ANIRUDH BADDEPUDI

anirudhbaddepudi.com | abaddepu@andrew.cmu.edu

EDUCATION

Carnegie Mellon University School of Computer Science (Aug 2017 – May 2021)

B.S. Computer Science, Minor in Mathematics

GPA: 3.91, Dean's List with High Honors

Selected Coursework:

- **Graduate:** Theoretical CS Toolkit (PhD), Advanced Algorithms (PhD), Machine Learning (PhD), Advanced Machine Learning and Game Theory (PhD
- **Undergraduate:** Valuation and Financial Modelling, Algorithm Design & Analysis, Matrix Theory (Honors), Vector Analysis (Honors), Probability Theory (Honors), Real Analysis, Abstract Algebra, Distributed Systems, Mathematical Finance, Discrete Time Finance, Intermediate Macroeconomics, Philosophy of Social Science

Work Experience

Google — Software Engineering Intern

May - Aug 2020

- Re-wrote Google Cloud Storage Python libraries to enable concurrency functionality for Cloud Storage operations. Created approximately x5 speedup in storage library operations (resumable uploads/downloads etc).
- Re-wrote Google Python Authentication libraries and credentials flow which enable Google's server-to-server authentication mechanisms to access all Google Cloud Platform APIs.
- Both libraries currently used by 100K active developers with 1.2 billion total API calls monthly.
- Received a full time return offer at the end of the internship, choosing to pursue an MS.

Automation Anywhere — Software Engineering Intern

June - Aug 2019

- Constructed tools for the Bot Analytics team that generates real-time statistical insights from bot-generated data.
- Built back-end features to the Robotic Process Automation analytics dashboard such as a search bar with autocomplete features using Elasticsearch.
- Developed and implemented data aggregation algorithms to summarize automation processes using RestAPI framework.

Earth Computing — Research Engineer Intern

June - Aug 2018

- Developed original algorithms to create metrics to measure company product performance - e.g. measuring data center resilience under machine failures by finding number of spanning trees in modified graphs in real-time
- Implemented spectral graph theory algorithms based on related papers for company use in analyzing performance of product.
- Sat in on meetings and presentations with investors to learn about growing and acquiring funding in a startup company

Research

Cryptography and Blockchains Advised by Vipul Goyal
Aug 2019-Present

- Funded by the Department of Energy for Smart Energy projects, developed and Implemented a smart private ledger - a private blockchain network that facilitates secure and private data storage and retrieval.

Research Project: Algorithmic Game Theory Advised by Fei Fang
Aug 2020-January 2021

- Working on research extending current work on solving Security Games (Attacker-Defender Stackelberg Extensive Form Games) with the introduction of multiple strategic informants.
- Applications in problems related to protecting wildlife and natural resources from activities such as poaching.

Numerical Linear Algebra Advised by Jason Howell
May – Aug 2018

- Worked on finding tight lower bound estimates for the smallest eigenvalue of large, sparse, tridiagonal matrices.
- Explored improving initial iterates to non-negative matrix factorization (NMF) algorithms with applications in areas such as text processing
- Applications in partial differential equations and research on solving large, sparse systems of linear equations.

An Original Proof to the Theorem of Quadratic Reciprocity
Aug 2016

- Invited to attend the Ross Mathematics Program. Constructed an original proof to the Theorem of Quadratic Reciprocity using similar lattice point techniques to Gauss' original proof of the theorem.

Teaching:

Carnegie Mellon University School of Computer Science Teaching Assistant
Aug 2018 - Present

Responsible for leading 20 member recitation sessions, grading assignments, designing/writing problems, organizing workshops and giving review lectures for the following classes:

- 15-451/651 Algorithm Design and Analysis (Spring 2020)
- 15-251 Great Ideas in Theoretical Computer Science (Spring 2019, Fall 2019, Fall 2020, Spring 2021)
- 15-151 Mathematics for Computer Scientists (Fall 2018)

Awards

- Putnam Mathematical Competition Top 500
- 2019 Heap Fellow
- British Math Olympiad Medallist
- IGSCE Cambridge Mathematics Top of the World Award (Highest Score Worldwide)
- Princeton Singapore Alumni Association Book Award (Given to 2 students in country)
- Outstanding contribution to college service award for developing an extension curriculum for an elementary school in Singapore

Leadership and Community Involvement

CMU OM (Vice President):

- Responsible for organizing events (for over 2000 people) on campus and in the wider Pittsburgh community. Managed budgets and raised funds for events on campus.

SCS Deans Advisory Council:

- Serve on the Deans Advisory Council for the School of Computer Science, meeting and collaborating with the Dean, Associate Dean and SCS staff to represent undergraduates in the School of Computer Science.

Tepper Policy Review Writer:

- Passionate about Economics and Public Polcy, I write for CMUs Economics Journal on topics in Macroeconomics, Finance and Policy.

CMU Quant Club (Exec Board):

- Responsible for organizing all Quant Club projects and events on campus. Leading a new initiative on quantitative trading, conducting workshops on trading strategies and the markets.

Carnegie Mellon Informatics and Math Competition:

- Help organize the competition at CMU. Responsible for writing problems and grading contests.

CMU Cricket Team (Co-President)

- Lead training sessions and manage club budgets and tournaments.