Harshith Kasthuri

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EDUCATION

University of Georgia, School of Computing	Athens, GA
Master of Science, Computer Science(GPA - 3.98)	August 2023 – April 2025
Osmania University	Hyderabad, India
Bachelor of Engineering, Computer Science and Engineering(GPA – 8.94)	August 2019 – June 2023

RELEVANT EXPERIENCE

Cognition and Dexterity Laboratory, University of Georgia	Athens, GA
Graduate Research Assistant	May 2024 – May 2025

- Conducted clinical testing, including the Action Research Arm Test (ARAT), to assess motor function and rehabilitation progress. Participants performed tasks such as finger tapping, grasping, and pinching, while high-resolution video recordings were collected for detailed motion analysis.
- Utilized the MediaPipe Hands as a base model for 2D hand landmarks detection and enhanced its 3D estimation capabilities by integrating computer vision algorithms, including stereo calibration and depth estimation.
- Assessed the accuracy of the enhanced 3D hand estimation using physical ground truth distances, achieving an RMSE of less than 1 cm for finger tapping tasks, demonstrating high reliability for biomechanical analysis.
- Developed a Python-based GUI application to streamline data collection and preprocessing workflows for high-frame-rate video recordings used in hand-tracking experiments.
- Designed and maintained reproducible development and testing environments using Docker containers to ensure consistency across different systems and ease of deployment.
- Automated deployment and data pipeline workflow on AWS using EC2 instance and S3 storage for scalable processing and secure archival of large video datasets.

TECHNICAL SKILLS

Programming Languages: C, C++, Java, Python, Golang.
Operating Systems: Unix, Linux, Windows.
Frontend Development: HTML, CSS, JavaScript, React, TypeScript, Angular.
Backend Development: Node.js, Express.js, Flask.
Databases: MySQL, PostgreSQL, MongoDB, SQLite.
Cloud Platforms: AWS(EC2, Lambda, S3), Azure (App Services, VMs, Blob Storage), GCP(Compute, Firebase).
DevOps & Infrastructure: Jenkins, GitLab CI/CD, Docker, Kubernetes, Terraform, RabbitMQ, Redis, Apache Kafka.
Testing & Deployment: JUnit, Selenium, Postman.
Computer Vision: Image Processing, Object Detection and Recognition, Pose Estimation, 3D Vision.

PROJECT EXPERIENCE

Cloud-Native Resource Monitoring App	Feb 2025

- Developed and containerized a Python Flask-based system monitoring application using psutil and Docker, ensuring consistent local and cloud execution, and pushed Docker images to AWS ECR for scalable deployment.
- Automated full cloud-native deployment to AWS EKS using Python scripts with Boto3 and Kubernetes client libraries, including ECR repo creation, EKS cluster provisioning, Kubernetes deployment/service setup, and application exposure via port forwarding.

Movie E-Booking System	April 2024

- Developed a full-stack movie booking web application using the PERN (Postgres, Express, React, Node), enabling secure user login, seat booking, offers, and admin control.
- Designed and implemented a relational database schema, optimizing performance and ensuring data integrity with PostgreSQL utilizing UML class diagrams for clear visualization and structure.
- Implemented software design patterns, including MVC architecture and system patterns, to enhance codebase scalability and efficiency, mitigating issues such as high coupling and low cohesion.

Flashcard Study Tool	May 2024

- Developed a full-stack flashcard revision web application using React for Dynamic UI and React Router for smooth navigation. Integrated Axios for API communication with an Express backend.
- Implemented a MongoDB database with Mongoose for managing user authentication and flashcard CRUD operations, including marking cards as active or inactive to track learning progress.