

# FAROUK HARB

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## EDUCATION

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**University of Illinois Urbana-Champaign (UIUC)**

PhD Candidate in Computer Science

*August 2021 - Present*

GPA: **4.0/4.0**

**Hong Kong University of Science and Technology (HKUST)**

Double major in Mathematics and Computer Science (First Class Honors)

*September 2015 - May 2019*

CGA: **3.932/4.300**

## EXPERIENCE

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**Google**

*Software Engineer Intern*

May 2022 - August 2022

- Worked on performance optimizations for Colossus, Google's distributed file system. Specifically, optimizing the encryption library using hardware acceleration.
- Profiled, measured, and benchmarked encryption library. Implemented performance improvements using hardware acceleration.
- Performance optimizations sped the average cryptography operation across 16KB chunks by 3x.

**Citadel LLC**

*Quantitative Trader*

July 2019 - June 2021

- Rewrote the trading simulation system and pipeline using Python 3 and C++11 that resulted in a **15x speedup on simulation run times**.
- Implemented a customized resource allocation algorithm for the team's simulation workload on a large scale cluster leading to **cutting simulation cost by  $\approx 15\%$** .

**Credit Suisse**

*Technology Analyst Intern*

June 2018 - August 2018

- Implemented a recommender system for recommending financial instruments to potential customers. **92% of users reported improved recommendations in their feed.**

**Augmedix**

*Software Engineer Intern*

June 2017 - August 2017

- Built a Restful speech-to-text back-end service that transcribes audio files into text and inserts them into a Google Spreadsheet with Flask and MongoDB. **The code freed 32 working hours daily for the firm.**

## PROJECTS

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**Reddit Suicide Posts Detector:** Programmed a decision tree based on information gain to detect whether a Reddit post was about self harm (suicide) or not.

**Open Source Contributor:** Rewrote the C++ back end for the Neural Network API in Shogun-toolbox, an open source C++ Machine Learning library, so that it uses automatic differentiation. Improved documentation and unit tests.

## PEER REVIEWED PUBLICATIONS

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All papers are either first author, or co-first author.

**E. Harb**, K. Quanrud, C. Chekuri. Faster and Scalable Algorithms for Densest Subgraph and Decomposition. **NeurIPS 2022**.

**E. Harb** and H. S. Lam. [KFC: A Scalable Approximation Algorithm for k-center Fair Clustering](#). **NeurIPS 2020**.

M. Golin and **E. Harb**, [Polynomial Time Algorithms for Constructing Optimal AIFV Codes](#). **DCC 2019**.

M. Golin and **E. Harb**, [Speeding up the AIFV-2 dynamic programs by two orders of magnitude using Range Minimum Queries](#), **Theoretical Computer Science Journal**.

## PROGRAMMING LANGUAGES

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Python, C++17