David Oniani

🖂 www.davidoniani.com
🌐 www.github.com/oniani

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.
- State-of-the-art research in machine learning (ML) and natural language processing (NLP).
- Lead architect of the NLP system aimed at facilitating state-of-the-art research in the US.
- Researching few-shot learning for document classification of the clinical text.
- Collaborating with other researchers 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*, 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*, 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.

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.

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.

08/2019 – 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.
- Troubleshot 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.
- Drafter 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, Native
- Russian, Native
- Mingrelian, Native
- 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, OpenCL, OpenCV, 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	7$^{\text{th}}$ Place (TOP 10) National Mathematics Olympiad of Georgia
2014	IMO & IPhO Nominee, Ministry of Education and Science of Georgia