Hashem Elezabi

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Education

Stanford University — *Stanford, CA*

M.S. in Computer Science | GPA: 4.0 — *Class of 2023*

Coursework: *Machine Learning, Deep Learning, Modern Algorithms, Natural Language Understanding, Data Structures (Advanced).*

B.S. in Electrical Engineering with Honors | Minor in Mathematics | GPA: 3.81 — *Class of 2022*

Coursework: *Parallel Computing, Database Systems, Principles of Computer Systems, Digital System Design, Digital Systems Architecture, AI Principles and Techniques, Massive Data Mining, Probability and Statistics, Applied Matrix Theory.*

Experience

***(Incoming)* NVIDIA** — *Santa Clara, CA*

Deep Learning Software Intern — *Sep 2021 - Dec 2021*

- Will be a Software Engineering intern at NVIDIA's Deep Learning Library Performance team this fall.

Stanford DAWN *(dawn.cs.stanford.edu)* — *Stanford, CA*

Research Assistant — *Sep 2020 - Present*

- Designing and implementing methods for automatically generating efficient CUDA kernels for deep learning workloads.
- Studied CUDA optimization techniques and implemented several benchmarks to evaluate performance on a V100 GPU.

Gridspace *(gridspace.com)* — *Los Angeles, CA*

Machine Learning Engineer Intern — *Jun 2020 - Sep 2020*

- Implemented deep generative models in TensorFlow based on cutting-edge research for audio speech enhancement.
- Studied theory, techniques, and best practices for audio processing in machine learning pipelines.
- Built React apps for generating arbitrary forms from simple markup descriptions, accelerating the way Gridspace collects training data.

Passed Plates — *San Francisco, CA*

Co-Founder — *Jun 2019 - Apr 2020*

- Passed Plates fights food waste by enabling food vendors to sell their surplus food to consumers at a discounted price.
- Led app front-end development (React Native, Expo) and implemented complex UIs for both consumers and businesses.

Stanford Future Data Systems Lab *(futuredata.stanford.edu)* — *Stanford, CA*

Undergraduate Researcher — *Jun 2017 - May 2018*

- Developed parallel Python code for efficiently processing large (>1TB) binary data encoding seismic time series data.
- Studied locality-sensitive hashing (LSH) for efficient near-neighbor search in high-dimensional data, applied to earthquake detection.
- Benchmarked our C++ MinHash LSH implementation against existing LSH libraries, and co-authored paper at top conference (VLDB).

Projects

Finding most popular Hacker News topics *(Database Systems class)*

- Used SQL, BigQuery, and Google's Natural Language API to mine millions of Hacker News comments to find most popular topics.

R-trees *(Team | Data Structures class)*

- Studied the R-tree spatial index, an extension of the B-tree for multidimensional data.
- Implemented an algorithm designed for fast updates on top of `rbush`, an efficient JavaScript R-tree library.

Speech enhancement RNN hardware accelerator *(Digital System Design Lab)*

- Implemented an FPGA hardware accelerator for an RNN-based speech enhancement algorithm using Spatial, a new high-level language for programming accelerators.

5-stage pipelined MIPS processor *(Digital Systems Architecture class)*

- Implemented a 5-stage pipelined MIPS processor in Verilog, complete with hazard detection, data forwarding, and pipeline stalling when necessary. Ran the processor on a real FPGA.

Teaching

Stanford CS106A Code in Place — *Apr 2020 - May 2020*

- Part of worldwide teaching team in Stanford's first public version of CS106A during COVID-19, with >10,000 students from >65 countries.

Skills

Languages Python, C/C++, JavaScript, CUDA, SQL, Verilog, HTML, CSS, Matlab, LaTeX

Tools Git, TensorFlow, NumPy, Apache Spark, Google BigQuery, Pandas, Docker, Kubernetes, MapReduce, Facebook React.js

Concepts Parallel computing, deep learning, data science, code optimization, web development