

Sudharshan Chandra Babu

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EDUCATION

- **National Institute of Technology Tiruchirappalli (NIT Trichy)** Trichy, India
B.Tech in Electronics and Communication Engineering 2014 - 2018

PUBLICATIONS

1. S. C. Babu, S. R. Maiya, and S. Elango. Relation Networks for Optic Disc and Fovea Localization in Retinal Images. *NeurIPS ML4H Workshop*, 2018
2. S. R. Maiya and S. C. Babu. Slum Segmentation and Change Detection : A Deep Learning Approach. *NeurIPS ML4D Workshop*, 2018

EXPERIENCE

- **ViGIL Lab, IIT Bombay** Mumbai, India
Research Engineer with Dr. Arjun Jain August 2018 - Present
 - Working on unsupervised and weakly-supervised 3D human pose estimation.
 - Implemented a novel approach for unsupervised 3D human pose estimation and submitted our work to CVPR 2019.
- **OdinAI** November 2018 - Present
Founder
 - OdinAI is a non-profit organisation that provides resources to get an AI job in India.
 - Resources include content on learning Deep Learning, Deep Learning guides for colleges and AI jobs.
 - OdinAI provides a structured pipeline to getting a job in AI.
- **HyperVerge** Bangalore, India
Deep Learning Intern May 2018 - Aug 2018
 - Worked on context-aware object detection applied to documents for text detection and recognition.
 - Extensively researched and implemented a novel approach for field-based text detection and recognition.
 - Improved performance and increased accuracy by 10 - 15% on all fields
 - Used Caffe and MXNet to implement the object detection frameworks.
- **NIT Trichy** Trichy, India
Student Researcher with Dr. Sivasankar Elango [Paper link] Jan 2018 - June 2018
 - Worked on a novel approach to localize the centers of the Optic disc and Fovea by simultaneously processing them and modeling their relative geometry and appearance using PyTorch and MXNet.
 - We showed that our approach improves localization and recognition by incorporating object-object relations efficiently, and we achieve highly competitive results.
 - Our work has been published in NeurIPS 2018 ML4H workshop.
- **Robotics Lab, NIT Trichy** Trichy, India
Undergraduate thesis with Dr. R. K. Jeyachitra [Thesis] [Code] Oct 2017 - March 2018
 - Worked on a vision-based control strategy (IBVS: Image-based visual servoing) for recognizing and tracking a face using an Unmanned Aerial Vehicle, AR Drone 2.0.
 - Implemented a Deep Learning framework (OpenFace) for face recognition.
 - Implemented a PID controller in ROS for robot control.
- **NEST Lab, WPI** Worcester, MA, USA
Research Intern with Dr. Carlo Pinciroli May 2017 - August 2017
 - Worked on implementing SLAM (Simultaneous Localisation and Mapping) on the Khepera IV robots and on ARGoS, a multi-physics robot simulator.
 - Reviewed various ROS-independent SLAM libraries to identify a robust and lightweight implementation that could run on the memory-limited KheperaIV.
 - Implemented BreezySLAM on the Khepera IV robots in ARGoS.

KEY PROJECTS

- **Mumbai Slum Segmentation**

[Project Site] [Paper Link] [Code]

September 2018

- Provided a Deep Learning solution to the problem of slum mapping and monitoring in Mumbai.
- Curated a custom dataset of slums from Google Earth and using data from the Slum Rehabilitation Authority of India.
- Trained an instance segmentation model (Mask R-CNN) on this dataset to identify and segment slums in satellite imagery.
- Implemented change detection between 2 slums at different instances of time. Our code gives the percent increase/decrease of the size of slum.
- Our work has been published in the NeurIPS 2018 ML4D workshop.

- **SOP-Generator**

[Code]

Nov 2018

- Built a simple LSTM based Statement of Purpose Generator for grad school in PyTorch.
- Curated a custom dataset containing diverse statement of purpose drafts and achieved a perplexity of 1.17 after training for 200 epochs.

- **Mumbai Rains VS Delhi Smog Web App**

[Project page]

Nov 2017

- Wrote scripts to visualize and analyze the twitter activity on Mumbai rains vs Delhi Smog using Python.
- Visualizations include Network graphs, Activity maps, tweet/retweet distributions and much more.
- Deployed the project as a web application on Heroku.

RELEVANT COURSEWORK

- Data structures and Algorithms
- Networks and Protocols
- Computer Architecture
- Operating Systems
- Calculus
- Linear Algebra
- Probability Theory and Random Processes
- Real Analysis and Partial Differential Equations
- Pattern Recognition
- deeplearning.ai (Coursera)
- Computer Vision (Coursera)
- Robot Mapping
- Signals and Systems
- Control Systems

PROGRAMMING SKILLS

- **Languages** : Python, C/C++, Lua, MATLAB
- **Machine Learning and Data Analysis** : PyTorch, TensorFlow, Caffe, Keras, Scikit-Learn
- **Robotics** : ROS, Gazebo, ARGoS

EXTRACURRICULAR ACTIVITIES

- **Speaker's Team Lead - TEDxNITTrichy** *March 2017 - August 2017*
 - Headed and managed a team of five, tasked with getting speakers for TEDxNITTrichy.
 - Responsible for curating speeches and training speakers and developed speaking modules and training programs.
- **Marketing Manager - Festember Marketing Team** *June 2016 - September 2017*
 - Responsible for bringing in sponsors for Festember (The Cultural festival of NIT Trichy). Secured the title sponsor for Festember'16.
 - Responsible for marketing Festember and developed Marketing agendas and deliverables.

REFERENCES

Upto 3 references available on request.