Vimala Yembar

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EDUCATION

Iowa State University Anticipated Dec, 2025

Master of Science in Computer Engineering, GPA (3.6/4) Ames, IA

LIVE PROJECT

Real-Time Tracking and Alerting Application for College Bus Transportation **March 2022-June2022**

- Built an Android app for real-time college bus tracking using Google Maps API, delivering live location updates every 5 seconds.
- Designed and deployed a backend server to process GPS data efficiently, supporting 30 daily location updates and providing accurate user alerts for bus arrivals, delays, and route changes.
- Conducted extensive testing, achieving 98% accuracy in location tracking and 100% reliability in notification delivery, improving on-time notifications by 40%.

PROJECTS

Data Consistency and Data Replication in cloud-based Distributed Systems **March 2024-May 2024**

- Created and implemented data consistency and replication strategies for cloud-based distributed databases, improving system performance by 25% and ensuring 99.9% data availability.
- Optimized replication protocols and data synchronization, reducing latency by 30% and enhancing fault tolerance for high-demand environments.
- Leveraged cloud technologies like AWS and Google Cloud, managing over 1TB of distributed data across multiple servers.
- Conducted extensive testing, documented best practices, and provided training materials, increasing operational efficiency by 15%.

Real-Time Adaptive Load balancer with Machine Learning **March 2024-May 2024**

- Engineered and integrated a machine learning-based load Balancer with the RYU SDN controller, reducing response times by 30% and increasing resource utilization by 25%.
- Enabled adaptive network management through predictive analytics, enhancing system responsiveness to traffic conditions by 40%.
- Automated load balancing processes, reducing operational costs by 20% and minimizing manual intervention to less than 5% of total operations.

Wi-Fi Network Analyzer and Optimizer **Oct 2024-Dec 2024**

- Developed an app to analyze and optimize Wi-Fi networks, achieving a 30% improvement in network speed through real-time signal monitoring, channel analysis, and speed testing.
- Implemented features for detecting interference and recommending optimal channels, reducing signal congestion by 25% and enhancing user experience.
- Designed a user-friendly dashboard with interactive charts and graphs and integrated push notifications, increasing user engagement by 40%.

Emotional Speech Recognition Using CNN **Oct 2024-Dec 2024**

- Refined and implemented a Convolutional Neural Network (CNN) to classify emotions from speech signals, processing over 12,000 audio samples and achieving a training accuracy of 90% and validation accuracy of 82%.
- Preprocessed data from four datasets (SAVEE, RAVDESS, CREMA-D, TESS) using Librosa, extracting 13 MFCC coefficients per file and normalizing features to ensure model consistency.
- Optimized model architecture with Conv1D, MaxPooling, and Dropout layers, reducing overfitting by 25% and improving classification performance across 14 emotion categories.
- Formulated Python scripts for end-to-end training, validation, and evaluation, including a confusion matrix that revealed 85% precision for dominant emotions like happiness and neutrality.

SKILLS

- **Programming:** Python, C, SQL, JavaScript, Java, Android
- **Web Development:** HTML, Bootstrap, CSS, React JS, Mongo DB, NodeJS, Figma.
- **Soft Skills:** Effective organization, Project management, Communication, Team collaboration
- **Data Structures and Algorithms**: Developing advanced algorithmic strategies and analytical thinking