Dinesh Samuel **Sathia Raj**

Computer Vision Enthusiast · Electronics and Computer Engineer

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Education

University of Michigan, Ann Arbor
Ann Arbor, USA

Masters of Science and Engineering in Electrical Engineering and Computer Science
Specializing in Computer Vision

Jan. 2021 - Present

Velore institute of Technology
Chennai, India

Bachelor of Technology in Electronics and Computer Engineering
Jul. 2016 - Jul. 2020

- CGPA: 9.12/10.00

The Cathedral and John Connon School
Mumbai, India

Higher Secondary School (ISC)
Jun. 2014 - Apr. 2016

- Aggregate: 94%

Experience

Fynd Research
Mumbai, India

Applied Machine Learning Intern
Sep. 2020 - Dec. 2020

- Developed cutting edge algorithms for robust background removal in images
- Achieved state of the art results for automatic natural image matting

SensoVision Systems Pvt Ltd.
Bengaluru, India

Computer Vision Research Intern
Jan. 2020 - Jul. 2020

- Led the development of a cloud based computer vision platform from scratch.
- Conceptualized the features, design and workflow for the cloud based solution.
- Coded the Deep Learning algorithms for the cloud based solution - Classification, Detection, Localisation and Anomaly Detection.
- Built custom, robust and accurate vision based quality inspection solutions for a variety of clients in the automobile and fastener industry.
- Developed highly accurate systems that work with highly skewed datasets. Ratio of good to bad samples up to 75:1.

Ericsson Global Services Pvt Ltd.
Chennai, India

Research and Development Intern
May 2019 - Aug. 2019

- Built a completely autonomous drone with a robotic end-effector placed on top.
- In charge of the computer vision and navigation of the drone.
- Tasks to be carried out by the drone included erasing white boards, changing light bulbs and fixing faults in telecommunication towers.

VIThink
Chennai, India

AI Trainer
Jul. 2018 - Jan. 2020

- Conducted an Intro to ML workshop
- Trained members of the group in basics of Linux, Python and Machine Learning

Leadership

Secretary at VIThink
Jul. 2018 - Jul. 2019

- Managed the events and members of the AI student research forum on campus

School Team Head at VITeach
Apr. 2018 - Jul. 2019

- Led over 100 juniors to ensure the smooth operations of the most active social outreach club on campus

Treasurer at Zurra Formula Racing
Apr. 2018 - Jul. 2019

- Carefully managed and distributed the funds of the only international formula student team on campus

Research

Salient Image Matting

DOI

ArXiv 2021

- R Deora, R Sharma, and **D S Sathia Raj**. "Salient Image Matting." *arXiv preprint arXiv:2103.12337 (2021).*

An Autonomous Drone with a Robotic Arm on Top

DOI

International Conference on Control and Robots (ICCR '20) — *Tokyo, Japan*

- **D S Sathia Raj**, TV Sethuraman, S S Shankar, VP Yashvanth, S K Perepu, S Mohan. "An Autonomous Drone with Robotic End Effector for Maintenance Operation of 5G Mobile Towers". *Presented at The International Conference on Control and Robots(ICCR '20)*

Eye State Detection using Convolutional Neural Networks

DOI

International Conference on Recent Trends in Advance Computing (ICRTAC '18) — *Chennai, India*

- S Sharma, A Negi, G S Jasmine, V Vaidehi, S Singh, **D S Sathia Raj**, S Ganesan. "Eye State Detection for use in Advanced Driver Assistance Systems". *Presented at The International Conference on Recent Trends in Advanced Computing(ICRTAC '18),*

Projects

Salient Image Matting

- Designed and built an automatic, end to end natural image matting system.
- Combined Salient Object Detection with image matting for real world, robust alpha matte prediction
- Achieved state of the art results for automatic matting.

Hand Cricket with Computer Vision

Link

- Indian school game of Hand Cricket.
- Recognize numbers from 1-6 from hand gestures in real time.

Anomaly Detection using Deep Learning

Link

- Worked with highly skewed data sets with 75:1 good to defective ratio
- Built multiple classification models which were fine tuned to give >98% accuracy
- Developed an AutoEncoder based anomaly detector that could be trained on only good/non-defective images.

Object Localisation using Deep Learning

- Aimed to predict bounding boxes around objects.
- Attained a 74.6% average IoU with pure Computer Vision techniques like edge detection, thresholding, contour detection etc.
- Trained a deep neural network, without using any pre-trained weights, and increased the average IoU to an impressive 87.66%.

Certifications and Accomplishments

2020 **Tensorflow in Practice Specialization**, deeplearning.ai — *Coursera*

2019 **Deep Learning Specialization**, deeplearning.ai — *Coursera*

2017 **Machine Learning**, Stanford University — *Coursera*

2016 **Pratibha Scholarship Awardee**, a quantum of INR 6,00,000 for undergraduate studies

2016 **AP Scholar With Distinction**, for achieving high scores in all AP exams taken