Navinashok Swaminathan

Software Engineer

Engineering novel ML solutions and high-performance distributed systems for data-intensive applications at enterprise scale

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WORK EXPERIENCE

Software Engineer
BNY - The Bank Of New York Mellon

07/2023 - 08/2024   *Chennai, India*

Achievements/Tasks

- Architected Java-based distributed ETL system for Teradata cross-regional migration. Implemented custom partitioning and parallel processing reducing migration time by 80% while handling 5TBs of financial data.
- Engineered real-time data replication pipeline using Pentaho, synchronizing Oracle to Snowflake. Enabled cross-business analytics through efficient change data capture.
- Automated QA document review using Python and proprietary AI. Achieved 90% classification accuracy and reduced processing time by 70%.
- Built real-time fraud detection using isolation forest and streaming statistics with AWS (SageMaker, Lambda, Kinesis, DynamoDB). Implemented Count-Min Sketch for efficient feature aggregation achieving 95% accuracy with SNS alerts and exactly-once processing.
- Led Spring Boot 2 to 3 migration for enterprise reporting platform. Implemented systematic security patches eliminating 21 CVEs.
- Implemented automated disaster recovery system for 53 Teradata tables using AWS S3. Designed GitLab CI/CD pipeline with parallel restoration reducing recovery time from hours to minutes.
- Optimized query performance for mission-critical Teradata reports. Implemented views and query parallelization reducing p99 latency by 50% for high-volume analytics.
- Led resolution of 20+ critical production incidents in distributed applications. Diagnosed and eliminated recurring failures reducing incidents by 60%.

Software Developer Intern
Accolite Digital

06/2022 - 08/2022   *Chennai, India*

Achievements/Tasks

- Designed and implemented ML-based personalized learning system for intern onboarding with content recommendations, driving 40% increase in completion rates. Built NLP-powered chatbot for policy Q&A.

Data Scientist Intern
NIELIT

06/2021 - 08/2021   *Chennai, India*

Achievements/Tasks

- Built customer retention prediction system using Pandas/NumPy/Scikit-learn stack, improving accuracy by 15% through feature importance analysis, k-fold cross validation and hyperparameter tuning with XGBoost.

EDUCATION

Columbia University
Master of Science in Computer Science

08/2024 - 12/2025   *New York, USA*

College Of Engineering Guindy, Anna University
B.Tech in Information Technology

07/2019 - 04/2023   *Chennai, India*

ACHIEVEMENTS

International Mathematics Olympiad: Medal of excellence for achieving Rank 5 in Singapore.

Cleared IIT-JEE Advanced exam (top 1% nationwide).

PROJECTS

Programming Error Detection and Correction System

- Designed end-to-end system combining LSTM networks and SVM to detect and correct logical errors in C programs. Implemented custom tokenizer using Clang AST and Wagner-Fischer algorithm for intelligent correction suggestions.
- Built multi-stage ML pipeline with PyTorch embedding layers, next-word probability distribution model achieving 90% accuracy, and automated edit operation predictor (insert/delete/replace) with iterative test case validation.

Database Agnostic Querying

- Created XQL, an XML-based, language-agnostic query abstraction layer that compiles queries to SQL (e.g., PostgreSQL, MySQL) for seamless database migration, removing language-specific ORM dependencies and enabling true cross-platform database flexibility.

AI Medical Consultant

- Built RAG-based consultation system using LangChain and FAISS. Implemented LSM-tree for vector storage and trie-based medical terminology matching. Developed async processing pipeline with circuit breakers using Python.

SKILLS

Java · Python · C++ · Spring Boot · Angular · Node.js · Javascript · React · REST API · GraphQL · LLM · GenAI · PyTorch · AI · ML · SQL · NoSQL · Snowflake · AWS · GCP · Azure · Kafka · Spark · Docker · Tableau · Data Structures & Algorithms