

Visit <https://www.davidoniani.com> for my papers, projects, and more!

Education

08/2017 – 05/2021 **B.A. Computer Science, Mathematics, *magna cum laude***, [Luther College](#), Decorah, IA.
Double major in computer science and mathematics. Academic advisor: Dr. Alan K. Zaring.

09/2011 – 07/2016 **High School Diploma, 4.0/4.0 GPA**, [Komarovi Campus School](#), Tbilisi, Georgia.
Graduated with the highest honors. Represented the school in various math and physics Olympiads.

Work Experience

02/2022 – Present **Machine Learning Research Scientist**, [University of Pittsburgh](#), Palo Alto, CA.
[Working Remotely from Palo Alto, CA.](#)

- Research and engineering in machine learning (ML) and natural language processing (NLP).
- Lead architect of the NLP system aimed at facilitating state-of-the-art research.
- Working on few-shot learning and building ML models for clinical text classification purposes.
- Collaborating with other engineers and scientists to write, draft, and review research papers.
- Presenting my work as well as recent advances in the field of AI to the lab on a bi-weekly basis.
- Responsible for supporting various projects within the lab.

06/2021 – 01/2022 **Research Engineer**, [DawnLight Technologies Inc.](#), Palo Alto, CA.

- Developed and maintained an AI sensing inference runtime for audio and radar.
- Ported a bounding box SSD model to PyTorch Lightning and maintained it.
- Designed and wrote wrapper APIs for interacting with annotation platforms.
- Together with the Principal Scientist, wrote a C++ signal processing library.
- Coordinated efforts with the Firmware Team for low-level systems and hardware support.
- Continuously improved the documentation quality of the Research Engineering team docs.

04/2021 – 05/2021 **Machine Learning Intern**, [DawnLight Technologies Inc.](#), Palo Alto, CA.

- Architected, trained, and benchmarked highly performant AI model for cough detection.
- Trained and evaluated CNN and Depthwise CNN based deep learning models.
- Automated a pipeline of data processing, feature engineering, and model training.
- Redesigned and improved performance of feature extractor generated using MATLAB-to-C++ transpiler.

11/2020 – 01/2021 **Preceptor**, [Luther College](#), Decorah, IA.

- Assisted in teaching Computational Models (CS 260) course (Fall Quarter 2, 2020).
- Held help hours and assisted students with homework assignments.

02/2020 – 09/2020 **Research Intern**, [Mayo Clinic](#), [Kern Center](#), Rochester, MN.

- First-authored several papers that got accepted at world's major AI and biomedical informatics conferences and journals (ACM-BCB, JAMIA, etc). Publications available on [my website](#).
- Created automated COVID-19 screening tool based on decision trees to assist nurses and physicians.
- Built chatbot as extension of GPT-2 model by applying BERT, BioBERT, USE, and tf-idf.
- Utilized node2vec for generating COVID-19 network embeddings and built [co-occurrence network](#).
- Wrote set of programs for extracting information from thousands of EHRs (Electronic Health Record).
- Set up Elasticsearch and indexed millions of documents for use in NLP algorithm.
- Drafted several papers and reports, reviewed over 15 state-of-the-art AI papers.
- Worked directly under [Dr. Feichen Shen](#) and [Dr. Yanshan Wang](#) in the division of [Dr. Hongfang Liu](#).

09/2019 – 12/2019 **Preceptor**, [Luther College](#), Decorah, IA.

- Assisted in teaching Object-Oriented Programming With Java (CS 252) course (Fall Semester 2019).
- Held help hours and assisted students with homework assignments.
- Attended classes and answered questions during the labs.

07/2019 – 08/2019 **Student Summer Worker - ITS Workstation**, [Luther College](#), Decorah, IA.

- Was responsible for installing and updating operating systems across the campus.
- Troubleshoot technical issues of computer systems.
- Set up new hardware to be used by the college students.
- Installed software to be used by faculty for teaching purposes.

