Neehar Peri

neeharperi.com

contact@neeharperi.com
(732) 325-4663

Education

Ph.D in Robotics, Carnegie Mellon University August 2021 - Present

B.S. in Computer Engineering, University of Maryland - College Park August 2017 - May 2021
QUEST Honors Program

Journal Publications

- MILAB-VTF(B): A Large-Scale, Multi-Distance, Unconstrained Visible and Thermal Face Dataset — Under Review
  T Bourlai, J Rose, S Mokalla, A Zabin, L Hornak, CB Nalty, ***N Peri****, J Gleason, CD Castillo, VM Patel, R Chellappa*

Conference Publications

- Long-Tail 3D Detection with Semantic Hierarchies — Under Review
  N Peri*, A Dave, S Kong, D Ramanan*
- Forecasting from LiDAR via Future Object Detection — CVPR 2022
  N Peri*, J Luieten, M Li, A Osep, L Leal-Taixe, D Ramanan*
- Assessment of a Novel Virtual Environment for Examining Human Cognitive-Motor Performance during Execution of Action Sequences — HCII 2022
  AA Shaver,* ***N Peri****, R Mezebish, G Matthew, A Berson, C Gaskins, GP Davis, GE Katz, IBH Samuel, JA Reggia, J Purtilo, RJ Gentili*
- A Synthesis-Based Approach for Thermal-to-Visible Face Verification — FG 2021†
  N Peri*, J Gleason, CD Castillo, T Bourlai, VM Patel, R Chellappa*
- PreferenceNet: Encoding Human Preferences in Auction Design with Deep Learning — NeurIPS 2021
  N Peri*, MJ Curry*, S Dooley, JP Dickerson*
- The Devil is in the Details: Self-Supervised Attention for Vehicle Re-ID — ECCV 2020
  P Khorramshahi,* ***N Peri****, JC Chen, R Chellappa*
- A Dual Path Model with Adaptive Attention for Vehicle Re-ID — ICCV 2019††
  P Khorramshahi, A Kumar, ***N Peri****, SS Rambhatla, JC Chen, R Chellappa*

Workshop Publications

- Deep k-NN Defense against Clean-label Data Poisoning Attacks — ECCVW 2020
  N Peri*, N Gupta*, WR Huang*, L Fowl, C Zhu, S Feizi, T Goldstein, JP Dickerson*
- Towards Real-Time Systems for Vehicle Re-ID, Multi-Camera Tracking, and Anomaly Detection — CVPRW 2020†
  N Peri*, P Khorramshahi*, SS Rambhatla*, V Shenoy, S Rawat, JC Chen, R Chellappa*
- Attention Driven Vehicle Re-ID and Unsupervised Anomaly Detection for Traffic Understanding — CVPRW 2019†
  P Khorramshahi, ***N Peri****, A Kumar, A Shah, R Chellappa*

*Equal Contribution
†Selected for Spotlight Presentation
††Selected for Oral Presentation

Patents

- Streaming 3D Detection and Forecasting from LiDAR Point Clouds — Under Review
  N Peri*, D Ramanan*

Academic Experience

Carnegie Mellon University, Pittsburgh, PA, *Robotics Institute* *Apr 2020 – Present*

- Leading research on 3D object detection, tracking, and forecasting for autonomous driving applications
- Advisor: Deva Ramanan

University of Maryland, College Park, MD, *UMIACS* *May 2018 – May 2021*

- Conducted research in unsupervised traffic anomaly detection and discriminative representation learning for vehicle re-id
- Led research in defending against clean-label adversarial poisoning attacks
- Established novel method for encoding human preferences in revenue maximizing auction design
- Advisors: Rama Chellappa & John P. Dickerson

Industry Experience

Argo AI, Pittsburgh, PA, *Research Intern* *May 2021 – Aug 2022*

- Developed end-to-end 3D object detection and forecasting pipeline from LiDAR point clouds
- Implemented novel metrics that jointly evaluate detection and forecasting accuracy

MUKH Technologies, College Park, MD, *Research Intern* *Aug 2020 – Apr 2022*

- Led research on improving thermal-to-visible face synthesis for zero-shot identification
- Built robust face verification pipelines for multi-spectral data streams

Bank of America, Charlotte, NC, *Conversational Commerce Technology Intern* *Jun 2019 – Aug 2019*

- Developed novel deep learning pipeline to validate quality of utterance-intent pairs in chatbot conversations using PyTorch, AllenNLP, and NLTK
- Deployed RESTful Active Learning API to introduce targeted learning feedback loop and improve intent classification model performance

Teaching Experience

16-720B, Carnegie Mellon University, Robotics Institute, *Head Teaching Assistant* *Jan 2022 – Dec 2022*

- Managed team of teaching assistants to effectively coordinate course responsibilities
- Updated course projects, held office hours, answered student questions and graded course projects
- Presented guest lectures on Training Convolutional Neural Networks and Transformers for Vision

ENEE 244, University of Maryland, ECE Department, *Undergraduate Teaching Fellow* *Jan 2019 – May 2019*

- Led Introduction to Digital Logic recitation for a discussion section of 15 students
- Received highest marks on metrics of preparedness, respect for students, and teaching effectiveness from all students

Invited Talks

- Metrics and Methods for Detection and Forecasting in Autonomous Vehicles Apr 2022
  National Autonomous Vehicle Conference

Research Mentorship

Name	Institution	Year(s)	Details
Christopher Nalty	UMD	2021-2022	Mentor for project on synthetic data generation for thermal-to-visible face synthesis and verification
Aastha Senjalia, Andrew Vetter, Benjamin Namovicz, Cheyenne Montgomery, Ferzam Mohammad, Matthew Weinberg, Nicholas Revill	UMD	2021	Project champion for CMSC435 software engineering capstone to build a unified rendering platform for autonomous vehicle data. Project won People's Choice Award.

Service

Conference Reviewer: NeurIPS 2021, CVPR 2022, CoRL 2022
Journal Reviewer: IJCV 2021
Mentorship: CMU AI Mentoring Program (2021-2022), QUEST Mentoring Program (2022), AI for Social Good (2022)
Consulting: Cherehani Africa (2019), Northrop Grumman Corporation (2020)

Awards

Name	Institution	Distinction	Year
Maryland Undergraduate Researcher of the Year	UMD	University	2021
Sujan Guha Memorial Best Senior Thesis Award	UMD	Department	2021
CRA Outstanding Undergraduate Researcher (Honorable Mention)	UMD	National	2021
NSF Graduate Research Fellowship (Honorable Mention)	UMD	National	2021