

SAI ASHISH SOMAYAJULA

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RESEARCH INTEREST

Passionate about Natural Language processing, Deep Learning, Reinforcement learning and Robotics with a strong background in Algorithms and mathematics. Specifically, I am interested in the application of Machine learning algorithms in Health care sector.

EDUCATION

Doctor of Philosophy, PhD— University of California, San Diego 20-Current
Electrical and Computer Engineering, Majors - Intelligent Systems and Robotics, GPA : 3.93/4

Bachelor of Technology— Indian Institute of Technology, Hyderabad (IIT-H) 2016-20
Electrical Engineering with Minors in Computer Science and Engineering, CGPA : 9.68/10
Second Highest CGPA in B.Tech Program across all departments (240 students)

Class XI-XII 2014-16
Board of Intermediate Education, Telangana, 98.5%

Class X 2013-14
CBSE board, CGPA : 10/10, Overall Topper Award, Gold medal in Mathematics and Science

PUBLICATIONS

IEEE 5G World Forum, 2020

- Pathapati, A.G., Chakradhar, N., Havish, P.N.V.S.S.K., Somayajula, S.A. and Amuru, S., 2020, September. Supervised Deep Learning for MIMO Precoding. In 2020 IEEE 3rd 5G World Forum (5GWF) (pp. 418-423). IEEE.

International Conference on Acoustics, Speech, and Signal Processing, 2021

- Subbareddy, B., S. Sai Ashish, and Aditya Siripuram. "Towards A Theory of Duality for Graph Signal Processing." arXiv preprint arXiv:1911.08135.

Teaching and Learning Centre - IIT Hyderabad 2017
Dr. GVV Sharma and Dr. J.Balasubramaniam

- Contributed to some of the TLC(Teaching and Learning Centre) papers by the Indian Institute of Technology, Hyderabad on [Digital Modulation Techniques](#), [Functional Series](#), [Continuity](#)

INTERNSHIPS

Texas A&M University, Halliburton Engineering Global Program Scholar 2019
Dr. Dileep Kalathil and Dr. Srinivas Shakkottai

- Developed a control algorithm for self-driving cars to navigate in a crowded environment using a pedestrian behavior model, which was developed using Inverse Reinforcement Learning.

L.V Prasad Eye Institute - Engineering Center 2018
Dr. Kiran Kumar Vupparaboina

- Segmentation of Optic disc and Hard exudates in Fundus Images, Choroid layer in Optical coherence tomography(OCT) images using Deep Learning Techniques. Developed a web portal for doctors to use the tools.

Pressbury - Health care Start-up 2017

- Developed a low power ECG monitoring device namely “CADENCE-ECG” that can interface with smartphones which is launched in the market.

PROJECTS

A Multi-Level Optimization Framework for End-to-End Text Augmentation

2020

Dr. Pengtao Xie

Trained a language model to produce quality augmentations adapting to the domain of the classification dataset framed in a multi-level optimization problem. Submitted the work to Transactions of the Association for Computational Linguistics.

Graph-to-Graph Generator Model for Automatic Generation of Commonsense Knowledge Graph

2020

Dr. Pengtao Xie

Working on automated generation of Commonsense Knowledge Graph from a seed graph via Graph-to-Graph generation approach.

Corona disease analysis mobile Application

2020

Prof. Kiran Kumar Kuchi

- I was leading the data analysis wing of the Corona App developed by Indian Institute of Technology, Hyderabad which is submitted for further usage by Government of Telangana, India.

Deep Reinforcement Learning for Communication Systems

2019

Dr. Sai Dhiraj Amuru

- Working on an end-to-end model for the MIMO system using Deep Reinforcement Learning techniques in the scenarios of noisy feedback and delayed feedback. Our model does not assume a known channel model.

Duality in Graph Signal Processing

2019

Dr. Aditya Siripuram

- Defined a new metric - Dualness, a measure of closeness between graphs to being (signal processing) duals of each other and developed an algorithm to compute the dualness. Submitted the work to the IEEE ICASSP, 2021

IITH-RU Project Based Learning Program

2019

Dr. Ravikumar Bhimasingu and Dr. S.Suriya Prakash

Ritsumeikan University-Japan

- Among the ten students from IITH to work in a cross-culture program with Ritsumeikan University. Performed a case study analysis on the concept of AI and Blockchains for the power grid with three Japanese and one Indian student.

