Manoj Nandakumar

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Education

- **Stony Brook University** — Stony Brook, NY
  Masters of Science, Computer Science — *August 2022 - May 2024*
  Courses: *Operating System, NLP, Computer Vision, Visualization, AI/ML, DBMS*
- **SRM Institute of Science and Technology** — Chennai, Tamil Nadu
  Bachlore of Technology, Computer Science and Engineering — *June 2018 - May 2022*
  Courses: *Operating System, Compiler Design, AI/ML*

Skills Summary

Languages	**C++, JavaScript, Python,** TypeScript, HTML, CSS
Frameworks	**ReactJS, ExpressJS, Flask,** Twitter Bootstrap, Jest, Playwright, Django, Springboot
Cloud and Tools	**Kubernetes, Docker, Kafka, Jenkins,** Apache Airflow, RDS, DynamoDB, CloudWatch, ECS
Databases	**MongoDB, PostgreSQL,** MySQL, Cassandra
Machine Learning	**TensorFlow, Numpy, Pandas,** Scikit-learn, PyTorch, Spacy, Hadoop, NLTK, OpenCV, Keras

Experience

- **Stony Brook University** — Stony Brook, NY
  Research Assistant — *July 2024 – Present*
  - Engineered a **multilingual hospital chatbot**, elevating patient engagement and automating data retrieval workflows, resulting in a 76% improvement in response time for patient care, leveraging **ReactJS, Flask, and PostgreSQL**.
  - Spearheaded the development of **scalable APIs** and **core services with Flask**, integrating a React-based front-end to facilitate human feedback loops, improving **machine learning pipeline** to achieve **98.4% accuracy** through iterative enhancements.
- **Fresh Digital** — Chennai, IN
  Software Developer — *August 2021 – August 2022*
  - Leveraged **ReactJS, ExpressJS, and PostgreSQL** to architect and deliver an **automated targeted marketing web application**, achieving a **36% average conversion** rate through precise and efficient campaign management.
  - Orchestrated the development of a responsive front-end and backend **REST APIs** within a **microservices** architecture, leveraging **lazy loading**, **Redux**, and **caching** strategies to boost **performance scores by 20%**.Streamlined QA by automating testing with **Jest** and **Playwright**, embedding it into the **CI/CD** pipeline for enhanced efficiency and reliability.
  - Architected a scalable job scheduling system utilizing **Kubernetes CronJobs (EKS)** and Kafka, enabling efficient scheduling and execution of marketing campaigns.
  - Deployed **Kafka** for centralized logging and integrated system metrics with **Prometheus** and **Grafana**, enabling real-time monitoring dashboards recovering from downtime 96% faster.
- **Dataviss** — Chennai, IN
  Software Engineer Intern — *January 2021 – April 2021*
  - Built and optimized the backend of a **SaaS based Analytics platform** handling 500k documents - **ExpressJS, MongoDB and socket.io**.
  - Led the **Dockerization** of the backend for deployment on **EKS (Kubernetes)** and implemented an optimized **CI/CD** pipeline with **Jenkins**, automating deployments for development and production environments, and reducing deployment time by 70%.
  - Developed Python automation scripts integrated with **AWS EventBridge** for efficient data migration to **Amazon S3**, reducing backend **response times by 50% to under 300 ms** through database purging and query optimization. Migrated backend server from **monolithic** to **micro service** architecture.

Projects

- **Prospectus Text Analysis**
  Developed a multi-stage ML pipeline using **GPT** and **RoBERTa** models to extract key information from large text documents and classify them into defined classes, improving accuracy and efficiency in text processing.
- **Lip Reading Speech Recognition**
  Engineered a deep learning model using CNNs and RNNs with LSTM to recognize spoken words from lip movements, achieving 93.4% accuracy.
- **Distributed Key-Value Store**
  Built distributed storage system implementing RAFT, a replicated state machine protocol and consensus algorithm. Thereby, enabling strong consistency and fault tolerance on all operations across the system.
- **Cloud Monitor**
  Deployed app for CPU utilization, managing Docker containers in ECR and deploying on Amazon EKS using boto3. Implemented scaling techniques with HPA, load balancing, and monitored using Prometheus and Nagios.