KUNAL MEHROTRA

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EDUCATION

Master of Science in Computer Science | Northeastern University | Boston MA, USA **Sept 2021 – Dec 2023**

Coursework: Program Design Paradigms, Database Management Systems, Algorithms, Data Science, Natural Language Processing, Unsupervised Machine Learning, AI for Human Computer Interaction **GPA: 3.97/4.0**

Bachelor of Technology – Computer Science | SRM Institute of Science and Technology | Chennai, India. **July 2016 – Jun 2020**

Coursework*:* Data Structures, Web Programming, Programming in Java, Operating Systems, Compiler Design **GPA: 8.7/10**

TECHNICAL SKILLS

Languages: Java, Python, Scala, PHP, C++, JavaScript, FeatureScript, TypeScript, R, HTML/CSS
Databases: MySQL, OracleSQL, MongoDB, SQLite, AWS RDS, DynamoDB, Apache Cassandra, ElasticSearch
Frameworks: Spring Boot, React.js, Redux, Node.js, jQuery, Hibernate, Flask, GraphQL, Sklearn, Keras, Tensorflow, Git, Junit4
Tools & Technologies: REST API, Postman, Docker, Kubernetes, Apache Flink, Kafka, AWS S3, EC2, Databricks, MLflow, CI/CD

EXPERIENCE

Software Engineer – Infotron Solutions | USA **Feb 2024 – Present**

- Designed and implemented scalable microservices using Java and Spring Boot, significantly enhancing the performance and scalability of the platform.
- Developed and integrated secure RESTful APIs to enable seamless communication between microservices, improving system efficiency and ensuring robust data flow.
- Leveraged AWS services including EKS, Lambda, and Step Functions for deploying and managing applications, achieving a 30% reduction in server response time and ensuring 99% uptime.
- Implemented server-side optimizations and load balancing to enhance the performance of Java-based applications, reducing latency and improving user experience.
- Led code reviews and mentored junior developers, improving productivity by 20% and ensuring high code quality and adherence to best practices.

Graduate Teaching Assistant - Northeastern University | USA **May 2022 – Dec 2023**

Course CS 3500 (Object Oriented Design), CS 5010 (Program Design Paradigms)

- Assisted Professor Amit Shesh by holding Office Hours, developing course content on Image Processing and MVC architecture design, conducting recitations and tutoring 350 students, helping them implement best coding practices thus lowering dropout rates by 8%

Software Engineer Intern – Onshape R&D | PTC | USA **June 2023 – Aug 2023**

- Streamlined Full Stack backend operations using JavaScript, emphasizing on SDLC best practices resulting in a 25% improvement in document load times through strategic code refactoring and QA testing and the implementation of efficient logic, ensuring uninterrupted design workflows, and increasing overall software reliability
- Pioneered a time-saving CAD feature, demonstrating strong UX Design principles, enabling designers to apply drafts at multiple angles with a single click within the rib functionality, resulting in a 40% increase in design efficiency
- Developed and conducted comprehensive Simulation unit tests, in an Agile environment, ensuring seamless integration and robustness of the new feature across diverse design scenarios

Machine Learning Intern | CNH Industrial | USA **Jan 2023 – May 2023**

- Developed and fine-tuned computer vision models in Azure Databricks using Resnet50 architecture and transfer learning techniques to accurately classify tractor implement equipment, while addressing class imbalance with smart sampling methods attaining an accuracy of 92% on test set.
- Contributed to NLP-based client chatbot by creating knowledge base question-answer pairs for efficient query-response mapping.
- Utilized unsupervised ML algorithms (DBSCAN, agglomerative clustering) on satellite imagery for crop mapping and field boundary detection, enhancing usability in precision agriculture practices.

Software Development Engineer Intern | Xcaliber Health | USA **July 2022 – Sept 2022**

- Created Enterprise Master Patient Index for indexing patients based on the Electronic Healthcare data by implementing deterministic and probabilistic matchings using NIST tokenization algorithms. Generated hash as Vaultless tokens and validated using checksum techniques achieving 95% precision in matching patient records and removing redundant data
- Worked extensively with RESTful web services and OAuth to integrate Xcal platform and client organizations, used various data formats (JSON, XML) to provide an interface to third-party applications, created new features leveraging MVC pattern using Node.js run time
- Designed and developed Javascript SDKs with entire microservice data pipeline for ingesting Workforce data into Kafka cluster using Apache Flink to process data streams used to deploy new APIs as part of their job, thereby improving application performance by 30%
- Achieved 90%-unit test coverage using Junit and Jest frameworks on EMPI and Xcal API integration platform

Systems Engineer | Tata Consultancy Services | India **Oct 2020 - July 2021**

- Programmed and designed a highly scalable client Banking web application using React and Java Spring Boot delivering high performance, and the ability to handle large volumes of traffic data
- Customized a hierarchical SQL server schema, enhancing database procedures, profiling, and optimizing queries for rapid data retrieval, ensuring high availability and recovery performance, yielding a 20% improvement in system efficiency, utilizing MySQL and Unix
- Performed system monitoring and automation for ING bank, Netherlands by providing System checks for backend Linux RHEL servers, writing Server-side scripts for daemon allocation, handling critical files and component configurations, infrastructure automation with Terraform, deploying ansible playbooks from Jenkins pipelines, version upgrades, patching of servers for ION products Anvil and Arc

Full Stack Engineer | Acme In Tech | India **Sept 2019 - Sept 2020**

- Boosted Revenue by 30% by reducing dependency and saving the commission given to freelancing platforms by leading and developing a Marketplace E-commerce platform for freelancers in a three-tier architecture model using MySQL, PHP, Laravel in the backend and WordPress, Bootstrap, and jQuery in the frontend
- Improved reliability**,** server response time and throughput by distributing traffic across servers by using Amazon's EC2 instances, auto-scaling, and Load Balancers by 20%

PROJECTS

The Dungeon Maze Game

- Created a Java-based GUI game applying the MVC architecture with Swing, integrating DFS for optimal pathfinding between start and end nodes, and enforced code quality through test-driven development with JUnit4 unit testing
- Implemented Factory Design Pattern using Interfaces, abstract classes, Enums enabling to add new features using Solid principles

Arogya

- Built a fitness android app using Kotlin, all the user form Sign up, profile, and history sections were made using Node.js and MongoDB to provide information about the calorific value of food from its image
- Uploaded these images using Firebase to the REST API which in turn passed it to the model having a Convolutional Neural Network built using Keras and Flask that had an accuracy of 89.66%

MarketSphere: Integrated E-Commerce Suite

- Led the design and implementation of a multi-user e-commerce web application, utilizing React, Redux, and Material UI for a seamless frontend experience; hosted on Netlify for enhanced performance and scalability
- Engineered backend solutions on Heroku with MongoDB Atlas, facilitating efficient product search and user-specific functionalities for shoppers, sellers, and admins, significantly improving user interaction and platform efficiency

ACHIEVEMENTS

- SRM University Gold Medal recipient for research paper on Optimization of Neural Networks using Deep Genetic Network Algorithm
- Team Lead in the Satellite Research Lab for the domain On Board Computer Systems in the mission to send cube satellites to the Moon carried out by students under the supervision of ISRO scientists