VALAY SAITWADEKAR

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EDUCATION

California State University Fullerton, United States of America — **Expected: May 2026**
Candidate for Masters of Science in Computer Science — CGPA 3.95/4

Shree L. R. Tiwari College of Engineering, Mumbai University, India — **May 2024**
Bachelor of Engineering in Computer Engineering with
Honors in Cyber Security with *Distinction* — CGPA 9.11/10

PROFESSIONAL EXPERIENCE

Filtroll International (India) Pvt. Ltd., Mumbai, India — **December 2022 – June 2023**
Intern – Software Engineer

- Implemented inventory management, accounting, and CRM modules using Python and Flask within the ERP system to help the business manage inventory levels and track financial transactions more efficiently, along with custom reports, dashboards, and analytics to provide business insights, reducing manual work by 50% and improving inventory management accuracy by 85%.
- Formed ERP system requirements and specifications document based on meetings with key business stakeholders to understand their needs and planned development of new capabilities aligned with business growth.
- Designed a relational database schema in MySQL to organize business data for reports and analysis with stored procedures and database triggers to enforce business logic and data integrity.
- Created user guides and admin manuals to support onboarding new users and documentation for users covering system navigation and module functions and conducted training to help employees adopt the new ERP tools.

PROJECTS

DupliCron – Metadata-Based Incremental File Synchronization and Backup

- Built a C++20 tool for Windows and Linux that performs incremental backups from multiple source directories by detecting file changes using file size and modification time, with a binary metadata cache to prevent redundant copying across runs.
- Parallelized scanning, hashing, and copying phases using a custom thread pool to efficiently manage concurrent tasks, maximizing resource usage and reducing synchronization time through overlapping operations. Tested with over a million files, maintaining a low memory footprint of just a few megabytes.
- Designed a disk-aware per-source copy mechanism using thread-safe queues with serialized and parallel modes for peak throughput. Ensured data integrity by updating metadata only after verified copies and enabling automatic retries on failure.
- Implemented structured logging, UTF-8 support for multilingual file and folder names and configured the system to be fully driven by a user-editable file supporting flexible sync modes, source exclusions, and stale file cleanup.

DISHA – Deep Learning based Cyclone Intensity Estimation with NLP based Report Generation

- Launched a website that integrates a CNN model to classify cyclone intensity with 94.5% accuracy using IR(Infrared) images from the MOSDAC website, categorizing cyclones into levels 1 to 5, and providing real-time insights into cyclone severity.
- Trained a T5 transformer model to generate multilingual safety guidelines and precautionary measures tailored to each cyclone level, enhancing accessibility and improving response strategies for diverse audiences.
- Setup Twilio API sending SMS alerts with cyclone intensity and precautionary guidelines, providing timely information to users and OpenWeatherMap API providing additional weather-related information.

SIPHI – Speech Improvement for People with Hearing Impairment using Visual Aid

- Developed an Android Application to help people with hearing impairments improve their speaking skills using lip-synced animations and dynamic sound represented in line graphs.
- Employed GMM – HMM (Hidden Markov Model with Gaussian Mixture Model) to perform Speech Recognition and Waveform Similarity Analysis to identify the accuracy of the words spoken by the user.
- Incorporated API that displays Lip Sync Animation and broken-down pronunciation in the form of Phonemes.

TECHNICAL SKILLS

- Programming Languages: C, C++, Shell Scripting, Java, Python, R, SQL, Kotlin, HTML/CSS/JavaScript.
- Tools: MS Visual Studio, Android Studio, AWS, Git/GitHub, Docker, CMake, gdb, SysInternals, WSL, Wireshark, Jira, Figma.

RELEVANT COURSEWORK

- Operating Systems Design
- Advanced Computer Networking
- Advanced Algorithm Analysis
- Software Maintenance
- Application and System Security
- Software Design & Architecture
- Theory of Computer Science
- Big Data Analysis
- Database Management Systems
- Cyber Security and Law
- Security Information Management
- Data Warehouse & Mining
- System Programming & Compiler Construction
- AI, ML, NLP and Social Media Analysis
- Digital Logic & Comp Arch
- Digital Forensics
- Cryptography
- Distributed Computing
- Ethical Hacking
- Data Structures
- Malware Analysis