

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 electronic health records (EHR).
- 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.

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 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.

## 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**  
 2016 **Khan Academy**

*Observed Georgian Parliamentary Elections*  
*Subtitled Georgian and Russian videos*

## 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
- Georgian, Native
- Russian, Native
- Mingrelian, Native

## Technical Skills

- Languages: Python, C++, Rust, Shellsript, 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: L<sup>A</sup>T<sub>E</sub>X, 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<sup>th</sup> Place (TOP 10) [National Mathematics Olympiad of Georgia](#)
  - 2014 IMO & IPhO Nominee, [Ministry of Education and Science of Georgia](#)