Pouyan Navard

EAD Card Holder (OPT)

● Columbus, OH   ✉ boreshnavard.1@osu.edu   📞 N/A   🔗 https://bnavard.github.io/   in pouyan-boreshnavard

Education

Ph.D. **The Ohio State University (OSU)**, College of Engineering   Feb 2021 – Aug 2025

- Dissertation:

    Beyond Point Estimates: Distribution-Aware Learning for Sparsely Labeled and Imbalanced Spatiotemporal Data

- Supervisor: Prof. Alper Yilmaz
- Focus: Computer Vision
- Selected Project:

    I. **Image Denoising Diffusion Probabilistic Models**: We focused on engineering an adapter module for sketch based image diffusion models. The objective was democratizing the image generation models for variety of sketch complexity. Our module would inject different granularity features throughout the diffusion process for better controllability.

    II. **3D Medical Image Analysis**: We devised a training recipe for learning from sparse annotation and skewed class distribution setting in 3D medical images dataset. The goal was to unleash the hidden potentials of the dataset.

    III. **Efficient 3D Vision Transformer**: We focused on designing a high throughput 3D Vision Transformer (ViT) model with low parameter count and competitive performance for 3D volumetric image analysis.

    IV. **Simultaneous Localization and Mapping**: I developed a Gaussian distribution–based optimization method that reduced drift in autonomous driving systems. The project deliverable was a post-processing wrapper module for SLAM systems. This module incorporated priors about the environment in the form of multi-variate Gaussian distributions.

M.Sc. **The Ohio State University (OSU)**, College of Engineering   Sept 2021 – Dec 2023

- Focus: Computer Vision
- Non-thesis degree

B.Sc. **University of Isfahan**, Photogrammetric Computer Vision   Sept 2014 – Sept 2018

- Capstone Project:

    3D reconstruction of archaeological sites using structure from motion technique

Publications

ERDES: A Benchmark Video Dataset for Retinal Detachment for Ocular Ultrasound   Under Review
                                                                                          Aug 2025

Pouyan Navard, Yasemin Ozkut, Sirikar Adhikari, Alper Yilmaz ⧉

Nature Scientific Data Journal

KnobGen: Controlling the Sophistication of Artwork in Sketch-Based Diffusion Models   March 2025
                                                                                                 Nashville, USA

Pouyan Navard, Amin Monsefi, Mengxi Zhou, Wei-Lun Chao, Alper Yilmaz, Rajiv Ramnath ⧉

CVPR 2025 - AI for Creative Visual Content Generation Editing and Understanding (CVEU) Workshop

SegFormer3D: an Efficient Transformer for 3D Medical Image Segmentation   Feb 2024
                                                                                     Seattle, USA

Shehan Perera, Pouyan Navard, Alper Yilmaz ⧉

CVPR 2024 - Workshop on Domain adaptation, Explainability, Fairness in AI for Medical Image Analysis

A Probabilistic-based Drift Correction Module for Visual Inertial SLAMs

Oct 2024
Las Vegas, USA

Pouyan Navard, Alper Yilmaz ⬀

The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS)

Work Experience

Path Robotics Inc., Computer Vision Engineer, Full-time

Columbus, OH
June 2025 - Now

- World Model for autonomous robotics
- Perception system for intelligent robotics
- Standardization of the Machine Learning Infrastructure
- Gold standard software engineering practice

Path Robotics Inc., Computer Vision Engineer, Intern

Columbus, OH
Nov 2024 - June 2025

- Photorealistic image generation of 3D objects using 3D diffusion model
- Conditional image generation (text, material, texture map)
- Active learning on out-of-distribution samples

Center for Automotive Research, Autonomous driving challenge II team lead

Columbus, OH
Oct 2022- May 2023

- Leading the Ohio State University's SLAM team at General Motors SAE Autodrive Challenge
- Engineered a SLAM pipeline optimized for narrow FOV LiDARs
- Robust localization and mapping in geometrically constrained environments.

Awards and Honors

- Robert E. Altenhofen Memorial Scholarship Award ⬀

ISPRS, 2022

Services

Invited Reviewer: CVPR, ECCV, ICCV, ICLR, AVSS, ACCV, SIBGRAPI

2023-2025

Invited Talk: Intro to Diffusion Probabilistic Models

OSU, 2025

Co-mentorship: Co-mentored along my advisor and collaborated with and lead junior PhD students

PCVLab, 2025

Distributed Parallel Computing: Streamline large scale high performance (multi-gpu) pipeline and configs

PCVLab, 2024-2025

Technologies

Technologies: PyTorch, GenAI, TensorFlow, Numpy, Scipy, Hydra, MLOps, Blender, VLM, Diffusion Model

Languages: C++, Python

Last updated: August 28, 2025