Overview of deep learning methods and completion of project in a team using Tensorflow
- Presentation of project results at StartAI Conference

January 2020:

UofT Hacks; University of Toronto, Canada
- Built recommender system for healthier food alternatives with web interface

Programming Skills

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

For open-source work see: https://github.com/quajak

Python – Deep learning with Pytorch and Tensorflow, Data Science/Machine learning with Numpy, Scipy, 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

x86 Assembly – operating system development SQL – MySQL, MariaDB C++

University Coursework:

Java – OOP and Swing App
MATLAB – Numerical algorithms
Verilog – FPGA
C – Unix
R – Statistics
Racket and Haskell – Functional Programming