Tom Lausberg

Computational Scientist and Engineer

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Personal Profile

Masters graduate in Computational Science and Engineering from ETH Zurich with distinction and perfect grades on both theses. Specialized in high-performance scientific computing across computational physics, fluid dynamics, and climate sciences. Proficient in developing optimized code for HPC, implementing advanced machine learning methods (GNNs, PINNs), and creating GPU solutions for complex physical modeling.

Education

MSc in Computational Science and Engineering - ETH Zürich 2021 - 2024

Passed with Distinction

GPA: 5.77/6.0

Fields of specialization: *Computational Physics / Atmospheric Physics*

BSc in Computational Science and Engineering - ETH Zürich 2016 - 2021

GPA: 4.88/6.0

Fields of specialization: *Computational Physics*

Practical Experience

ETH Zurich Feb 2024 - Sep 2024

Master Student - Reliability and Risk Engineering Lab

Master Thesis: Multi-period Optimal Power Flow with Physics-informed Graph Neural Networks

Designed and implemented physics-informed graph neural network to solve the multi-period optimal power flow problem. Showed promising results on small grids when compared to traditional solvers.

Final grade: 6.0/6.0

Technologies: Python, PyTorch, Torch Geometric, Gurobi, Matpower

Lucerne University of Applied Sciences and Arts Feb 2020 - Jun 2021

Research Assistant - Competence Center Thermal Energy Storage

Implemented the software infrastructure for a mobile air quality monitoring system, including MicroPython-based sensor control, LoRa/LTE telemetry, and ThingsBoard-based data visualization platform.

Conference Paper: Low-Cost Sensor Node for Air Quality Monitoring

Technologies: MicroPython, LoRaWAN, MQTT, Thingsboard, Postgres

ETH Zurich Jun 2020 - Apr 2021

Bachelor Student - Computer Graphics Laboratory

Developed a novel numerical solver for 2D fluid dynamics using streamfunction-vorticity formulation and discrete exterior calculus, reducing numerical dissipation common in computer graphics applications. Implemented support for non-uniform grids and parametrized viscosity for diverse fluid simulation.

Final grade: 6.0/6.0

Technologies: C++17, Eigen, Finite Difference Methods

Software Skills

Languages		Libraries\Packages	Tools	
C++	●●●●○	PyTorch	GNU Bash	●●●●○
Python	●●●●○	Micropython	Unix	●●●●○
Matlab	●●○○○	Eigen	Git	●●●●○
Julia	●●○○○	MPI/OpenMP	QGIS	●●●○○
SQL	●●○○○	Numpy/Pandas	Jupyter	●●●○○

Miscellaneous

ETH Zürich Sep 2023 - Feb 2024
Student - Photogrammetry and Remote Sensing Group

Semester Thesis: Accuracy and Reliability of Atmospheric Correction for Optical Satellite Images

Evaluated the performance of atmospheric correction algorithms for Sentinel-2 satellite imagery to improve the conversion of top-of-atmosphere measurements to surface reflectance values.

Technologies: Python, rasterio/gdal/geopandas, Scikit-learn

Institute for Atmospheric and Climate Science, ETH Jun 2021
Student - High Performance Computing for Weather and Climate Summer Course

Mastered computational methods for weather and climate modeling on supercomputers, including parallel computing, GPU acceleration, and domain-specific languages through practical development exercises.

Lucerne University of Applied Sciences and Arts Nov 2019 - Jan 2020
Civil Service - Competence Center Thermal Energy Storage

Pfadi Zytturm 2013 - 2016
Scoutgroup leader: Planned and led weekend activities and residential camps for youth scout groups ('Wölfli'), developing leadership and program management skills.

Language Skills

English	*Native*
German	*Native*
French	*Basic*

Excerpt of Attended Courses

- High Performance Computing for CSE I+II (151-0116-00L)
- Introduction to Machine Learning (252-0220-00L)
- Software Engineering (252-0232-AAL)
- Advanced Systems Lab (263-0007-00L)
- Advanced Numerical Methods for CSE (401-4671-00L)
- Numerical Methods for Partial Differential Equations (401-0674-00L)
- Numerical Modelling of Weather and Climate (701-1216-00L)
- Computational Statistical Physics (402-0812-00L)

Interests

- Cycling, Swimming, Hiking
- Bike packing

References

Available upon request for either one of the listed practical experiences.