Yashika Jaya Kuckian

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Education

Master of Science in Computer Science **GPA: 3.73/4.0**
Univeristy of Massachusetts Amherst **Aug 2023 – May 2025**
Advanced Machine Learning, Advanced Algorithms, Algorithms for Data Science, Software Engineering, Distributed Systems

Bachelor of Engineering in Information Technology **GPA: 3.96/4.0**
Fr. C. Rodrigues Institute of Technology, Vashi **Aug 2019 – May 2023**
Operating Systems, Algorithms and Data Structures, Compilers, Computer Networks and Security, Artificial Intelligence

Technical Skills

Programming Languages	: Python, Java, C++, JavaScript, R
Frontend Development	: React, Angular, HTML, CSS
Backend Frameworks and Tools	: Spring Boot, Django, Flask, Apache Kafka, OpenSearch, NeuralSearch
	: Git, Docker, Kubernetes, Jenkins, Prometheus, Apache Maven, Node.js
Cloud Platforms and Services	: AWS, AWS Lambda, AWS Secrets Manager, Amazon EC2, Amazon SNS, Bedrock
Databases and Data Storage	: MySQL, MongoDB, PostgreSQL, Redis, Amazon DynamoDB
Machine Learning Frameworks	: TensorFlow, PyTorch, Scikit-Learn, XGBoost, Random Forest
Other Tools and Technologies	: OAuth 2.0, JSON Web Tokens (JWT), RESTful APIs, CI/CD, Agile Development
	: Protocol Buffers, Cron Jobs, Mockito, JUnit, Postman API, Swagger(Open API)

Experience

Software Engineer Research Assistant, University of Massachusetts Amherst May 2024 – Present

- Developed and deployed a dynamic website `Social Polls by SIMS Lab` using **React**, **Node.js**, **HTML**, and **CSS**. Implemented an automated data updating system with **cron jobs**, integrated with **GitHub** for seamless updates and auto-deployment via **GitHub Pages**, resulting in **98% uptime**.
- Designed and set up a large-scale academic experiment for **2000** participants, including creating a **JavaScript browser extension** to modify user feeds on platform X for data collection, achieving a **95% response rate** from participants.
- Built a **Python-Flask** backend to securely store and log user interactions in a **MySQL** database, ensuring session continuity and data traceability via **cookies**, processing over **600,000** user interactions per day.
- Developed and maintained secure **HTTPS** web pages to guide participants, managed by an **Nginx** server for reliability, and analyzed user interaction data using **data science** tools, providing insights into user behavior for research.
- Contributed to **time series analysis** of election polls, applying **ARMA** to forecast trends and predict future outcomes.
- Worked on **public opinion mining** projects, analyzing **social media poll data** to gauge societal sentiment and trends, helping identify **key opinion shifts** in real time.

Software Engineer Intern, CryptCube May 2024 – Dec 2024

- Developed around **10+ Spring Boot services** to handle use cases like web scraping, sending DocuSign mails, making Bedrock calls, and integrating chat with Lex, improving process automation by **40%**.
- Assisted in developing libraries for **CRUD operations in DynamoDB** and **OpenSearch**, enhancing data management and improving caching response time by **35%**.
- Experimented with different parameters of **OpenSearch** to identify optimal configurations for specific use cases, improving search efficiency and response time by **30%**.
- Leveraged **Titan embeddings**, **Apache Lucene**, and **NLP techniques** to evaluate the accuracy of web-scraped documents, improving document processing accuracy by **45%**.
- Assisted in maintaining and improving a **Kafka Lambda chain**, enabling real-time data processing and monitoring Kafka health using **Prometheus**, leading to **60% faster issue detection**.
- Developed a **mitigation database** that enhanced the speed and quality of mitigation responses, reducing response times by **15%**.

Software Engineer Intern, Tata Institute of Fundamental Research Jan 2023 – Jul 2023

- Developed a robust digitization system to preserve ancient Gujarati manuscripts, achieving an accuracy of **97.63%** in converting typed newspaper text into an editable online machine format.
- Reduced training complexity by dividing text lines into three horizontal zones, cutting training classes from **564 to 79**.
- Designed and deployed a **Django-based application** with tools for annotation, dataset generation, model training, and testing at TIFR for large scale text digitization.
- Modularized the codebase using **OOP principles**, enhancing scalability and maintainability.
- Implemented **OAuth2** and **JWT authentication** for secure access and user data protection.
- Participated in **agile development practices**, contributing to sprints and iterative improvements.

Projects

GTReZ - Gujarati Text Recognition using Zone Segmentation Jul 2022 - Apr 2023

- Developed a **machine learning model** to convert **Gujarati text** into a **machine-readable format** for manuscript preservation and applied **neural networks** and **image processing** to improve **text recognition accuracy**.

ATM Security System Jun 2021 - Jun 2021

- Created a **gesture-based PIN** and **hand vein recognition system** using **CNN** and **OpenCV** for enhanced ATM security. Deployed on a **Raspberry Pi** with a **NoIR camera** and **IR LEDs** for **authentication**.

Tracking Missing People Using Face and Vehicle Recognition Jan 2021 - Apr 2021

- Built a system to track **missing individuals** and **vehicles** using **live CCTV feeds** and **photograph datasets**. Implemented **machine learning** and **image processing** for real-time **identification**.

Publications

- Yashika Kuckian, et al., *GTReZ - Gujarati Text Recognition using Zone Segmentation*, IEEE Explore, 2023, Link to Paper.
- Yashika Kuckian, et al., *ATM Security System Using Gesture and Hand Vein Recognition*, Springer, 2023, Link to Chapter.