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 artificial intelligence and natural language processing.
- Collaborating with the leading researchers to write, draft, and review research papers.
- Research in data model design, data standards, and ontology design.
- Lead architect of the AI/NLP system aimed at facilitating state-of-the-art research.
- Responsible for the research, design, and implementation of the data warehouse.
- Data platform implementation using distributed system tools such as Haddop, Spark, etc.

04/2021 – 01/2022 **Research Engineer**, *DawnLight*, Palo Alto, CA.
Sequoia Capital Backed AI and Edge Computing Startup.

- Architected, trained, and benchmarked highly performant AI model for cough detection.
- Developed and maintained an AI sensing inference runtime for audio and radar.
- Trained and evaluated CNN and Depthwise CNN based deep learning models.
- Automated a pipeline of data processing, feature engineering, and model training.
- 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.
- Redesigned and improved performance of feature extractor generated using MATLAB-to-C++ transpiler.
- Coordinated efforts with the Firmware Team for low-level systems and hardware support.
- Continuously improved the documentation quality of the Research Engineering team docs.

02/2020 – 09/2020 **Researcher *(internship)***, *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/NLP papers.
- Worked directly under Dr. Feichen Shen and Dr. Yanshan Wang in the division of Dr. Hongfang Liu.

08/2018 – 01/2020 **Teaching Assistant**, *Luther College*, Decorah, IA.

Fall 2020 Computational Models (CS 260) with Dr. Alan K. Zaring.
Fall 2019 Object-Oriented Programming With Java (CS 252) with Dr. Shafqat A. Shad.
Fall 2018 Introduction to Computer Science (CS 150) with Dr. Alan K. Zaring.

- Held help hours and assisted students with homework assignments.
- Attended all classes and answered questions during the labs.

06/2018 – 12/2018 **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.

03/2017 – 07/2017 **Co-Founder and CEO**, *Warbler*, Tbilisi, Georgia.
- Spearheaded the team of young and enthusiastic software developers.
- Processed five-year data (180k+ rows) of UNE (Unified National Exams of Georgia).
- Designed the logo; built the pitch, presentation, and the WordPress-based website for the start-up.
- Created a social media chatbot using Chatfuel API and set up Zoho mailing system.

11/2016 – 09/2017 **Freelance Graphic Designer**, *Behance (not affiliated)*.
- Designed logos and posters for various companies in the local and the global market.
- Instructed and taught the basics of design to several aspiring graphic designers.

10/2016 – 06/2017 **Sales Representative and Marketing Coordinator**, *Insta LLC*, Tbilisi, Georgia.
- Partook in the complete rebuild and redesign of sales and marketing departments.
- Contributed to the CRM, was responsible for data gathering, filtering, and entry.
- Managed social media, responsible for targeted campaigns, copywriting, and image-editing.
- Cold-called and contacted clients to build and maintain long-term relationships.
- Attended a number of staff meetings and new product/partner presentations.

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.

Summer 2019 Collaborative research on visual 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.

Summer 2018 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.

Volunteer Experience

2016 Transparency International Georgia — *Observed Georgian Parliamentary Elections*

2016 Khan Academy — *Subtitled Georgian and Russian videos*

Activities and Memberships

2020 - Present Member, Pi Mu Epsilon (Math Honor Society)

2017 - 2021 Member, Association for Computing Machinery (ACM)

Natural Language Proficiency

- English, Native
- Georgian, Native
- Russian, Native
- Japanese, Elementary
- Mingrelian, Native

Technical Skills

Languages: **Advanced**: Python, Rust, Shellscript (POSIX-compliant).
Proficient: Haskell, Lua, C/C++, R, SQL, Java, Javascript, Zsh, HTML, CSS.
Acquainted: TypeScript, Prolog, Standard ML, Scheme, VBA.

Tools and Libraries: Linux, macOs, kitty, Neovim, RStudio, JupyterLab, numpy, scipy, PyTorch, TensorFlow, scikit-learn, pandas, polaris, OpenCL, OpenCV, SQLite, Flask, Zola, Git, GitHub, GitHub Actions.

Other Skills: LaTeX, Markdown, Technical Writing.

Publications

2021 Social and Behavioral Determinants of Health in the Era of Artificial Intelligence with Electronic Health Records: A Scoping Review (accepted at HDS)

2020 A Qualitative Evaluation of Language Models on Automatic Question-Answering for COVID-19 (accepted at ACM-BCB) **[First Author]**

2020 Constructing Co-occurrence Network Embeddings to Assist Association Extraction for COVID-19 and Other Coronavirus Infectious Diseases (accepted at JAMIA) **[First Author]**

2020 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