

# Zachary Levonian

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## data science | human-computer interaction | natural language processing | ML

Data scientist, research engineer, and expert in applied ML/NLP. 8+ years building AI-powered systems using human-centered design. I combine quantitative and qualitative techniques to **understand, improve, and create** complex systems.

### EXPERIENCE

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**Senior Machine Learning Engineer**, Digital Harbor Foundation, Remote May 2023 – Present

- Developing education technologies for math education using large language models.

**Senior Machine Learning Engineer**, ConcertAI, Remote November 2022 – April 2023

- Deployed production ML models to rank and impute missingness for 20K+ patients using LightGBM, scikit-learn, Spark, and Redshift, reducing screening time from hours to minutes.
- Led an observability overhaul: added data validation, new metrics, and integration tests.

**Data Science Intern**, CaringBridge, Remote June 2021 – August 2021

- Designed, deployed, and evaluated a deep learning recommendation system for health blogs, resulting in 250+ new supportive comments and positive survey feedback from users.
- Implemented first-in-org ML pipelines for 40M+ user interactions using Pandas and PyTorch.
- Managed multi-stakeholder messaging to implement new operational success metrics (KPIs).

**Applied Scientist Intern**, Amazon, Remote September 2020 – December 2020

- Compared sampling methods using statistical simulations of 1000+ text classification models, resulting in a peer-reviewed conference paper and published design guidelines.
- Implemented active learning and full-text search methods using PyTorch and Lucene.

**Computer Science Researcher**, Univ. of Minnesota, Minneapolis MN September 2017 – July 2022

- Led research teams of 2-5 people in human-computer interaction research, culminating in 8 peer-reviewed publications with 100+ citations in venues like ICWSM, CSCW, and IUI.
- Developed open-source statistical code in Python and R for multi-modal data analysis.
- Designed annotation tasks, surveys, field studies, interview protocols, and app deployments.
- Mentored 20+ undergraduate and MS students, winning recognition (CRA and poster awards).
- Methods used: deep learning, statistics, classification/regression, social network analysis, NLP, qualitative content analysis, surveys, semi-structured interviews, and usability studies.

**Computer Scientist**, MITRE Corp., McLean VA January 2015 – July 2017

- Full-stack design and development of a prototype aviation safety interface in Java, ultimately deployed to 5+ airports and transitioned to the FAA for full development as a product.
- Led implementation of terabyte-scale automatic speech recognition using Hadoop and Spark.
- Evaluated statistical NLP methods and trained SVM classifiers for intent detection.

**Software Developer**, General Dynamics, Fairfax VA October 2014 – January 2015

### EDUCATION

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**Ph.D., Computer Science**, University of Minnesota September 2017 – September 2022

**B.A., Computer Science**, Carleton College September 2010 – June 2014

### PROGRAMMING SKILLS

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**Languages:** Java, Python, R, SQL, Bash, JavaScript, Awk, Clojure, Lua, C, C#, Objective C, Scheme

**Frameworks & packages:** PyTorch, Pandas, Matplotlib, scikit-learn, Hadoop MapReduce, Spark, slurm, SpaCy, React, AWS (S3, EC2), Docker, transformers, XGBoost, NLTK, networkx, statsmodels

**Tools:** Jupyter, Vim, Git, VW, VS Code, LaTeX, SQLite, MySQL, Postgres/Redshift, MongoDB, Linux