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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

- 06/2021 – Present **Research Engineer, [DawnLight](#)**, Palo Alto, CA.
- Developed and maintained an AI sensing and signal processing system - audio and radar (C++ codebase).
 - Architected, trained, and benchmarked highly performant AI model for cough detection.
 - Wrote a set of tools for automating pipeline of data processing, feature engineering, and model training.
 - Implemented Voice Activity Detection (VAD) system using both AI and WebRTC inference.
 - Together with the Principal Scientist, wrote a library of signal processing algorithms.
 - Coordinated efforts with the Firmware Team for low-level systems and hardware support.
 - Worked closely with Product Team and the Director of Product to meet customer needs.
 - Continuously improved the documentation quality of the ML and Engineering team docs.
- 04/2021 – 05/2021 **ML Engineering Intern, [DawnLight](#)**, Palo Alto, CA.
- Trained and evaluated CNN and Depthwise CNN based deep learning models.
 - Developed signal processing algorithms for audio detection.
 - 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.
- Major-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.

- 10/2016 – 06/2017 **Sales Representative and Marketing Coordinator**, [Insta LLC](#), Tbilisi, Georgia.
- Instructed and taught the basics of design to several aspiring graphic designers.
 - 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](#)
 2016 [Khan Academy](#)

*Observed Georgian Parliamentary Elections
 Subtitled Georgian and Russian videos*

Activities and Memberships

- 2020 - Present Member, Pi Mu Epsilon (Math Honor Society)
 2017 - Present Member, Association for Computing Machinery (ACM)

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](#)
 2014 7th Place (TOP 10) [National Mathematics Olympiad of Georgia](#)
 2011 – 2016 Five-time Finalist (TOP 30 out of over 3,000 participants), [National Mathematics Olympiad of Georgia](#).
 2014 IMO & IPhO Nominee, [Ministry of Education and Science of Georgia](#)
 2011 – 2016 Won a number of various mathematical olympiads, Varied

Publications and Other Manuscripts

- 2020 [A Qualitative Evaluation of Language Models on Automatic Question-Answering for COVID-19](#) (presented at ACM-BCB)
- 2020 [Constructing Co-occurrence Network Embeddings to Assist Association Extraction for COVID-19 and Other Coronavirus Infectious Diseases](#) (published at JAMIA)
- 2020 [Setting Up Python Development Environment for Use in a Small Classroom](#) (presented at MICS)
- 2019 [Textual and Statistical Analysis of Russian IRA Facebook Advertisements](#)
- 2019 [Type Inference Rules For Container Types in CCL](#)
- 2019 [The Topology of Robotic Configuration and Motion Planning](#)
- 2018 [Unit testing frameworks in the classroom](#) (applied research report)
- 2018 [Photography as a socially influential medium in Jennifer Baichwal's *Manufactured Landscapes*](#)

Language Proficiency

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

Technical Skills

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

Tools and Libraries: macOS, Linux, kitty, Neovim, Git, Zola, GitHub, Travis CI, SQLite, Flask, Elasticsearch, Jupyter, RStudio, PyTorch, TensorFlow, nltk, numpy, scipy, networkx, pandas, scikit-learn, OpenCV, OpenCL.

Other Skills: L^AT_EX, Markdown, Technical Writing.

Other Courses and Certificates

- 2020 [GCP for Clinical Trials with Investigational Drugs and Medical Devices \(U.S. FDA Focus\)](#), CITI Program, A Division of BRANY
- 2019 [Machine Learning & AI: Advanced Decision Trees](#), LinkedIn Learning
- 2019 [NLP with Python for Machine Learning Essential Training](#), LinkedIn Learning
- 2018 [Machine Learning Crash Course](#), Google
- 2017 [Think About It](#), Campus Clarity
- 2017 [How to Rock Social Media](#), LinkedIn Learning
- 2016 [South Caucasus Leadership Forum Participant](#), GSFL, Friedrich Naumann Foundation
- 2016 [Parliamentary Elections Observation Mission Training](#), Transparency International Georgia