

Neehar Peri

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EDUCATION

Ph.D in Robotics, Carnegie Mellon University

Expected May 2026

3D Perception In-The-Wild

M.S in Robotics, Carnegie Mellon University

May 2023

Long-Tailed 3D Detection via Multi-Modal Fusion

B.S. in Computer Engineering, University of Maryland - College Park

May 2021

QUEST Honors Program

WORK EXPERIENCE

Carnegie Mellon University, Pittsburgh, PA, *Research Assistant*

Apr 2020 – Present

- Leading research on 3D object detection, multi-object tracking, motion forecasting, and multi-agent planning for embodied perception
- Advisor: [Deva Ramanan](#)

RAI Institute, Boston, MA, *Research Scientist Intern*

Jun 2025 – Present

- Leading research on benchmarking SLAM and SfM methods for manipulation with motion capture data

NVIDIA, Pittsburgh, PA, *Research Scientist Intern*

Jan 2024 – Dec 2024

- Led research on persistent 3D object detection in-the-wild
- Built GNN-based tracker that outperforms production system by 5% HOTA and achieves a 10x speedup

MUKH Technologies, College Park, MD, *Research Scientist Intern*

Aug 2020 – May 2023

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

Argo AI, Pittsburgh, PA, *Research Scientist Intern*

May 2021 – Oct 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

University of Maryland, College Park, MD, *Research Assistant*

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](#)

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

AWARDS

| Name | Institution | Distinction | Year |
|--|-------------|-------------|--------------|
| NSF Graduate Research Fellowship | CMU | National | 2023 |
| 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 |
| Yurie & Jeong H. Kim Scholarship | UMD | Department | 20{18,19,20} |

CONFERENCE PUBLICATIONS

- [UniFlow: Zero-Shot LiDAR Scene Flow via Cross-Domain Generalization](#) Under Review
S Li, Q Zhang, I Khatri, K Vedder, D Ramanan, N Peri
- [RF-DETR: Neural Architecture Search for Real-Time Detection Transformers](#) Under Review
I Robinson, P Robicieux, M Popov, D Ramanan, N Peri
- [RefAV: Towards Planning-Centric Scenario Mining](#) Under Review
C Davidson, D Ramanan, N Peri
- [Roboflow100-VL: A Multi-Domain Object Detection Benchmark for Vision-Language Models](#) NeurIPS 2025
P Robicieux, M Popov*, A Madan, I Robinson, J Nelson, D Ramanan, N Peri*
- [MonoFusion: Sparse-View 4D Reconstruction via Monocular Fusion](#) ICCV 2025
Z Wang, J Tan, T Khurana, N Peri*, D Ramanan*
- [Towards Learning to Complete Anything in LiDAR](#) ICML 2025
A Tacmaz, C Saltori, N Peri, T Meinhardt, RD Lutio, L Leal-Taixe, A Osep
- [Planning with Adaptive World Models for Autonomous Driving](#) ICRA 2025
AB Vasudevan, N Peri, J Schneider, D Ramanan
- [Neural Eulerian Scene Flow Fields](#) ICLR 2025
K Vedder, N Peri, I Khatri, S Li, E Eaton, M Kocamaz, Y Wang, Z Yu, D Ramanan, J Pehserl
- [Revisiting Few-Shot Object Detection with Vision-Language Models](#) NeurIPS 2024
A Madan, N Peri*, S Kong*, D Ramanan**
- [Shelf-Supervised Cross-Modal Pre-Training for 3D Object Detection](#) CoRL 2024
M Khurana, N Peri*, J Hays, D Ramanan*
- [I Can't Believe It's Not Scene Flow!](#) ECCV 2024
I Khatri, K Vedder*, N Peri, D Ramanan, J Hays*
- [Better Call SAL: Towards Learning to Segment Anything in LiDAR](#) ECCV 2024
A Osep, T Meinhardt*, F Ferroni, N Peri, D Ramanan, L Leal-Taixe*
- [ZeroFlow: Scaling Scene Flow via Distillation](#) ICLR 2024
K Vedder, N Peri, N Chodosh, I Khatri, E Eaton, D Jayaraman, Y Liu, D Ramanan, J Hays
- [Towards Long-Tailed 3D Detection](#) CoRL 2022
N Peri, A Dave, D Ramanan, S Kong**
- [A Brief Survey of Person Recognition at a Distance](#) ASILOMAR 2022
C Nalty, N Peri*, J Gleason*, CD Castillo, S Hu, T Bourlai, R Chellappa*
- [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](#) HCI 2022
AA Shaver, N Peri*, R Mezebish, G Matthew, A Berson, C Gaskins, GP Davis, GE Katz, I 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

