
Siddeshwar Raghavan

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EDUCATION

University of Wisconsin-Madison - *Master of Science (Research) in Electrical Engineering*

SEPT 2019 - MAY 2021

GPA - 3.68/ 4

Courses taken: (Fall 2019)- Image Processing, Advanced Operating Systems, Modern Probability Theory and Stochastic Processes. (Spring 2020) - Independent Research under Dr. Yin Li, Computer Vision, Matrix Methods in Machine Learning. (Summer 2020)- Independent Research student at Dr. Yin Li's lab. (Fall 2020) - Independent Research student at Dr. Yin Li's lab, Intro to Artificial Intelligence, Topics in Database mgmt systems.

PSG College Of Technology, Coimbatore, India - *Bachelor of Engineering in Electronics and Communication Engineering*

2014 - 2018

Graduated with a Final CGPA of 8.23/ 10

RESEARCH AND INDUSTRIAL EXPERIENCE

Independent Research Student, University of Wisconsin-Madison (Under [Dr. Yin Li](#), Assistant Professor, Biostatistics & Medical Informatics and Computer Sciences)

DEC 2019 - PRESENT

I conducted preliminary research in [Dr. Yin Li](#)'s new collaboration project with [Dr. Andreas Velten](#) to use deep learning to reconstruct Non-Line-of-Sight (NLOS) Images. I built a renderer using Blender 3D to create ground truth images from over 1000 categories in ShapeNet. These ground truth images formed the foundation of the deep reconstruction pipeline for NLOS imaging. I automated the whole process of Blender image creation to simplify the task of generating ground truth sets. I continued to work with Dr. Yin Li this past summer when I developed the deep learning backbone for the recovery of intensity images from the NLOS measurements. I implemented a UNET architecture supporting a 2D ResNet encoder with a 2D decoder. Later, I modified the 2D encoder to a 3D ResNet encoder to extract the low-level features from the volumetric input data.

Currently working on developing models for 3D pose estimation from video, action recognition, and action classification.

Adori Labs, Bangalore, India - *Engineering Intern*

SEPT 2018 - MAY 2019

Adori Labs is a startup working to enhance live and on-demand audio to be natively interactive.

I developed a Voice Assistant for the in-house built Adori Player: built a modular SDK-like voice assistant layer on iOS using Swift to control specific player functionalities. I built and released Google Home Actions and Amazon Alexa Skills for the Adori platform. Designed and developed a podcast audio search functionality using Elasticsearch.

Thorogood Associates, Bangalore, India - Intern

DEC 2017 - APR 2018

I developed an automation tool for data transformation and reporting using SQL Server, SSIS, and SSRS tools (Microsoft tools for ETL scripting) for an FMCG's supply-chain software. This internship was during the 8th (final) semester of my undergraduate study.

IIT, Bombay, India - Research Intern

JUN 2017 - JUL 2017

Worked on a VSLAM project under the guidance of [Prof. Rajbabu Velmurugan](#), Associate Professor, Electrical Engineering Department, IIT Bombay. I developed a system to identify markers and distance of the markers from the video captured by a single camera rather than the conventional multi-camera approach. This was achieved by segmenting it into frames and analyzing each frame to find the position of the marker using Python and OpenCV. I had chosen the approach to identify markers from the video feed to make the solution as weakly supervised as possible. This was a summer internship post the 6th semester of my undergraduate study.

IIT, Madras, India - Research Intern

JUN 2016 - JUL 2016

Designed and built a State Of Health tester, which measures the health of the battery, efficiency percentage, number of charge cycles dynamically under the guidance of [Dr. Ashok Jhunjhunwala](#), Professor, Electrical Engineering Department, IIT Madras. This was a summer internship post the 4th semester of my undergraduate study.

PUBLICATIONS/ PATENTS/ PROJECTS

Towards Non-Line-of-Sight Photography: High resolution 2D reconstruction with a deep neural network - Paper submitted to ICCV 2021. Co-authored with 3 other authors.

Spacenet 7 - Participated in [Spacenet 7](#) and exhibited the results for the **Intro to Artificial Neural Networks (CS/ ECE 539 - Fall 2020)** course project. The unique challenge for this competition involves segmenting and tracking tiny, dense building footprints over time from satellite images. I implemented 4 different deep learning models (VGG-16, ResNet-50, DenseNet-121 and Yolov4) with a UNET decoder for the semantic segmentation of building footprints from satellite images. With these results, I finished within the top 7 percentile of participants in the competition.

Spacenet 6 - Participated in [Spacenet 6](#) and exhibited results for the **Computer Vision (CS766 - Spring 2020)** course project. This involved developing deep models to segment building footprints from a sparse number of SAR (Synthetic-aperture radar) images, instead of the usual optical (EO) images. I implemented data augmentation and extensive pre-processing, and transfer learning from optical data (EO) images. The deep neural network architecture used was Vgg-11 in a UNET structure. I tuned the hyperparameters for optimal results. With these, I finished within the top 50 percentile in the competition.

Patent-published - [Human Interface System For Playing Virtual Percussion Instruments](#) (Ref: Patent Application No: 201841021574 dated June 8, 2018 - Published at the Indian Patent office)

The patent filed is based on a Virtual Reality prototype developed. It is a learning environment built using the Arduino board, Unity 3D. Our in-house developed position tracking system help users learn to play percussion instruments by using VR cues along with providing a touch-sensory feel in

the form of vibration through a haptic feedback glove. The tutorial mode has floating notes, the drum and corresponding notes are highlighted and reverse-karaoke to aid easy learning.

AWARDS

- Won the 2nd prize for VRDrum kit (implementation of the above-patented idea) at NIT Trichy Pragyan's project exhibit **Ingenium 2017**.
- Won the Siemens PLM Award for Excellence at the Annual Forum 2017 PACE for a presentation Portability Assisted Mobility Access, a prototype for baby boomers.

SKILLS

Python, PyTorch, TensorFlow, Tensorboard, Blender, Java, MATLAB, AWS & Google Cloud, SQL, C++, Unity 3D.

INTERESTS

Biking, [painting](#), [playing the piano](#), and cooking.