Prem Kumar Amanchi

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EDUCATION

Ira A. Fulton Schools of Engineering, Arizona State University — **Tempe, AZ, USA**
Master of Science, Computer Science (CGPA: 3.89/4.0) — *January 2022 - December 2023*
Relevant Coursework: Software Security, Cloud Computing, Statistical Machine Learning

Amrita School of Engineering, Amrita Vishwa Vidhyapeetham — **Coimbatore, TN, India**
Bachelor of Technology, Electronics and Communication (CGPA: 8.11) — *July 2017 - June 2021*
Relevant Coursework: Data Structures and Algorithms, Foundations of IT, Operating Systems

SKILLS

Languages: Java, Python, C, C++, Javascript, Typescript, Go, HTML, CSS, MATLAB
Frameworks: ReactJS, NodeJS, ExpressJS, Bootstrap.
Database: MySQL, MongoDB, PostgreSQL
Developer Tools/Libraries: Android, Git, Kubernetes, Jenkins, Jira, jQuery, ReduxJS, Axios, AWS, Docker, Kafka, TensorFlow
AWS Stack: ElasticCache, CloudFront, CloudWatch, SQS, S3, IAM, Aurora, EC2.
Certifications: AWS Certified Solutions Architect

EXPERIENCE

All Test Maker Company — **Bangalore, India**
Software Developer — *December 2019 - December 2021*

- Designed and developed a secure online testing platform using **ReactJS, NextJS, Redux, NodeJS** and **PostgreSQL,** handling 40,000+ test attempts and an extensive question bank of 800,000 questions.
- Employed **NodeJS, ExpressJS,** and **RESTful API** to ensure efficient data access, facilitating the seamless development of robust back-end REST APIs, aligning with Agile Software Development Life Cycle principles.
- Optimized system efficiency by 20% through the implementation of query indexing and batch processing of CRUD operations, resulting in a more streamlined system.
- Implemented a subscription-based question bank model, achieving a remarkable 300% revenue increase and establishing it as the company's primary revenue stream.
- Accelerated time-to-market by enabling guest logins, introducing test-taking in guest mode, and facilitating test link sharing within one week for SRMO, managing 10,000+ simultaneous student tests.
- Orchestrated the deployment and configuration of staging and production servers, ensuring high performance and reliability for company web applications using **AWS EC2, AWS ElasticCache** and **AWS CloudFront**.

TECHNICAL PROJECTS

Game-Based Performance Prediction — *January 2023 - May 2023*

- Investigated student learning experience by performing data mining on sequential game log datasets, extracting patterns, and utilizing statistical measures to predict a curated pool of 3 question groups.
- Developed and fine-tuned machine learning models, including KNN, logistic regression, LSTM, and Transformers, to predict student performance on 21 questions.
- Elevated F1 score from 0.65 to nearly 0.73, significantly enhancing predictive precision in assessing student proficiency and contributing to a deeper understanding of student learning behavior.

Off-Loading Machine Learning on Simulated Mobile Edge Computing — *August 2022 - December 2022*

- Spearheaded Java-based **Android** app development with a fog server-based model between 5 devices, segmenting high-res images for low-latency processing, enhancing reliability, scalability, privacy, and security.
- Applied image processing techniques (portioning, storage, grayscale) to boost processing efficiency by 75%.
- Achieved 98.72% accuracy via **TensorFlow**-trained Deep Learning network on MNIST data, revolutionizing real-time image prediction in edge computing and privacy-aware apps.

Hospital Management System — *January 2022 - May 2022*

- Administered the creation of a Hospital Management System web app with **Django** in the backend, establishing a strong role-based access system catering to patients and 5 distinct staff roles.
- Strengthened security through the integration of advanced security measures such as Captcha, Google Authenticator, OTP, and SSL encryption.

PUBLICATIONS

First Author, Entropy Journal, MDPI

- Munagala, N.V.T.S.; Amanchi, P.K.; Balasubramanian, K.; Panicker, A.; Nagaraj, N. "Compression-Complexity Measures for Analysis and Classification of Coronaviruses." Entropy, 25(2023), 81. doi:10.3390/e25010081