JOURNAL PUBLICATIONS

- [Long-Tailed 3D Detection via Multi-Modal Late Fusion](#) Under Review
Y Ma, N Peri*, A Dave, W Hua, D Ramanan, S Kong*
- [Accelerating Image Recognition Using High Performance Computing](#) ITEA 2023
J Adams, JM Barton, R Chellappa, J Gabberty, J Gleason, S Hu, J Johnson, F Moor-Clingenpeel, B Oshiro, N Peri, D Richie, V To
- [Data and Algorithms for End-to-End Thermal Spectrum Face Verification](#) TBIOM 2023
T Bourlai, J Rose, S Mokalla, A Zabin, L Hornak, CB Nalty, N Peri, J Gleason, CD Castillo, VM Patel, R Chellappa

WORKSHOP PUBLICATIONS

- [QuickDraw: Fast Visualization, Analysis and Active Learning for Medical Image Segmentation](#) HCII 2025
D Syomichev, P Gopinath*, GL Wei, E Chang, I Gordon, A Seifu, R Pemmaraju*, **N Peri***, J Purtilo**
- [Semi-Supervised Federated Multi-Organ Segmentation with Partial Labels](#) AAPM 2024^{††}
R Pemmaraju, **N Peri****
- [An Empirical Analysis of Range for 3D Object Detection](#) ICCV 2023^{††}
***N Peri**, M Li, B Wilson, YX Wang, J Hays, D Ramanan*
- [ReBound: An Open-Source 3D Bounding Box Annotation Tool for Active Learning](#) CHI 2023[†]
W Chen, A Edgley*, R Hota*, J Liu*, E Schwartz*, A Yizar*, **N Peri***, J Purtilo**
- [Deep k-NN Defense Against Clean-label Data Poisoning Attacks](#) ECCV 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](#) CVPR 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](#) CVPR 2019[†]
*P Khorramshahi, **N Peri**, A Kumar, A Shah, R Chellappa*

Highlighted Papers

*Equal Contribution

*Equal Supervision

[†]Selected for Spotlight Presentation

^{††}Selected for Oral Presentation

INVITED TALKS

- [Argoverse 2 Scenario Mining Challenge](#) Jun 2025
Invited Talk: CVPR 2025, Workshop on Autonomous Driving
- [Foundational Few-Shot Object Detection Challenge](#) Jun 2025
Invited Talk: CVPR 2025, Workshop on Visual Perception via Learning in an Open World
- [3D Object Detection for Autonomous Vehicles](#) Apr 2025
Guest Lecture: 16-825, Learning for 3D Vision
- [Towards Foundation Models for 3D Perception](#) Mar 2025
Invited Talk: Carnegie Mellon University (FLAME Seminar & NeuroAI Seminar)
- [Image Processing from a Frequency Perspective](#) Feb 2025
Guest Lecture: 16-720, Computer Vision
- [Long-Tailed 3D Detection via 2D Late Fusion](#) Oct 2024
Invited Talk: ECCV 2024, Workshop on Vision-Centric Autonomous Driving
- [Shelf-Supervised Cross-Modal Pre-Training for 3D Object Detection](#) Oct 2024
Invited Talk: ECCV 2024, Autonomous Vehicles meet Multimodal Foundation Models Workshop
- [Argoverse 2 End-to-End Forecasting Challenge](#) Jun 2024
Invited Talk: CVPR 2024, Workshop on Autonomous Driving
- [Foundational Few-Shot Object Detection Challenge](#) Jun 2024
Invited Talk: CVPR 2024, Workshop on Visual Perception via Learning in an Open World
- [3D Object Detection for Autonomous Vehicles](#) Apr 2024
Guest Lecture: 16-720, Computer Vision
- [Better Call SAL: Towards Learning to Segment Anything in LiDAR](#) Apr 2024
Invited Talk: Stack AV
- [3D Object Detection for Autonomous Vehicles](#) Apr 2024
Guest Lecture: 16-825, Learning for 3D Vision
- [Long-Tailed 3D Object Detection via Multi-Modal Fusion](#) Jan 2024
Invited Talk: Carnegie Mellon University (R-PAD Lab)
- [An Empirical Analysis of Range for 3D Object Detection](#) Oct 2023
Invited Talk: ICCV 2023, Robustness and Reliability of Autonomous Vehicles in the Open-World
- [Argoverse 2 End-to-End Forecasting Challenge](#) Jun 2023
Invited Talk: CVPR 2023, Workshop on Autonomous Driving
- [3D Object Detection for Autonomous Vehicles](#) Mar 2023
Guest Lecture: 16-825, Learning for 3D Vision
- [Image Processing and Convolutions](#) Sep 2022
Guest Lecture: 16-720, Computer Vision