Engineering the Eye Hackathon, LV Prasad Eye Institute

2018

- awarded Microsoft Azure Award

- Developed a prototype product to assist visually challenged through unknown indoor environments. Designed a smart cane equipped with a virtual eye to the glasses that can replicate a dog's behavior, which can guide the user, without much complication to the design. It uses deep learning algorithms to identify obstacles and humans.

Soldier Support, Inter IIT Technical meet

2017

- Worked on a problem statement given by Defence Research and Development Organisation, India to upgrade the gear of soldiers. We secured the sixth position in this challenge.

ACCOLADES

- **Second Highest CGPA** in B.Tech Program across all departments (240 students).

2020

- Academic Excellence Award for the Highest CGPA in Electrical Engineering. 2019
- Achieved *Microsoft Azure Award* in “Engineering the Eye-2018 hackathon” 2018
- Represented IIT-Hyderabad in the prestigious Inter-IIT Technical meet and secured 6th position. 2018
- Academic Excellence Award for the Highest CGPA in freshman year. 2017
- Runners-up in PWC challenge with theme as “Smart Cities”- Megathon. 2017
- Class X - Overall Topper Award. 2014
- Bronze medal in National Science olympiad. 2012

TEACHING ASSISTANT

At UCSD:

- ECE 269 - Linear Algebra with Professor Piya Pal.
- ECE 100 - Linear Electronic Systems with Professor Dan Sievenpiper.

During my Undergraduate: Vector calculus, Linear Algebra, Introduction to AI and ML, Representation Learning, and Probabilistic Graphical Models.

EXTRA CURRICULAR ACTIVITIES

First Year PhD representative at UCSD 2020
Student representative at ECE GSC UCSD.

Head of Elektronika—*Electronics and Signal Processing Club of IIT-H* 2018
A student activity club aimed to foster the culture of critical thinking and innovation in technology among students.

Head of Marketing Team—*Entrepreneurship Cell of IIT-H* 2018
Head of a team that captivates investors to invest in fresh ideas for start-ups from students.

Co-Founder of College Counsel 2017
A start-up that helps a JEE (the exam to be cleared for admission to the IIT) qualified student choose a branch they are suited for according to their rank and interest.

Lead Singer—*Vibes - Music club of IIT-H* 2016
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SKILLS

Languages/Python Libraries	C, C++, Python, SQL, Keras, PyTorch, Tensorflow, Numpy, OpenCV
Softwares/OS	Matlab, Scilab, Octave, L ^A T _E X, Microsoft Office, Windows, Ubuntu

REFERENCES

Dr. Piya Pal, Associate Professor at Department of ECE, University of California, San Diego
p1xie@ucsd.edu [website](#)

- Working as a Teaching assistant for ECE 269.

Dr. Pengtao Xie, Assistant Professor at Department of ECE, University of California, San Diego
p1xie@ucsd.edu [website](#)

- Working under his guidance currently at UCSD.

Prof. Srinivas Shakkottai, Professor of Computer Engineering, Department of ECE, Texas A&M University
sshakkot@tamu.edu [website](#)

- Worked on a project under his and Dr. Dileep Kalathil's guidance during my summer internship at Texas A&M University.

Prof. Mohammed Zafar Ali Khan, Professor, Department of Electrical Engineering IIT Hyderabad
zafar@iith.ac.in [website](#)

- Teacher and Research project guide

Dr. Sumohana Channappayya, Associate Professor and Dean R&D, IIT Hyderabad
sumohana@iith.ac.in [website](#)

- Teacher and Research project guide

Dr. Sri Rama Murthy K, Associate Professor and Head of EE Department, IIT Hyderabad
ksrm@iith.ac.in [website](#)

- Teacher and Research project guide

Dr. Dileep Kalathil, Assistant Professor at the Department of ECE, Texas A&M University
dileep.kalathil@tamu.edu [website](#)

- Worked on a project under his and Prof. Srinivas Shakkottai's guidance during my summer internship at Texas A&M University.

Dr. Aditya Siripuram, Assistant Professor at the Department of Electrical Engineering, IIT Hyderabad
staditya@iith.ac.in

- Teacher, Research project guide and advisor.

Dr. Saidhiraj Amuru, Adjunct Assistant Professor at the Department of Electrical Engineering, IIT Hyderabad
asaidhiraj@iith.ac.in [website](#)

- Teacher, Research project guide.