

ZEEL DESAI

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Education

Virginia Tech

Master of Science in **Computer Science** — GPA: 3.88/4

Aug. 2023 – Decemeber 2025

Blacksburg, Virginia

Software Engineering, Information Storage Retrieval, Advance Topics in HCI, Machine Learning, Information Visualization

Vellore Institute of Technology

Bachelor of Technology, Computer Science, 8.59/10

July 2019 – May 2023

Chennai, India

Operating System, Parallel and Distributed Systems, Large Scale Data processing, Compiler Design, Data Structures

Technical Skills

Languages: Python, C/C++, Java, JavaScript/TypeScript, Golang, SQL/NoSQL, HTML, Matlab, R, PHP

Database, Containers & DevOps: PostgreSQL, MySQL, MongoDB, DynamoDB, Docker, GCP, Oracle, Jenkins, AWS S3, Azure

Technologies/Frameworks: Flask, ReactJs, Angular, .NET, CSS, Vue, Node.js, Tensorflow, Pytorch, AWS(EC2, ECS, SageMaker)

OpenSearch, ElasticSearch, Kafka, Git, Django, RESTful APIs, Spring Boot, MVC Framework, GitHub, Linux/Unix, Jira

Areas of Interest : Full stack Development, Software Engineering, Data Analysis, Data Engineering, Artificial Intelligence, Generative AI, Machine Learning

Experience

Virginia Tech-Assured Vehicle Autonomy (AVA) Lab

August 2024 - Current

Blacksburg, VA

Graduate Research Assistant(Funded)

- Built a Web Application to detect satellite jamming by analyzing GNSS signals received from 1000 continuous observation stations using **Flask, REST Framework, React.js, MySQL, & MATLAB** analyzing influx of 60 GB satellite data streams.
- Deployed the application in **AWS infrastructure** using **Elastic Container Service** (both FARGATE and EC2 instances), **AWS Lambda functions, AWS S3 Bucket** (for managing static files) and Application Load balancers (to manage the traffic between different microservices in the Virtual Private Cloud networks).

Mouri Tech

May - August 2024

Irving, Texas

Software Developer

- Developed and optimized **RESTful APIs** to enhance vector search efficiency in Retrieval-Augmented Generation (RAG) pipelines, implementing caching strategies & indexing techniques to reduce data retrieval **latency by 40%** while ensuring scalability
- Built and deployed a full-stack chatbot using **NodeJS and MongoDB**, integrating **Azure Speech Services** for real-time text-to-speech and speech-to-text interactions, significantly improving conversational AI engagement.
- Automated **CI/CD pipelines** using **Jenkins and GitHub Actions**, streamlining deployments and reducing production **issues by 35%**.
- Integrated an AI-powered document processing feature using **Azure Search, OpenAI's GPT, and LangChain**, improving data extraction efficiency for invoices and resumes by 50% .

RareNature

May 2021 - April 2022

Singapore

Software Developer

- Optimized database queries and designed efficient schema, leading to a 30% improvement in application performance. Integrated third-party APIs to enhance functionality and scalability.
- Developed and customized asynchronous **RESTful APIs** using the **Spring Framework** for user management, ensuring seamless integration with external components. Contributed to **10+ successful** integration tests and resolved **15 defects** through rigorous testing and **version control with Git**.
- Worked closely with UI/UX teams to design and implement responsive front-end interfaces using **React, TypeScript, HTML, and CSS**, ensuring an intuitive user experience and managed development tasks using **Agile methodologies** and tracked progress with **JIRA**, enabling smooth project execution and efficient collaboration across teams.

Projects

GemFlow – A smooth and elegant jewelry management system

July 2024

| Angular, Flask, Postgres AWS S3,

- Developed a scalable full-stack web application using Angular, Flask, and PostgreSQL, with **JWT authentication**, RBAC, and **Stripe integration** for secure transactions. Optimized database queries, reducing retrieval time by 40%, implemented full-text search, an AI-powered recommendation engine, and real-time analytics with **Chart.js**.

Cloud-Based Financial Data Processing with AWS Services

March 2024

| Python, AWS

- Designed and implemented a cloud-based solution for processing large-scale **financial data using AWS** such as S3, Lambda, and DynamoDB. Developed data pipelines to **extract, transform, and load (ETL)** financial datasets for analysis and reporting. Enhanced data retrieval speed by optimizing query performance using **AWS DynamoDB** and integrated **AWS Lambda** for automated real-time updates. Ensured data security and compliance with financial regulations using **AWS IAM** and encryption techniques.

SaaS Dashboard for Business Analytics

March 2023

| ReactJs, TypeScript, Tailwind, AWS

- Developed a business analytics dashboard using **React with TypeScript** and **Tailwind CSS** for a responsive and user-friendly interface. The backend was built with **Node.js, Express, and PostgreSQL**, with **Redis** for real-time caching. Key features include **customizable dashboards**, multi-tenant architecture, third-party API integration (**Google Analytics, Stripe**), and role-based access control.

Publications

Consumer Price Index forecasting using **ARIMA** and **Holt's Winter** Time Series models

Link (Sept'22)

Deep transfer learning software for **CVD prediction** based on multi-class ECG images.

Link (Sept'22)