- [How do Autonomous Vehicles See the World?](#) Aug 2022
Invited Talk: Carnegie Mellon University (RoboLaunch)
- [Transformers for Vision](#) Apr 2022
Guest Lecture: 16-720, Computer Vision
- [Training Convolutional Neural Networks](#) Apr 2022
Guest Lecture: 16-720, Computer Vision
- [Metrics and Methods for Detection and Forecasting in Autonomous Vehicles](#) Apr 2022
Invited Talk: National Autonomous Vehicle Conference

MENTORSHIP

| Name | Institution | Year(s) | Project |
|--|------------------------|-------------|---|
| Manu Gaur | CMU | 2025 – | Adapting multi-modal large-language models for few-shot object detection |
| Narayanan PP | CMU | 2025 – | Wheeled quadrupedal locomotion and navigation |
| Lucky Nayak | CMU | 2025 – | Wheeled quadrupedal locomotion and navigation |
| Shruti Jain | CMU | 2025 – | Benchmarking spatial understanding in VLMs |
| Henry Tsui | CMU | 2025 – | Referential 3D point tracking |
| Siyi Li | UPenn | 2025 – | Zero-shot scene flow estimation via cross-domain generalization |
| Cainan Davidson | CMU | 2024 – | Benchmarking scenario mining for autonomous vehicles |
| Guang-Lin Wei, Eric Chang, Padmini Gopinath, Ian Gordon, Amanuel Seifu, Daniel Syomichev | UMD | 2024 | CMSC435 software engineering capstone to build an active-learning framework for medical image analysis |
| Zihan Wang | CMU | 2024 – 2025 | Sparse-view dynamic reconstruction in-the-wild |
| Nina Johe, Aryan Kakadia, Muzzamil Khan, Morgan Ko, Josh Leeman, Max Son, Sashwat Venkatesh | UMD | 2024 | CMSC435 software engineering capstone to build an end-to-end platform for medical image analysis |
| Mehar Khurana | IIITD → CMU MSR | 2023 – 2024 | Shelf-supervised 3D object detection with vision-language models |
| Anish Madan | CMU → SkildAI | 2022 – 2025 | Few-shot multi-modal 2D detection with vision-language models |
| Andrew Shen | CMU → Tesla | 2022 – 2023 | Benchmarking modular 3D perception stack for autonomous vehicles |
| Xindi Wu | CMU → Princeton PhD | 2022 | Self-supervised multi-modal representation learning for point clouds |
| Aminah Yizar, Andrew Edgley, Ezra Schwartz, Joshua Liu, Raunak Hota, Royce He, Wesley Chen | UMD | 2022 | CMSC435 software engineering capstone to build an active learning framework to allow human-in-the-loop 3D object annotation |
| Christopher Nalty | MUKH → UOregon PhD | 2021 – 2022 | Synthetic data augmentation for thermal-to-visible face verification |
| Aastha Senjalia, Andrew Vetter, Benjamin Namovicz, Cheyenne Montgomery, Ferzam Mohammad, Matthew Weinberg, Nicholas Revill | UMD | 2021 | CMSC435 software engineering capstone to build a visualization platform for autonomous vehicle data. Project won People’s Choice Award. |

SERVICE

Conference Reviewer: NeurIPS, CVPR, AACL, ICCV, ICLR, ECCV, ICRA

Journal Reviewer: IJCV, TPAMI

Mentorship: CMU AI Mentoring Program, QUEST Mentoring Program, CMU AI for Social Good Summit

Organizer: Visual Perception and Learning in an Open World, Computer Vision Reading Group

Masters Thesis Committee Member: Bharath Raj, Anish Madan
Other: AUTOBOT & TRINITY Cluster Management, RISS Admission Committee

PATENTS

- [Few-Shot Object Detection with Vision-Language Models](#) Under Review
*A Madan, **N Peri**, S Kong, D Ramanan, CK Mummadi, FC Condessa*
- [Learning Driving Behavior Control Parameters Using Machine Learning Models](#) 18/882,013
*AB Vasudevan, **N Peri**, D Ramanan, CK Mummadi, FC Condessa*
- [End-to-End Systems and Methods for Streaming 3D Detection And Forecasting from LiDAR Point Clouds](#) 17/692,973
***N Peri**, D Ramanan*

TEACHING EXPERIENCE

- 16-720**, Carnegie Mellon University, Robotics Institute, *Head Teaching Assistant* *Spring 2022, Fall 2022*
- Managed team of teaching assistants to effectively coordinate course responsibilities
 - Graded course projects and held office hours
- ENEE 244**, University of Maryland, ECE Department, *Undergraduate Teaching Fellow* *Spring 2019*
- Led Introduction to Digital Logic recitation for a discussion section of 15 students