Lucas Ortengren

715-965-9280 | lortengren@pm.me | linkedin.com/in/lortengren | github.com/ortengren

Education

University of Wisconsin - Madison | *3.71 / 4.00 GPA* Sep 2022 – May 2026

- B.S. AMEP (Applied Math, Engineering, and Physics)
- Additional majors in Mathematics and Physics
- Certificate in Computer Science

Research

Cersonsky Group | *UW-Madison* Sep 2023 – Present

- Co-authored *AniSOAP: Machine Learning Representations for Coarse-grained and Non-spherical Systems*, published in the Journal of Open Source Software
- Acted as a member of a five-person team to develop AniSOAP, a novel machine learning representation for chemical environments
- Developed a custom Monte-Carlo simulation engine to compare the performance of an AniSOAP MLP with that of the Gay-Berne potential
- Presented original research on the global structural patterns of molecular crystals at two poster sessions

Madison Experimental Mathematics Lab | *UW-Madison* Sep 2023 – Dec 2023

- Worked in a team of four undergraduates to design and program an algorithm for determining the Heesch number of polykites
- Successfully calculated the Heesch number of all possible n-kites up to $n = 7$
- Wrote a detailed report about our findings and the methods we used
- Designed a research poster and delivered a presentation to an audience of over 100 UW-Madison faculty and students

Presentations and Publications

- A. Y. Lin, L. Ortengren, S. Hwang, Y.-C. Cho, J. Nigam, and R. K. Cersonsky, AniSOAP: Machine Learning Representations for Coarse-grained and Non-spherical Systems, Journal of Open Source Software 10, 7954 (2025).
- L. Ortengren, Geometrically-Informed Machine Learning on Molecular Crystals, (unpublished).
- G. Julati, S. Narendran, L. Ortengren, and N. Sullivan, Computing Heesch Numbers of Polykites, (unpublished).

Honors and Awards

Dept. of Nuclear Engineering and Engineering Physics Scholarship | *UW-Madison* Aug 2023

- Awarded by the NEEP Department for academic achievement and research experience

Undergraduate Scholarship for Summer Study | *UW-Madison* April 2023

- Awarded based on academic achievement and an essay explaining my desire to enroll in summer classes

National Merit Scholarship | *NMSC* March 2022

- Became one of the 15,000 finalists selected from the 1.3 million total applicants
- Won an additional scholarship sponsored by Mead Witter, Inc

Kemper K. Knapp Rural Scholarship | *UW-Madison* Aug 2022

- Recognized as a high-achieving student from rural Wisconsin

Other Experience

Directed Reading Program | *UW-Madison* Jan 2026 – April 2026

- Studied the statement and proof of the Baire Category Theorem
- Applied the Baire Category Theorem to various problems in analysis, including a proof of the existence of Besicovitch sets

Directed Reading Program | *UW-Madison* Jan 2025 – April 2025

- Read in its entirety *Topology from the Differentiable Viewpoint* by John Milnor
- Met with a graduate mentor and another undergraduate to discuss the text, solve exercises, and explore various topics in differential and algebraic topology

Employment

Geospatial Engineering Intern Sep 2022 – Aug 2023
Millennium Geospatial *Madison, WI*

- Used Python, Pandas, and Microsoft Excel to redesign data processing and record-keeping
- Assisted in the design and planning of four fiber optic (FTTH) networks
- Used Python integration with ArcGIS to develop efficient geospatial data analysis workflows
- Devised a process and format for the documentation of telecommunication networks

Skills

Programming Languages: Java, Python, Rust, C#, C, Matlab, Bash, Haskell
Database Management: SQLite, VisualDB
Computer Algebra Systems: SageMath, Mathematica, SymPy
Markup Languages: LaTeX, reStructured Text, Markdown
Development Tools: Git, Conda, Docker, GNU/Linux
Data Science & ML Tools: Pandas, NumPy, Matplotlib, SciKit-Learn, PyTorch, TensorFlow, Keras
Scientific Computing: SciPy, Atomic Simulation Environment, OVITO