- 05/2019 – 07/2019 **Undergraduate Researcher**, [Luther College](#), Decorah, IA.
- Conducted a collaborative research on persuasion with professor Richard K. Merritt.
 - Trained convolutional neural networks for image recognition using PyTorch.
 - Wrote Python scripts for PDF image/text extraction and data cleanup.
 - Performed an extensive set of both statistical and textual/NLP analyses using state-of-the-art algorithms.
 - Drafted a paper that was submitted Dean's Office.
- 08/2018 – 12/2018 **Preceptor**, [Luther College](#), Decorah, IA.
- Assisted in teaching Introduction to Computer Science (CS 150) course (Fall Semester 2018).
 - Held help hours and assisted students with homework assignments.
 - Attended classes and answered questions during the labs.
- 06/2018 – 12/2018 **Student Web Programmer**, [Luther College](#), [ITS - Software Development](#), Decorah, IA.
- Contributed to the brand new [Norse Hub](#) web system which has successfully replaced [my.luther.edu](#).
 - Communicated with the team, wrote reports, and attended weekly SCRUM meetings.
 - Conducted performance & load testing using JMeter and presented the results.
 - Created a data visualization tool utilizing JavaScript DOM.
 - Migrated from the Microsoft to the Linux server and refactored the Python code.
- 05/2018 – 06/2018 **Undergraduate Researcher**, [Luther College](#), Decorah, IA.
- [Collaborative research on unit testing with Dr. Roman Yasinovskyy](#).
 - Automated feedback generation for C++ programming course.
 - Redesigned and significantly improved SQL and relational algebra solution checker.
 - Designed testable practice problems for the algorithms and data structures course.

Research Experience

- Fall 2019 [Directed research in programming languages with Dr. Alan K. Zaring](#).
- Redesigned and made a few significant contributions to the type system.
 - Introduced the notion of container types to the language.
 - Designed relational operators for container types.

Volunteer Experience

2016 [Transparency International Georgia](#)

Observed Georgian Parliamentary Elections

Activities and Memberships

- 2022 - Present Member, Association for Computing Machinery (ACM)
- 2020 - Present Member, Pi Mu Epsilon (Math Honor Society)

Natural Language Proficiency

- English, Fluent
- Russian, Fluent
- Mingrelian, Fluent
- Georgian, Native

Technical Skills

- Languages: Python, C++, Rust, Shellscript, Haskell, Lua, C, R, SQL, Java, Javascript, HTML, CSS.
- Tools and Libraries: Linux, macOS, kitty, Neovim, RStudio, JupyterLab, numpy, PyTorch, TensorFlow, scikit-learn, pandas, TensorRT, SQLite, Flask, Zola, Git, GitHub, GitHub Actions.
- Other Skills: \LaTeX , Markdown, Technical Writing.

Publications

- 2021 (Co-Author) [Social and Behavioral Determinants of Health in the Era of Artificial Intelligence with Electronic Health Records: A Scoping Review](#) (accepted at HDS)
- 2020 (First Author) [A Qualitative Evaluation of Language Models on Automatic Question-Answering for COVID-19](#) (accepted at ACM-BCB)
- 2020 (First Author) [Constructing Co-occurrence Network Embeddings to Assist Association Extraction for COVID-19 and Other Coronavirus Infectious Diseases](#) (accepted at JAMIA)
- 2020 (Co-Author) [Setting Up Python Development Environment for Use in a Small Classroom](#) (accepted at MICS)

Honors and Awards

- 2017 – 2020 Multiple Competitive Scholarships, [Luther College](#)
- 2018, 2019 Recipient of 2 Luther College Dean's Office Summer Research Awards, [Luther College](#)
- All Semesters Dean's List Recipient, [Luther College](#)
 - 2017 Selected Start-up ([UnleashAR](#)), TOP 200, [Wolves Summit](#) (Largest Startup Conference in EU).
 - 2016 Gold Medal for Academic Excellence, [Ministry of Education and Science of Georgia](#)
- 2011 – 2016 Multiple-time Finalist, [National Mathematics Olympiad of Georgia](#).
 - 2014 7th Place (TOP 10) [National Mathematics Olympiad of Georgia](#)
 - 2014 IMO & IPhO Nominee, [Ministry of Education and Science of Georgia](#)