Lukas Münzel

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EDUCATION

Swiss Federal Institute of Technology (ETH Zurich)   Zurich, Switzerland
B.Sc. in Mathematics; ***Grade average: 5.80 / 6.0***   *Sep 2022 − Sep 2025 (Expected)*
Relevant coursework: Deep Learning (advanced graduate course; 6.0/6.0), Models of Computation,
Linear Algebra, Probability and Statistics, Real Analysis I+II, Numerical Analysis, Measure Theory

Gymnasium Bäumlihof   Basel, Switzerland
High School Diploma; ***Grade average: 5.54 / 6.0***   *Aug 2019 − Jul 2022*

RESEARCH EXPERIENCE

Institute of Fluid Dynamics, ETH Zurich
Research internship under Professor Patrick Jenny   *January 2021 − March 2021*
- Optimized and implemented code for numerical fluid simulations in order to simulate airflow in lecture halls, leading to a 50x performance improvement by allowing the code to run on GPUs
- Designed and implemented a novel tool to edit the simulation meshes
- A continuation of this work is in the process of being published with me as third author

Massachusetts Institute of Technology
Research internship under Professor Lizhong Zheng   *June 2021 − August 2021*
- Selected as the only central European student for the *Research Science Institute* 2021, a program annually enabling 80 high school students to conduct research at MIT for six weeks
- Designed, programmed and conducted experiments to demonstrate the feasibility of a supplemental approach to training artificial neural networks inspired by insights from information theory
- A more detailed description of this work is available as a PDF or a ten-minute video presentation

Department of Computer Science, ETH Zurich
Research group project as part of a graduate-level course on Deep Learning   *September 2023 − January 2024*
- We worked on enhancing representations of so-called *heterophilic* graphs, with which Graph Neural Networks commonly struggle
- I implemented and ran various experiments with PyTorch Lightening to investigate the performance of our proposed modifications. With these modifications, we surpassed the state-of-the-art accuracy of 91.64% by over three percent on the heterophilic dataset *Minesweeper.* Consequently, we were offered to continue our work to present it at an ICML workshop

AWARDS & ACHIEVEMENTS

Swiss Olympiad in Informatics 2nd place nationally in the final round in 2020 and 2022, representing Switzerland in five international competitions and winning a Bronze medal at the Romanian Master of Informatics

Basler Maturapreis Having skipped two grades, I was the only student in my graduating class of 111 students selected for a price of 4000 Swiss Franks for "outstanding dedication and accomplishments, socially and academically"

Swiss Biology Olympiad 15th place nationally in the second round in 2022, participating in the week-long final round involving various theoretical and laboratory exams

Swiss Physics Olympiad 5th and 6th place respectively in the second round of 2022 and 2021

SKILLS AND EXTRACURRICULAR ACTIVITIES

Programming Python for all research projects and various smaller coding experiments, C++ for competitive programming competitions and fluid dynamics research

Swiss Olympiad in Informatics Organized a total of five full days of workshops and held introductory lectures on graph traversal algorithms, dynamic programming, linear algebra, and debugging in C++

Student Project House Learned how to laser cut, embroider, and 3D print with both plastic filament and resin