# Sai Venkatesh

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## EDUCATION

**Sri Venkateswara College of Engineering, Tamil Nadu, India** *Aug 2014 - May 2018*
*Bachelor of Engineering (B.E.) in Computer Science* ***CGPA**: 7.88/10*
**Relevant Courses***:* Data Structures & Algorithms, Operating Systems, Theory of Computation, Information Retrieval
**Final Year Thesis**: Autonomous Cab Management using Deep Learning and Django

## WORK EXPERIENCE

**Samsung Electronics Pvt Ltd, Chennai,** *Software Development Engineer* *Jul 2018 – present*
- Designed scalable pipelines with Go to ingest and transform raw data into structured Elasticsearch documents. Created visualization buckets and observability dashboards using Python for ad-hoc analysis and monitoring.
- Developed a JSON DSL based blueprint library using Node.js for orchestrating messaging worker workflows.
- *Mobile Point Of Sale:* Built Node.js - PostgreSQL microservices following SAGA design pattern for handling integrations with omnichannel retailers. Designed state machines for administrating and customizing the interactions.
- *Endless Aisle:* Implemented priority stock allocation for 720 Samsung Smart Shops affected due to COVID-19 in India.

**Glosys Technology Solutions Pvt. Ltd, Chennai,** *Research Intern* *Aug 2017 – Jun 2018*
- Implemented CNN-BiLSTM with visual attention using Inject and Merge, Encode-Decoder models for automatically describing an image with BLEU-1, CIDEr scores of 67.4, 91.4.
- Proposed 'GlosysNetIC': Sequential and Parallel Transformer with support for stacking multiple CNN feature maps.
- Experimented on ensemble of encoders, increased BLEU-1, CIDEr scores to 72.5, 94.1, and co-authored a conference paper.

## SELECTED PROJECTS

**Tracking Military Tanks From High-Speed Missiles | IIIT-Hyderabad | Bharat Dynamics** *Oct 2020 - present*
*Research Assistant | Guide: Prof.* ***Ravi Kiran Sarvadevabhatla***
- Evaluated CenterNet, adapted Deep Layer Aggregation and Deformable Convolutions for multi-tank detection in infrared videos.
- Designed a Euclidean based Centroid Tracker for tracking and associating predicted tanks.
- Enhanced Adaptive Template Matching (ATM) with local search space optimization and multi-scale support.
- Alternated between Detection and ATM to balance accuracy and speed to reach the required target FPS of 60.

**TrackJectory : Live Tracking + Trajectory Forecasting** *Oct 2020 - Jan 2021*
- Implemented ResNet-50 based Siamese tracker with Depthwise Cross-Correlation for visual tracking of selected Kabaddi Player.
- Extended FairMOT to simultaneously track multiple Kabaddi players with Kalman Filter enhanced JDE tracker.
- Furnished the processed framewise tracked player detections to a Spatio-Temporal Graph CNN to extract context embeddings.
- Supplied the embeddings to a Time-Extrapolator CNN to forecast and visualize player trajectories.

**Faster R-CNN : Multi Object Detection** *Aug 2020 - Oct 2020*
- Implemented Faster-RCNN with Region Proposal Network, Non-Linear Suppression, and ROI Pooling components.
- Trained over the Pascal VOC 2007 dataset to achieve a mean average precision of 0.69.

## PUBLICATIONS

- **Venkatesh R.S**. "**FairMOT : Multi-Object Tracking**". Analytics Vidhya, 2021.
- **Venkatesh R.S**. "**Faster R-CNN : Object Detection**". Analytics Vidhya, 2020.
- **Venkatesh R.S**, Vignesh V, Thanukrishnan S. "**GlosysIC Framework: Transformer for Image Captioning with Sequential Attention**". MIKE 2019, LNAI 11987, pp. 330-340, 2020.

## CERTIFICATIONS

Deep Learning (*Nanodegree - Udacity)* *May 2020*
Machine Learning - A Case Study, Classification, Regression (*Coursera - Univ. Of Washington*) *Dec 2017*
Machine Learning (*Coursera - Stanford Univ*.) *Dec 2017*

## AWARDS & ACTIVITIES

**Most Innovative Project**, Samsung GMC Hackathon *Dec 2020*
**Most Inspiring Employee**, Samsung Performance Awards *Jun 2020*
**Creative Intelligence**, Samsung Performance Awards *Jun 2019*
**Runners-up**, Smart India Hackathon, Government Of India *Mar 2018*
**Executive Member**, Association of Computer Engineers *Mar 2016 - Apr 2018*

## SKILLS

- **Programming:** Python, C/C++, Go, Javascript, Dart, SQL
- **Machine Learning:** Pytorch, Scikit-Learn, Numpy, Pandas
- **Web:** Node.js, PostgreSQL, Cockroach, ELK, Redis, Django
- **Others:** Bash, Git, Docker, Markdown, Jira, Linux, AWS