KIRAN BRAHMATEWARI

kiran.brahma98@gmail.com

kiran-brahmatewari lynkos lynkos.dev

Education

Bachelor of Science in Computer Science — Anticipated Spring 2025

Florida International University (FIU) — *Miami, FL*

- **Relevant Coursework**: Artificial Intelligence, Operating Systems, Net-Centric Computing, Data Structures, Discrete Mathematics, Systems Programming, Computer Architecture, Software Engineering, Algorithm Techniques, Principles of Programming Languages, Mobile Application Development, Fundamentals of Quantum Computing

Experience

Research Assistant — September 2023 – Present

Analytics for Cyber Defense Lab — *Miami, FL*

- Writing and designing custom client-server software from scratch to facilitate secure communication between a computer (i.e. client) and M Internet of Things (IoT) devices (i.e. servers)
- Implementing multiparty computation (MPC), a quantum-resistant cryptographic algorithm, to securely compute the product of N matrices with custom client-server software
- Improved multiplication speed for sufficiently large matrices; i.e. runtime is significantly faster — in comparison to NumPy's `dot`, `matmult`, and `einsum` routines — when computing the product of sufficiently large matrices
- Reading research literature about (1) applications and (2) theory of post-quantum cryptography that will ensure quantum-resistant devices (i.e. quantum hacking prevention)
- Temporarily paused since May 2024 to focus on internship and coursework; returning in Spring 2025

Software Engineer Intern — June – September 2022, May – August 2021/2023/2024

Oracle Cloud — *Remote, Hybrid*

- Automated (1) Top of Rack switch replacement workflow, (2) change management ticket creation, and (3) release creation/deployment; resulted in 80% decrease in time spent triaging tickets
- Built command line tool to automatically convert all Terraform alarm configurations within a given directory and subdirectories into a Grafana dashboard; conveniently auto-uploaded once user enters new dashboard's name, parent folder (optional), and commit message (optional)
- Wrote structured, concise technical documentation, unit tests, and test scenarios and cases; method coverage $\approx 90\%$
- Created table in Oracle Database for storing fault code data to be sent to data warehouse, and implemented Data Access Object (DAO) pattern to handle communication (i.e. CRUD) between table and data objects
- Onboarded throttling service to limits service

Projects

Using AI and Low-Cost Camera to Detect Harmful Algae in Natural Water — January – May 2024

Capstone II — *Miami, FL*

- Designed and developed a system that uses AI (i.e. computer vision) and a camera to quickly detect and identify species of harmful algae in real-time (livestream/video); i.e. using convolutional neural networks for object detection
- Included compatibility for various cameras, including most ESP32-CAMs, iPhones, and webcams
- Lead and managed team of 3 senior computer science students (i.e. team lead)
- Wrote comprehensive Google Colab tutorial that details the process of training, validating, inferencing, exporting, and deploying the custom AI model; tutorial also goes over dataset annotation, preprocessing, and augmentation

Grover's Algorithm — April – May 2023

Fundamentals of Quantum Computing — *Miami, FL*

- Created n-qubit quantum program searching for m target(s) in an unsorted database of size N
- Resulted in quadratic speedup over classical algorithms ($O(\sqrt{N})$ vs. $O(N)$ complexity)

Skills

Languages: Python, Java, Bash, JavaScript, HTML, CSS, JSON, jQuery, LaTeX, YAML, Jinja, Terraform, C, C++, R

Frameworks: PyTorch, OpenCV, Qiskit, Keras, TensorFlow, NumPy, SymPy, SASS, Roboflow, JUnit, Espressif, Arduino, Ultralytics YOLO, Spring, Bootstrap, React, Maven, Vue.js, Babel

Tools: Jira, Git, Conda, Jupyter, Colab, Vim, VMWare Fusion, PlatformIO, Grafana, Docker, GPT, GitHub, Bitbucket, Confluence, Homebrew, Wine, npm, Microsoft Office