

VINEET R. SHENOY

CONTACT INFORMATION	Clark Hall Room 307 3400 North Charles Street Baltimore, Maryland, 21218 vshenoy4@jhu.edu , https://vineetrshenoy.github.io/ U.S. Citizen
OBJECTIVE	I am searching for full-time R&D opportunities in machine learning and computer vision, with a focus on hardware-aware algorithmic design. My dissertation and professional work focused on video-based vital signs estimation, which has given me solid foundations in signal recovery, optimization, and imaging. I am excited to build and implement algorithms in real-world environments to help customers solve their difficult challenges.
EDUCATION	<div><div>Johns Hopkins University PhD., Electrical and Computer Engineering Advisor: Dr. Rama Chellappa</div><div>Johns Hopkins University M.S.E, Electrical and Computer Engineering Advisor: Dr. Rama Chellappa</div><div>Rutgers University - New Brunswick B.S., Electrical and Computer Engineering, Computer Science <i>Summa Cum Laude</i></div></div> <div>Aug 2020 - Present December 2024 August 2014 - May 2018</div>
PROFESSIONAL AND ACADEMIC EXPERIENCE	<div><div>Mitsubishi Electric Research Labs <i>Research Intern – Remote Vital Signs Estimation</i> July 2022 - December 2022, May 2024-August 2024<ul style="list-style-type: none">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 and IEEE Transactions on Image Processing (under review).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.</div><div>Johns Hopkins University – Anticipatory Ground-Level Imagery Analytics <i>Research Assistant</i> January 2020 - Present<ul style="list-style-type: none">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).</div><div>Blutag <i>Software Engineer</i> August 2018 - August 2019<ul style="list-style-type: none">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.</div></div>

- 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 2017 - 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).

PUBLICATIONS

Uncertainty-quantified Pulse Signal Recovery from Facial Video using Regularized Stochastic Interpolants

Shenoy V., Peng C., Chellappa R., Sun Y.

Submission to Transaction on Machine Learning Research (TMLR)

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.

Plastic and Reconstructive Surgery 2025

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> – submission to *IEEE Access*

Robust Feature Space Organization with Distillation for Few-Shot Object Detection

Shenoy V., Chellappa, R.

IEEE International Conference on Pattern 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

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

- 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