KIRAN BRAHMATEWARI

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Education

Bachelor of Science in Computer Science August 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 – April 2024

Analytics for Cyber Defense Lab *Miami, FL*

- Designed and developed client-server software for large matrix multiplication with Internet of Things (IoT) devices
- Implemented multiparty computation (MPC), a quantum-resistant cryptographic algorithm, to ensure reliable and secure data exchange
- 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
- Read research literature about the theory and applications of post-quantum cryptography as a preventatve measure against quantum hacking

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

Oracle Cloud Infrastructure (OCI) *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
- Enhanced network monitoring capabilities by developing a 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)
- Authored comprehensive technical documentation, unit tests, and test scenarios/cases; method coverage $\approx 90\%$
- Engineered a database solution for fault code data management, including a Data Access Object (DAO) layer, to support a data pipeline for the data warehouse, contributing to operational analytics
- 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, Bash, Java, Terraform, YAML, Jinja, JSON, C, C++, LaTeX, HTML, MQL

Frameworks: PyTorch, OpenCV, Qiskit, Keras, TensorFlow, NumPy, SymPy, JUnit, Espressif, Arduino, Spring, Maven

Tools: Jira, Git, GitHub Actions, Oracle Cloud Infrastructure (OCI), Google Cloud, Conda, Jupyter, Colab, Vim, VMWare Fusion, Grafana, Docker, GitHub, Bitbucket, Confluence, Homebrew, Wine

Operating Systems: macOS, Ubuntu Linux, Windows