

Sai Venkatesh Ramesh

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EDUCATION

B. Eng. in Computer Science and Engineering | CGPA 7.88/10

Aug 2014 – May 2018

Anna University, Chennai, India.

Relevant Coursework: Theory of Computation, Data Structures, Distributed Systems, Information Retrieval, Operating Systems

EXPERIENCE

Motorq Labs LLP, Chennai | Individual Contributor: Software Development

Oct 2021 – Present

- Building a connected-cars data and analytics platform with data streams ingested from OEM-embedded systems and aftermarket telematics.

Samsung Digital E-Commerce Pvt. Ltd, Chennai | Software Engineer

Jul 2018 – Oct 2021

- Order Monitoring: Designed scalable pipelines that aggregated order lifecycle data from heterogeneous databases and transformed them into structured documents. Created visualization buckets and dashboards for ad-hoc analysis, tracking and monitoring.
- Mobile Point Of Sale: Built state machines following SAGA design pattern for handling integrations with omni-channel retailers.
- Endless Aisle: Designed a priority fulfillment system to route created orders to Samsung Warehouses affected due to Covid 19.
- Rules Engine: Created a JSON DSL based blueprint tool for orchestrating distributed messaging workflows.
- Postal Code Limit Restriction: Designed a highly available throttling system to regulate the inflow of orders within a time period.
- Part of the Internal Committee where responsibilities included organizing workshops, writing white papers and mentoring interns.

Glosys Technology Solutions Pvt. Ltd, Chennai | Research & Development Intern

Aug 2017 – May 2018

- Built an Encode-Decoder architecture with CNN-LSTM to generate captions for Indian Road Safety signs to assist vehicle drivers.
- Guided the research on 'GlosysNetIC' architecture for stacking multiple CNN Encoders with Transformer Decoder.
- Presented the work at the Mining Intelligence and Knowledge Exploration (MIKE 2019) conference.

SELECTED PROJECTS

Tracking Military Tanks From High-Speed Drone Cameras | Research Assistant, Product Labs, IIT Hyderabad

Oct 2020 – Aug 2021

- Evaluated CenterNet, adapted Deep Layer Aggregation and Deformable Convolutions for multi-tank detection in infrared videos.
- Extracted Histogram of Gradients descriptors of tanks with templates and combined with Wasserstein distance to filter false targets.
- Designed a Euclidean based Centroid Tracker for tracking and associating detected tanks.
- Built a multi-threaded pipeline that alternated between Detection and Adaptive Template Matching with a throughput of 74 FPS.
- Filed the end product for a provisional patent.

TrackJectory: Live Tracking & Trajectory Forecasting of Kabaddi Players | Independent

Sep 2020 – Dec 2020

- Implemented a Siamese tracker with Depthwise Cross-Correlation for visual tracking of Kabaddi Players.
- Extended FairMOT architecture to simultaneously track multiple Kabaddi players with a Kalman Filter enhanced tracker.
- Furnished the player detections to a Spatio-Temporal Graph CNN to extract spatio-temporal context embeddings. Supplied the embeddings to a Time-Extrapolator CNN to forecast and visualize player trajectories.

PUBLICATIONS

- **FairMOT: Multi-Object Tracking, Faster R-CNN: Object Detection**, Analytics Vidhya, 2020.
- **GlosysIC Framework: Transformer for Image Captioning with Sequential Attention**, MIKE, 2019. LNAI 11987: 330-340.

PATENTS

"A System and Method for Depth-based Recognition and Tracking of a Pre-defined Physical Structure" - (Published)

Indian Patent Application No. 202141034670 - Date of Patent: August 02, 2021.

CERTIFICATIONS

- **Deep Learning Nanodegree**: Udacity Jun 2020
- **Machine Learning - Specialization (University Of Washington) , Machine Learning (Stanford University)**: Coursera Dec 2017

AWARDS

Hackathon of Pie: Zephyr | Special Mention Prize: Top 13 from 2956 Teams

Jul 2021 – Sep 2021

- Designed a virtual teaching framework, where teachers can write, share, collaborate and present remotely. The product looks to bridge the gap between physical education and virtual education.

OpenCV Spatial AI Competition: AI Professor | Finalist from 1400 Teams

Mar 2021 – Aug 2021

- Combined finger movements with OAK-D device's depth information to enable real-time air writing in a virtual 2D grid space using a blend of 2D hand keypoint detection and optical flow to enhance the digital teaching experience.
- Proposed and implemented "Expandable Board" that creates an infinite writing space and "Lazy Move" to virtually navigate in it.

Samsung Xtreme Hackathon: Samsung Group Buy (Team Lead) | Most Innovative Project (1st Place)

Dec 2020

- Designed a microservice that enabled B2C customers to collaborate and avail tiered pricing offers designated for business users.

Samsung Performance Awards | 500+ Employees

Jul 2018 – Oct 2021

- Recognized as the "Most Inspiring Employee" of Q2, 2019 and felicitated with the "Creative Intelligence" award for Q3, 2020.

Smart India Hackathon: Empowerment of People with Disabilities | Runner Up - 1000+ Teams

Mar 2018

- Built a Smart Parking Application to help people with disabilities find parking spaces allocated for them. Parking Lot availability could be tracked using IR Sensors connected to Raspberry Pi or by processing parking camera footages using CNN.