Sagnik Chakraborty

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EDUCATION

University of Illinois at Urbana-Champaign | Champaign, IL Expected Graduation Fall 2024

B.S. - Electrical and Computer Engineering, Minor in Mathematics

Coursework: Data Structures*, Elementary Theory of Numbers, Discrete Mathematics, Abstract Linear Algebra*, Linear algebra w/ computing applications, differential equations, Analog Signal Processing, System Programming in C, Digital Systems* (* = will finish by May 2023)

SKILLS & TECHNICAL TOOLS

Languages: Rust, Python, SQL, Javascript, C/C++

Technologies: Git, AWS, SageMath, Matplotlib, Linux, NextJS, React, Sanity.IO

Other Skills: Mathematical Argument, Proof-writing/interpretation, Algorithms

Achievements

Academic: ctf.sigpwny.org: Top 5 individual contestant (username: Quaternion), uiuc fallctf 2022 top 44 contestant (team: B1G_D4WG5)

EXPERIENCE (Academic)

Technological Advancement Group leader| IEEE UIUC Chapter *Oct 2022 - Current*

- Developing a 5-week long Curriculum for UIUC IEEE Chapter on Networking, Network analysis, and Security
- Teaching Network Security, building Network applications, and socket programming.

Competitor | SIGPwny *Aug 2022 - Current*

- Active Participation in club CTF - currently 5th place of 313+ active participants: https://ctf.sigpwny.com/scoreboard
- Demonstrated ability to learn and implement new tools and technologies to solve relevant problems in cybersec/penetration testing, such as Cross-Site Scripting, BurpSuite, NetCat, SQLmap, Wireshark, and Webhook.site
- Participated in competitions like BuckeyeCTF and contributed to team placement of 2nd place overall, 1st in undergrad division (writeup on github)

Student Researcher| AoPS CrowdMath + MIT Prime *June 2020 - Aug 2020*

- Conducted research and made progress on open problems regarding the unique determination of position in a graph space or a node network via analyzing the distances to landmark nodes
- Experience with bounding, graph analytics, and usage of the research topic in real-world application such as robot navigation
- Learned to interpret papers, analyze flaws, and develop optimizations and improvements.

PROJECTS

Personal Site | *Next.JS, Sanity.IO* | *(Ongoing)*

- Developing a Personal Website/blog using the Next.JS and Sanity.IO headless CMS. Will deploy in Vercel within the coming month.

Mathkov | *Python, spaCy, Markovify* | RedFlame2112/mathkov

- Mathkov is an ongoing project in NLP that utilizes a markov chain stochastic model and spaCy library to create competition math problems from a compiled dataset that contains numerous problems from past competitions like the American Invitational Mathematics Examination.

Wordle Optimality Analysis | *Rust, Rayon Data-Parallelism Library/Crate* | RedFlame2112/Wordle-Optimality-Analysis

- Using the Rust programming language, I conducted an analysis of the massively popular word game Wordle, and mined for 20 of the most optimal starting words in Wordle.

Termordle | *Rust* | RedFlame2112/termordle

- Termordle is a system local version of the smash hit word game, Wordle, written exclusively in the Rust system programming language. Gained skills in data structures and algorithms from this project.