Parth Kulkarni

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Education

- **Syracuse University** — Syracuse, NY
  Masters in Computer Science — *August 2023 - May 2025*
  Courses: *Operating Systems, Data Structures, Analysis Of Algorithms, Artificial Intelligence, Machine Learning, RDBMS*

Skills Summary

- **Languages**: **Java**, **Python**, C/C++, Dart, Swift, Haskell, HTML, CSS, R
- **Libraries & Frameworks**: Flutter, **Spring Boot**, React Native, **JPA**, **JUnit**, ReactJS, Numpy, Pandas, scikit-learn
- **Database & Cloud**: **SQL**, MongoDB, Firebase, Supabase, **AWS**,Microsoft Azure,**Bedrock**
- **Tools & Platforms**: Maven, Jira, GitHub, Postman, Docker, SupaBase, Figma, Android Studio, R Studio, Vercel, Salesforce, Power BI, Tableau, Excel, VS Code, Notion, HuggingFace, Selenium, JUnit, Tensorflow, XGBoost, Random Forest
- **Concepts**: OOP, REST, SOAP API, Microservices, Scrum, Agile, MVC, MVVM, SVM Algorithm, KNN Algorithm

Experience

Syracuse University — Syracuse, NY
Software Developer — *February 2025 – Present*

- **Mobile Physiotherapy Application**: Developing a cross-platform physiotherapy app for NHRL Lab using React Native and smartphone sensors to compute Drop Angle, Drop Time, and Motor Velocity—expected to serve 1,000+ clinicians while minimizing hardware costs by $5,000 through smartphone-based testing.
- **Data Infrastructure Development**: Architected a versioned local patient database using ***react-native-async-storage*** and ***react-native-fs***, enabling seamless offline access to 100,000+ records and reducing data retrieval latency by 40%.

Syracuse University — Syracuse, NY
Research Assistant — *February 2025 – Present*

- **DNA Methylation Analysis**: Designed and executed an R-based pipeline using ***minfi*** to preprocess and normalize DNA methylation data spanning 450,000+ CpG sites across 100+ clinical samples.
- **QC and Visualization**: Conducted probe-level quality control using ***wateRmelon***, filtering out 12,000+ unreliable probes and correcting for batch effects; created 20+ visualizations with ***ggplot2*** to support differential methylation analysis.

- **MTX Group, Inc.** — Schenectady, NY
  Software Developer Intern — *May 2024 – August 2024*
  - **Salesforce Custom Development**: Developed modular Lightning Web Components and Apex classes to streamline service workflows—cutting redundant clicks by 40% and accelerating adoption across 120+ internal users.
  - **Batch Processing Automation**: Built Apex Batch jobs to process 100k+ records asynchronously with checkpointing and error handling—cutting execution time by 80% and saving $25,000/month in manual support costs.
  - **Case Management Optimization**: Devised Round Robin case assignment using Apex and custom queues in Service Cloud, automating distribution across agents and improving first-response SLAs by 30% while reducing manual triaging.

- **Speech Markers Pvt. Ltd** — Pune, MH, India
  Software Developer Intern — *May 2023 – July 2023*
  - **Library App Initiative**: Led the design of a scalable Flutter app integrated with open source KOHA library software via RESTful APIs, collaborating with two senior engineers to support growing student engagement.
  - **UI & Data Engineering**: Crafted reusable Flutter widgets and integrated ***SQLite*** for robust offline access to catalog and loan data—powering seamless access for 10,000+ students.
  - **CI/CD Integration**: Implemented CI/CD pipelines using ***GitHub Actions*** to automate build, test, and deployment workflows—reducing manual release overhead by 90% and accelerating feature delivery.
  - **Performance & Scalability Optimization**: Revamped app architecture using ***Provider*** for state management and streamlined database queries—reducing app size by 70%, cutting latency by 20%, and enabling smooth scale-up across a 5x data load.

Projects

- **JavaChip (Full-stack E-Commerce Platform)**: Constructed a scalable e-commerce site using Java Spring Boot and MongoDB, supporting 5,000+ products and 10,000+ daily reads, deployed on AWS. Built React components for order management, improving transaction speed by 20% and visibility by 30%.
- **Scalable Concurrent Job Scheduler**: Defined and implemented a Java-based multithreaded job scheduler simulating OS-level task management with priority and round-robin strategies. Utilized thread-safe data structures, resource-aware scheduling via system APIs, and performance tuning with JMH—achieving 30% higher throughput under concurrent workloads.
- **Flight Delay Prediction (ML, XGBoost, PCA)**: Engineered a predictive model using BTS and weather data, improving accuracy by 15%. Tuned XGBoost via grid search and applied PCA for dimensionality reduction and model efficiency.
- **Operating System Simulation using NachOS**: Simulated OS functionalities using NachOS, including virtual memory, process scheduling, Unix system calls, and interrupt handling in a multi-programming environment.