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

https://satabios.github.io
sathyaprakas@iisc.ac.in
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
US Patent: *KNS.IES.1281IN1*

System and method for ego-centric activity recognition from vehicle on-board neuromorphic cameras
Sathyaprakash Narayanan, Pradhan Bibrat Ranjan, Anirban Charkraborty, Chetan Singh Thakur
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*