Sathyaprakash Narayanan

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Education

University of California, Santa Cruz. *2022-2024*
Masters in Electrical and Computer Engineering
Visa Status: **Student F1 Visa**

Anna Univeristy; RMD Engineering College, Chennai *2014-2018*
Bachelors of Engineering, Electronics and Communication
Cumlative GPA: 8.14/10 [3.47/4] (WES Certified)

Work Experience

- **Machine Learning Scientist II** *Oct 2021- April 2022*
  Lytx
  Bangalore, Karnataka, India

  - ⋆ Development of low resource intensive DL/ML model designed for edge devices
  - ⋆ DL model pruning for efficient training/deployment of models onto hardware
  - ⋆ Development of ML/DL models for mmwave radar

  – **Research Associate** *Dec 2017- Sep 2021*
  NeuRonICS Lab, DESE Department.,
  Indian Institute of Science, Bangalore

  Real-Time Object Detection and Localization in Compressive Sensing Video **ICIP 2021**
  Research Associate under Dr. Chetan Singh Thakur in collaboration with:
  Qualcom, USA; tinyVision.ai, USA and IISc, Bangalore

  - ⋆ Object detection and localization can be possible directly in the Compressed Domain.
  - ⋆ Achieved SOTA 46.27% mAP on a GeForce GTX 1080 Ti with an inference time of 23ms.
  - ⋆ Deployed on a NVIDIA TX2 embedded board with 45.11% mAP with an inference time of 34ms.

  n-EAR: Neuromorphic Ego motion vehicle Activity Recognition **US Patent App. 17/377,761; 2022**
  Research Associate under Dr. Chetan Singh Thakur collaboration with:
  Wipro Research; IISc, Bangalore

  - ⋆ A Neuromorphically inspired attention sampling technique
  - ⋆ A light weight end to end trainable bio-inspired deep learning two stream architecture that bridges the event data and the conventional frame-based data for egocentric vehicle activity recognition
  - ⋆ Modded CARLA simulator for event-based data generation/ego-motion tracking

  N-HAR: A neuromorphic event-based human activity recognition system **ISCAS 2019**
  Research Associate with Dr. Chetan Singh Thakur and Dr. Anirban Chakraborty, CEDT, IISc

  - ⋆ First system to achieve the task of human activity recognition based on the event-based camera data
  - ⋆ Memory surfaces to make the sparse event data compatible with deep convolutional neural networks (CNNs)
  - ⋆ Achieved SOTA accuracy of 94.3% using event memory surfaces on our activity recognition dataset.

  Real-time implementation of proto-object based visual saliency model on NVIDIA TX **ISCAS 2019**
  Research Associate with Dr. Chetan Singh Thakur in collaboration with Jamal Lottier, JHU

  - ⋆ Real-Time Biological proto-object visual saliency model

  - ⋆ Implementation considers the dynamic temporal motion change by convoluting using CUDA
  - ⋆ We have implemented the model on an NVIDIA Jetson TX1 board

- **Teaching Assistant and Support** for Deep Learning Certificate Program *2018-2019*
  Great Learning, Bangalore
  - Responsible for developing content for assignments and in course code-walkthroughs
  - Conduct one-to-one online support and doubt clarification sessions
  - Review and Evaluate coding assignments

Publications

Real-Time Object Detection and Localization in Compressive Sensing Video
Sathyaprakash Narayanan*, Yeshwanth Ravi Theja*, Venkat Rangan, Anirban Charkraborty, Chetan Singh Thakur
IEEE International Conferenceon Image Processing (**ICIP**) 2021.

N-HAR: A neuromorphic event-based human activity recognition system using memory surfaces
Pradhan Bibrat Ranjan, Yeshwanth Ravi Theja, **Sathyaprakash Narayanan**, Anirban Charkraborty, Chetan Singh Thakur
IEEE International Symposiumon Circuits and Systems (**ISCAS**) 2019.

Real-time implementation of proto-object based visual saliency model on NVIDIA Jetson TX
Sathyaprakash Narayanan, Yeshwanth Ravi Theja, Chetan Singh Thakur
IEEE International Symposiumon Circuits and Systems (**ISCAS**) 2019.

A Compressive Sensing Video dataset using Pixel-wise coded exposure
Sathyaprakash Narayanan, Yeshwanth Ravi Theja, Chetan Singh Thakur
arXiv:1905.10054 (**arXiv**) 2018. *- equal contribution

Patents

Method and system for recognizing activities in surrounding environment for controlling navigation of autonomous vehicle
Sathyaprakash Narayanan, Pradhan Bibrat Ranjan, Anirban Charkraborty, Chetan Singh Thakur
US Patent App. 17/377,761

System and Method for exhale controlled Augmentative and Assistive Communication device for communication and controlling IOT device
Sathyaprakash Narayanan
IN Patent: *201641044496*

Selected Awards and Honors

- Awarded **Top 20 Innovators of India**, by **Intel and DST** *2016*
- Represented India in **MIT MedHacks, Yale University, CT, USA** *2016*
- Represented India in **MIT Loomo hacks, NTU Singapore** *2016*
- Awarded **Best Student** by ISTE Chapter
  for overall performance in academic and extracurricular activities *2017*
- Represented India in **Hack the North at University of Waterloo, Canada** *2017*

Responsibilities

Reviewer

- **WACV** *2019, 2020, 2022, 2023*
- **TPAMI** *IEEE Transactions on Pattern Analysis and Machine Intelligence*