Vineet R. Shenoy

Contact Information

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U.S. Citizen

Education

Johns Hopkins University **Aug 2020 - Present**

PhD., Electrical and Computer Engineering
Advisor: Dr. Rama Chellappa

Rutgers University - New Brunswick **August 2014 - May 2018**

B.S., Electrical and Computer Engineering, Computer Science
Summa Cum Laude

Publications

Perfusion Assessment of Healthy and Injured Hands Using Video-Based Deep Learning Models
Shenoy V., Kingston C., Singh M., Durr N., Chellappa R., Giladi A.
Submission to Plastic and Reconstructive Surgery

Recovering Pulse Waves from Video Using Deep Unrolling and Deep Equilibrium Models
Shenoy V., Lohit S., Mansour H., Chellappa R., Marks T
https://arxiv.org/abs/2503.17269 – submission to IEEE Trans. Image Processing

Time-Series U-Net with Recurrence for Noise-Robust Imaging Photoplethysmography
Shenoy V., Wu S., Comas A., Marks T, Lohit S., Mansour H.
https://arxiv.org/abs/2503.17351

Robust Feature Space Organization with Distillation for Few-Shot Object Detection
Shenoy V., Chellappa, R.
IEEE International Conference on Patern Recognition (ICPR 2024)

Unrolled iPPG: Video Heart Rate Estimation via Unrolling Proximal Gradient Descent
Shenoy V., Marks Tim K., Mansour H., Lohit S.
IEEE International Conference on Image Processing (ICIP 2023)

Robust and Scalable Vehicle Re-Identification via Self-Supervision
Khorramshahi P., Shenoy V., Chellappa R.
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops 2023

Scalable and Real-Time Multi-Camera Vehicle Detection, Re-Identification, and Tracking
Khorramshahi P., Shenoy V., Pack M., Chellappa R.
Pre-print 2022

Multi-Class, Multi-Movement Vehicle Counting on Traffic Camera Data
Shenoy V., Chellappa R.
Technical Report 2022

Towards real-time systems for vehicle re-identification, multi-camera tracking, and anomaly detection
Peri N., Khorramshahi P., Rambhatla S., Shenoy V., Rawat S., Chen J.C. , Chellappa R.

Conference on Computer Vision and Pattern Recognition Workshops, 2020

Study of Timing Constraints and SAS Overload in the CBRS Band using SAS-CBSD Protocol
Anirudha Sahoo, Naceur El-Ouni, Vineet Shenoy
IEEE Globecom Conference Workshops 2019

Professional and Academic Experience

Mistsubishi Electric Research Labs

Research Intern – Remote Vital Signs Estimation **July 2022 - December 2022, May 2024-August 2024**

- Implemented two state-of-the-art algorithms for heart-rate estimation at-a-distance using facial videos, reducing error by over 14%. Publication at ICIP 2023.
- Designed and built data collection set-up for blood pressure estimation from facial videos. Identified equipment to procure, including high frame-rate camera, lighting, and blood pressure sensor.

Johns Hopkins University – Anticipatory Ground-Level Imagery Analytics

Research Assistant **January 2020 - Present**

- Improved baseline object detector by 9 points to achieve state-of-the-art performance on operational traffic camera data using domain adaptation techniques.
- Integrated the detector along with a multi-target, multi-camera camera tracking system that re-identifies vehicles in different cameras.
- Collaborated with professional software engineers to integrate research into a real-time, multi-target multi-camera tracking system for the National Geospatial-Intelligence Agency (NGA).

Blutag

Software Engineer **September 2018 - August 2019**

- Integrated a recommendation system using LightFM (Python) into ElasticSearch for efficient searching of products.
- Generated classification labels for unknown products using PyTorch. Achieved 95% accuracy after 20 epochs of training.
- Built workflow for product classification using PyTorch, from image download, data cleaning, and preparation to training and model deployment as a web service using Microsoft Azure.

National Institute of Standards and Technology (NIST)

Intern, Wireless Communications **May - August 2017**

- Simulated FCC rules (docket 12-354) for spectrum sharing in the 3.5GHz frequency band using C++.
- Augmented simulation to analyze over 10,000 units simultaneously passing messages and analyzed stresses on the system.
- Delivered 25-minute plenary presentation to over 200 interns, scientists, and employees of NIST.
- Publication “Study of Timing Constraints and SAS Overload in the CBRS Band using SAS-CBSD Protocol"accepted to IEEE Global Communications Conference Workshops (2019).

Assistantship

Teaching Assistant **Aug 2019 - Dec 2019**

Digital Computer Design (UMD ENEE446)

- Lead weekly discussion sessions, assisted students during office hours, and provided feedback through graded assignments

Relevant Coursework

University of Maryland, College Park

- Statistical Theory
- Machine Perception
- Statistical Pattern Recognition
- Advanced Digital Signal Processing
- Information Theory
- Estimation and Detection Theory
- Convex Optimization
- Stochastic and Random Processes

Skills

Languages : Python, C, Java
Softwares : Pytorch, Tensorflow, OpenCV, Matlab, Docker
Operating System : Windows, Linux

Achievements

- **Rutgers School of Engineering Commencement Speaker**, May 2018
- **Rutgers Chancellor's Leadership Award**, May 2018
- **James Leroy Potter Award for Original Investigation**, May 2018
- **Phi Beta Kappa**, Member, April 2018
- **Tau Beta Pi**, Member, December 2016
- **Valedictorian**, West Windsor-Plainsboro High School North, June 2014
- **Eagle Scout**, September 2013