Hashem Elezabi

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Education

Stanford University — *Stanford, CA*
MS in Computer Science | GPA: 4.0 — *Class of 2023*
Coursework: *Machine Learning, Deep Learning, Modern Algorithms, Natural Language Understanding, Data Structures (Advanced)*

Stanford University — *Stanford, CA*
BS in Electrical Engineering with Honors | Minor in Mathematics | GPA: 3.79 — *Class of 2021*
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

Stanford DAWN *(dawn.cs.stanford.edu)* — *Stanford, CA*
Undergraduate Researcher — *Sep 2020 - Present*
- Performing honors thesis research under Professor Kunle Olukotun as part of the DAWN *(Data Analytics for What's Next)* project.
- Building a library for automatically generating efficient CUDA kernels from Python code to accelerate deep learning workloads.

Gridspace *(gridspace.com)* — *Los Angeles, CA*
Machine Learning Engineer Intern — *Jun 2020 - Sep 2020*
- Built React apps for generating arbitrary forms from simple markup descriptions, accelerating Gridspace's crowdsourcing process.
- Implemented custom TensorFlow models with complex architectures for speech enhancement in contact center phone calls.
- Studied theory, techniques, and best practices for audio processing in machine learning systems.

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.

SLAC National Accelerator Laboratory *(slac.stanford.edu)* — *Menlo Park, CA*
Undergraduate Researcher — *Jun 2018 - Aug 2018*
- Studied the space charge limited (SCL) emission phenomenon in high-power devices.
- Implemented algorithms in Mathematica and C++ for efficiently approximating the SCL in complex device geometries.

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 *(CS145)*
- Used SQL, BigQuery, and Google's Natural Language API to mine millions of Hacker News comments to find most popular topics.

R-trees *(Team | CS166)*
- 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.

Quantum clustering algorithm
- Implemented in Python a clustering algorithm based on the recently introduced Quantum Approximate Optimization Algorithm (QAOA).
- Used startup Rigetti Computing's API and published code and explanation in a Jupyter Notebook **(https://bit.ly/3pVHIld)**.

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.

CS + Social Good and Streetcode *(Team)* — *Jan 2017 - Jun 2017*
- Part of CS + Social Good team working with Streetcode on building a web platform for improving delivery of CS teaching content.

Skills

Languages Python, C/C++, JavaScript, CUDA, SQL, Verilog, HTML, CSS, LaTeX
Tools Git, TensorFlow, NumPy, Apache Spark, Google BigQuery, Pandas, Docker, Kubernetes, MapReduce, Matlab, Facebook React