

## Education

### Texas A&M University

College Station, TX, USA

#### Master of Science, Computer Science GPA: 3.5

Aug 2024 – May 2026

- Coursework: Artificial Intelligence, Machine Learning, Deep Reinforcement Learning, Software Engineering, Analysis of Algorithms, Computer and Network Security, Operating Systems, Cybersecurity Risk

### Maulana Abul Kalam Azad University of Technology

Durgapur, WB, India

#### Bachelor of Technology, Computer Science Engineering - GPA: 3.75

Aug 2019 – Aug 2023

- Coursework: Database Management System, Object Oriented Programming, Data Structure and Algorithms

## Work Experience

### Texas A&M University, Mays Business School

College Station, TX, USA

#### Research Assistant

May 2025– Present

- Built and maintained scalable ETL and backend services processing 4M+ healthcare records, improving data pipeline throughput and reliability for downstream analytics systems.
- Engineered a graph-based data representation layer and optimized data retrieval paths, reducing query latency and supporting high-throughput workloads.
- Added observability tooling (logging, metrics, debugging hooks) to improve reliability and developer visibility into data pipeline behavior.

### Roboiotics Services

Ghaziabad, UP, India

#### Software Development Intern

Nov 2022 – Apr 2023

- Developed backend REST APIs for the company's learning management system, optimizing the codebase and leveraging AWS for cost-effective performance.
- Enhanced system efficiency by implementing client-side caching (14% latency reduction), database indexing (20% throughput improvement), and a dynamic document retrieval system (28% faster than legacy).
- Increased software release efficiency by 30% by creating reusable Python scripts for web scraping/crawling using BeautifulSoup and Selenium modules and writing comprehensive API test cases.
- Built internal automation utilities that reduced manual debugging and deployment steps, improving engineering productivity and system maintainability.

### Ardent Computech Pvt Ltd

Kolkata, WB, India

#### Software Development Intern

Jul 2022 – Aug 2022

- Contributed to a tourism management system by reengineering database queries, improving customer satisfaction (CSAT) by 15% and increasing data transfer efficiency by 20% compared to the legacy application.
- Designed and deployed asynchronous APIs that reduced server-side errors by 8%, strengthened security against denial-of-service (DoS) attacks, and optimized operational costs.
- Collaborated in an Agile development team, participating in sprint planning, daily stand-ups, and code reviews to deliver production-ready features on schedule.

## Projects

### Clinical Referral AI Assistant (RAG + LangChain + FastAPI + FAISS)

Overview: Built an LLM-powered clinical decision support assistant that provides context-aware specialist referral recommendations using healthcare records.

- Developed a backend service (FastAPI + Python) providing low-latency lookup, search, and reasoning capabilities over high-volume structured data.
- Implemented vector indexing (FAISS) to support efficient retrieval operations, enabling sub-second responses under concurrent load.
- Designed modular internal APIs used by multiple downstream components; integrated robust error handling, logging, and metrics.
- Containerized and deployed the service using Docker, optimizing startup and data-loading time and reducing cold-start latency by 31%.

### Autonomous Overtaking in CARLA

Overview: Enhanced a proprietary lane-keeping autonomous driving model, based on deep Q-learning, within the CARLA simulator, to perform lane changing and overtaking maneuvers in dynamic traffic environments.

- Designed a custom reward function for DDQN in the CARLA simulator to enable safe overtaking and lane changes, improving overtaking success by 17% and lane-change accuracy from 83% to 89%, with real sensor data integration for real-world applicability.

## Technical Skills

**Programming & Backend:** Python, Java, C++, Go (learning), Swift (learning), REST APIs, Object-Oriented Programming

**Systems & Infrastructure:** Linux (x86), Distributed Systems, Networking Concepts, Monitoring & Logging, Load Optimization, High-Availability Systems

**Cloud & DevOps:** AWS, GCP, Docker, Kubernetes, CI/CD (GitHub Actions), Infrastructure Automation, Containerized Deployments

**Data & Backend Services:** SQL, MySQL, Oracle, SQL Server, MongoDB, Caching, ETL Pipelines, Apache Kafka, BigQuery, Hadoop, Airflow

**Developer Tools & Collaboration:** Git, GitHub, Jira, Confluence, Agile/Scrum, Unit & Integration Testing, TDD