

ARYAN ISHAN RAVESHIA

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Education

Northeastern University

Master of Science in Computer Science • GPA: 3.92/4.0

Sep. 2025 – May 2027

Boston, MA

Manipal Institute of Technology

Bachelor of Technology in Computer and Communication Engineering

Oct. 2020 – Jul. 2024

Manipal, India

Work Experience

The Boeing Company

Entry Level Software Engineer

Aug. 2024 – Aug. 2025

Bangalore, India

- Architected a **Python** and **Neo4j** Data-Fetch service (**Cypher**) to pull airline and airport data, conditionally fall back to OAG to ensure scalability and data availability, maintaining **99%** uptime for downstream simulation components.
- Generated **.ACF** flight schedules using the Data-Fetch module for **1,000+** flights in under **2 minutes**, enabling real-time simulation workflows for Simulation Management Service.
- Engineered a high-performance aircraft-state streaming using **ZeroMQ** by developing Python publisher/receiver, **Cythonized** and compiled to **.pyd** modules to reduce overhead; achieved performance optimization of approx **1000ms** end-to-end latency and sustained over **5,000 messages/sec** in test harnesses to support real-time conflict detection.
- Developed a reusable Python flight-path module that decodes aggregated route datasets (routes.rts, routes.json, waypoints.wpt, airport.apr), supports city-city and waypoint-airport queries, and returns route strings plus structured waypoint files — handled a dataset of approx **200,000 routes** and returned queries in under **2000ms** on average.
- Implemented waypoint ETL via Python to fetch and normalize approx **5000 waypoints** from Neo4j, convert decimal co-ordinates to cardinal format, and publish it for modular simulation components part of production.
- Designed serialization and inter-service contracts for microservice migration: prototyped **Protocol Buffers (Protobuf)** for TAAM aircraft payloads to support **FMI 3.0 migration** and defined **ZeroMQ** streaming message schemas; reduced serialized payload size by **20%** vs. JSON across the distributed systems stack.
- Prototyped a technical spike to containerize the Windows-native simulation engine using **CrossOver**, successfully packaging VC++ dependencies and validating **100%** of core simulation logic on Linux, proving the feasibility of platform-independent deployment.

Manipal Institute of Technology

Undergraduate Artificial Intelligence Research Assistant

Jan. 2024 – Jul. 2024

Manipal, India

- Researched on Evaluating Explainable Artificial Intelligence in Regression Models. Designed and constructed interpretable machine learning models, improving explanation fidelity by approx **15%** on benchmark datasets.
- Engineered Explainable AI visualization pipelines using **Python, SHAP, and LIME** to extract and display model decision factors.
- Benchmarked XAI model reliability by computing feature attribution stability scores across **200+** test iterations and measuring SHAP value consistency, validating explainability techniques for deployment in production regression models.

Projects

Calendar Management System (Java, Swing)

- Architected a robust, object-oriented calendar system using **Java** and **Swing**, strictly adhering to the Model-View-Controller (**MVC**) architecture to ensure modularity, scalability, type-safety and separation of concerns.
- Applied **4+** advanced design patterns and engineered a flexible controller using the **Command Pattern** to decouple user actions from business logic and integrated the **Builder Pattern** to streamline the creation of complex event objects.
- Developed complex algorithms for recurring event scheduling and conflict detection, optimizing for **performance** to handle dense calendar data efficiently and achieved **90%** mutation and line test coverage in JUnit.
- Built a **custom analytics engine** to track user interactions (event creation, edits, deletions) and calculate usage patterns; designed **immutable DTOs** with defensive copying to prevent data corruption across **MVC** layers, ensuring type-safe encapsulation and adherence to **SOLID**.

Learning Management System (TypeScript, React, Node.js, MongoDB, Express)

- Developed and deployed a scalable learning management system with **role-based access control (RBAC)** supporting students, faculty, and administrators, implementing **RESTful APIs** with **Express.js** and **MongoDB** for persistent data storage with optimized queries using **Mongoose ODM**.
- Built responsive **React** frontend with **Next.js** and **TypeScript** featuring real-time course enrollment, dynamic user management with **CRUD** operations, modular assignment tracking, and session-based authentication with secure cookie handling, deployed on **Vercel** and hosted on **Render**.

Technical Skills

Languages: Java, Python, SQL, C++, TypeScript, JavaScript (ES6)

Frameworks and Libraries: ZeroMQ, REST APIs, gRPC, Protobuf, CMake, React, Angular, Swing, ExpressJS, NodeJS

Databases: MySQL, MongoDB, SQLite, Neo4j (Cypher)

Tools & Cloud: Git (Version Control), Docker, GitLab CI/CD, Jira, Postman, Vercel, Render, VS Code, IntelliJ, Eclipse, Agile, AWS, Google Cloud, Kubernetes

Achievements

- Achieved **1st Place** in Boston at the Google **Deepmind x Cactus (YC) Agentic AI Hackathon** held at MIT in February 2026