Sathyaprakash Narayanan
Research Associate, NeuRonICS Lab, IISc, Bangalore
Advisor: Dr. Chetan Singh Thakur

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Google Scholar

Research Interests

Computer Vision, Deep Learning, Compressive Sensing, Neuromorphic Engineering, Computational Imaging

Education

Anna Univeristy; RMD Engineering College, Chennai *2014-2018*
B.E, ECE
Cumlative GPA: 8.14/10

Publications

Real-Time Object Detection and Localization in Compressive Sensing Video
Yeshwanth Ravi Theja*, **Sathyaprakash Narayanan***, 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

System and Method for exhale controlled Augmentative and Assistive Communication device for communication and controlling IOT device
Sathyaprakash Narayanan, Pradhan Bibrat Ranjan, Anirban Charkraborty, Chetan Singh Thakur
IN Patent: *KNS.IES.1281IN1*

System and method for ego-centric activity recognition from vehicle on-board neuromorphic cameras
Sathyaprakash Narayanan
IN Patent: *201641044496*

Work Experience

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

Research Associate *2017- Present*
NeuRonICS Lab, DESE Dept.,
Indian Institute of Science, Bangalore

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

- 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 *Patent*
Research Associate with Dr. Chetan Singh Thakur, Dr. Anirban Chakraborty and Wipro Research

- 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

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*
- Among global rank of under 50, Amazon DRS Developer Challenge *2016*
- Among global rank of under 100, MediaTek Labs The Future of Smart Homes and Offices *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*
- Among top 10 in India for Academia-Industry Training(AIT) *2017*
  Programme by **Sine IIT-B and Swissnex India, DST and Zurich University of Applied science**
- **Best project of the year**, RMD Engineering College *2018*

Responsibilities

Reviewer

- **WACV** *2019, 2020, 2022*
- **BMVC** *2018*