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: *Data Structures, Algorithms, Operating Systems, System Design, Computer Networks*

SKILLS SUMMARY

Languages	**C++, JavaScript, Java, Python,** TypeScript, HTML, CSS
Frameworks	**ReactJS, Angular, ExpressJS, Springboot, Flask,** Twitter Bootstrap, Jest, Playwright
Cloud tools	**Kubernetes, Docker, Kafka, Jenkins,** AWS (RDS, DynamoDB, CloudWatch, ECS), Airflow
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 — ReactJS, Flask, and PostgreSQL — *July 2024 – Present*

- Engineered a **multilingual hospital chatbot**, elevating patient engagement and automating data retrieval workflows, resulting in a 33% improvement in response time for patient care.
- Spearheaded **scalable APIs** that integrated with **React frontend** with **machine learning feedback loops**, enhancing pipeline accuracy to 98.4%. Optimized data retrieval mechanisms, reducing query response times by 60%.

Fresh Digital — Chennai, IN
Software Developer — ReactJS, ExpressJS, and MongoDB — *August 2021 – August 2022*

- Architected an **Automated campaign management platform**, achieving 36% user conversion rate.
- **Designed and implemented a responsive web application**, utilizing Redux, lazy loading, and caching, resulting in a 20% boost in system performance.
- Deployed **Kafka** for centralized logging and integrated system metrics with **Prometheus** and **Grafana**, enabling real-time monitoring dashboards recovering from downtime 96% faster.
- Streamlined **QA by automating testing** with **Jest** and **Playwright**, embedding it into the **CI/CD** pipeline resulted in a 40% reduction in testing time.

Dataviss — Chennai, IN
Software Engineer Intern — ExpressJS, MongoDB and socket.io — *January 2021 – April 2021*

- Designed and integrated the backend of a **SaaS based Analytics platform** handling 500k documents.
- Streamlined the **Dockerization** of the backend for deployment on **EKS (Kubernetes)** by implemented **CI/CD** pipeline with **Jenkins**, automating deployments and reducing deployment time by 70%.
- Automated python scripts 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.

PUBLICATION

- **Scamblk:** A voice recognition-based natural language processing approach for the detection of telecommunication fraud.
- **OntoINT:** a framework for ontology integration based on entity linking from heterogeneous knowledge sources.

PROJECTS

- **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**.

- **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.

- **URL shortener - GO**
  Developed a URL shortener server in Go with horizontal auto-scaling and fault-tolerant. Used ZooKeeper for efficient server coordination and management.