Suman Mandava

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Education

University at Buffalo, The State University of New York Aug 2024 – Jun 2026

- Master of Science in Computer Science and Engineering; GPA: 3.7
- **Areas of Interest:** Data Structures & Algorithms, Database Systems, Object-Oriented Programming, Operating Systems, Machine Learning, Deep Learning.

Experience

UB research, University at Buffalo – Buffalo, USA Oct 2024*

- Developed multi-head Transformer models to recognize affective states (Engagement, Boredom, Confusion, Frustration) using Action Unit (AU) and Valence-Arousal (VA) features from the DAiSEE dataset.
- Achieved 78.08 test accuracy by training multihead classifiers across AU-only, VA-only, and fused VA+AU inputs.
- Implemented parallel Transformer encoders with late fusion to enhance performance in complex emotional states such as confusion and frustration.

Software Engineer Intern, Centum T&S – Bengaluru, India April 2024 – Jun 2024

- Built responsive HMI applications for BMRCL and DMRC metro systems using protobuf, ZeroMQ, and web sockets, achieving a 30% improvement in system responsiveness.
- Designed intuitive UI components (fault info screen, settings page) with Handlebars.js and Node.js, enhancing driver control over console and audio configurations.
- Translated business requirements into detailed technical specifications, ensuring accurate implementation and timely delivery of HMI features.

Software Engineer Intern, HCLTech – Chennai, India Jan 2024 – Mar 2024

- Built a full-stack Online Video Platform using React.js, Node.js, and MongoDB, improving system performance by 25% and reducing authentication latency by 15
- Engineered core features like JWT authentication, role-based user interfaces, and video streaming, boosting user engagement by 20% and admin efficiency by 30%.

Projects

Know Your Customer Verification using Blockchain and CPABE Algorithm github

- Built a secure e-KYC platform integrating Ethereum and CP-ABE encryption, achieving 98% data accuracy and reducing verification redundancy by 70%. (ICIMA-2023, IEEE DOI – View here).

Visual Question Answering | PyTorch, CLIP, Transformers, Vision-Language, Multi-head Classifier github

- Developed a Visual Question Answering (VQA) system for real-world images from the VizWiz dataset, addressing challenges such as blur and poor lighting.
- Integrated pre-trained CLIP (ViT-B/32) vision-language encoder with a lightweight multi-head classifier, achieving 70% test accuracy in textual answer prediction.

Online Video Platform | React.js, Node.js, MongoDB, Express.js, JWT Authentication. github

- Developed a full-stack online video platform with JWT authentication, React Hooks, REST API, Firebase, MongoDB, an admin dashboard, an analytics module, and a Google Dialogflow chatbot.

Technologies

Languages: Java, C++, Python, HTML, CSS, JavaScript

Frameworks: React.js, Node.js, Express.js, Handlebars, Bootstrap, Material UI, Context API, JSON Web Token

Databases & Libraries: MySQL, MongoDB(NoSQL), PostgreSQL

DevOps/Cloud: Git, Firebase, GCP, Docker

Tools & Technologies: RESTAPIs, Postman, WebSockets, OAuth, Ganache, Nmap, Wireshark, Tableau, Google Dialogflow

AI & ML: Linear/Logistic Regression, SVM, k-Means, CNNs, RNNs, Transformers, VAEs, GANs, Reinforcement Learning, scikit-learn, TensorFlow, PyTorch, NumPy, NLP.