Lukas Münzel

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EDUCATION

Swiss Federal Institute of Technology (ETHZ)   Zurich, Switzerland
*B.Sc. in Mathematics; **Grade average: 5.85 / 6.0***   *Sep 2022 – Oct 2025 (Expected)*
   Relevant coursework: Deep Learning, Measure Theory, Fourier Theory, Probability and Statistics,
   Functional Analysis, Dynamical systems and ergodic theory, Topology

Gymnasium Bäumlihof   Basel, Switzerland
*High School Diploma, graduating two years early; **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
- Designed and implemented a novel tool to edit the simulation meshes
- This work was published in *Cambridge Flow* with me as third author

Massachusetts Institute of Technology
Research internship under Professor Lizhong Zheng   *June 2021 – August 2021*
- Selected as 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 in German ("Orthogonale Eigenschaftsfunktionen - Ein ergänzender Ansatz künstliche neuronale Netzwerke zu trainieren") and English ("The Influence of the Orthogonality of Feature Functions on Artificial Neural Networks"). Alternatively, a ten-minute video presentation is also available

ETH Zurich - Department of Computer Science
Graduate-level Research Project on Deep Learning   *September 2023 – January 2024*
- Worked on enhancing representations of heterophilic graphs, a type of graph 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

Basler Maturapreis by Novartis Selected for this price for "outstanding dedication and accomplishments, socially and academically" out of a class of 111 students

Swiss Olympiad in Informatis 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 Masters in Informatics

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

International Public Policy Forum Member of a team of five students which advanced to the top 32 internationally with essays on whether the US Dollar hegemony is detrimental to the world economy

SKILLS

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

Languages: English (fluent), German (Native), French (B2)