Pouyan Navard

Columbus, OH | boreshnavard.1@osu.edu | 380 710 3895 | https://bnavard.github.io/ | pouyan-boreshnavard

About Me

PhD hacker turning pixels into intelligence—2D/3D generative AI, CVPR-grade diffusion & 3D vision. PhD wraps May 2025, ready to start June 2025. Actively seeking full-time AI/ML roles where cutting-edge research ships to production.

Education

PhD **The Ohio State University (OSU)**, Computer Science — Feb 2021 – May 2025
- Focus: computer vision
- GPA: 3.85

MSc **The Ohio State University (OSU)**, Computer Science — Sept 2021 – Dec 2023
- Non-Thesis degree obtained through my PhD, GPA: 3.75

BSc **University of Isfahan**, Computer Vision — Sept 2014 – Sept 2018
- Thesis: 3D Reconstruction using Structure from Motion
- GPA: 3.60

Publications

A 3D Self-supervised Video Transformer for 3D Echo Ultrasound Images — Under preparation, July 2025
Pouyan Navard, Sirikar Adhikari, Alper Yilmaz
The Journal of the American Medical Association

A Benchmark for 3D Eye Ultrasound Analysis — Under preparation, June 2025
Pouyan Navard, Yasemin Ozkut, Sirikar Adhikari, Alper Yilmaz
Nature Scientific Data

KnobGen: Controlling the Sophistication of Artwork in Sketch-Based Diffusion Models — March 2025, Nashville, USA
Pouyan Navard, Amin Karimi 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
Pouyan Navard, Shehan Perera, 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

Assessing the effects of georeferencing error in a vertical comparison study of GDEMs — June 2021
Masoud Babadi, Saeed Nadi, Pouyan Navard, Mohammad Moein Sheikholeslami, Mohammad Samiei, Vahid Sadeghi
International Journal of Remote Sensing

Experience

Path Robotics Inc., Computer Vision Engineer — Columbus, OH, Nov 2024 - April 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
- World model for autonomous robotics

Photogrammetric Computer Vision Lab (PCVLab), Graduate Research Assistant — Columbus, OH
Feb 2021 – May 2025

- 3D medical image understanding (segmentation, classification)
- 3D image probabilistic distributional reasoning & representation learning
- 3D image self-supervised training

Center for Automotive Research, Simultaneous Localization and Mapping (SLAM) 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.

Projects

Fine-grained Material Control for Diffusion-based Image Generation — Path Robotics Inc

- Introduced a *three stage* method for controlling the material during image generation:
- First stage: generate a provisional image with uncontrolled material with text-prompt
- Second stage: generate material hint given the provisional image and target material
- Third stage: using text-material conditioning using ControlNet to generate the foreground object
- Reduced the cost of data collection.

Deep-Neural World Model for Autonomous Robots. — Path Robotics Inc

- Developed end-to-end ML-ops pipeline—automated data processing, PyTorch-Lightning training and Hydra configuration.
- **3x** faster experimentation with the devised streamlined pipeline.
- Muti-modal state representation for robot-learning using Graph Neural Network.

3D Ultrasound Image Understanding. — PCVLab

- 3D ultrasound medical image representation learning robust to extreme noise (motion blur, diffuse reverbation etc)
- Foundational model for multi-modal ultrasound data, ocular (eye) and echocardiogram (heart) 3D image sequence
- Achieved expert-level performance with sensitivity of **98%** percent in detecting the class of interest

Visual SLAM in GPS-Denied and Low-Texture Environments. — PCVLab

- Devised Multivariate Gaussian based probabilistic module for visual inertial navigation methods such as VINS-MONO
- software engineering computer vision pipeline into Augmented Reality (AR) system.

Awards and Honors

- Robert E. Altenhofen Memorial Scholarship Award — ISPRS, 2022
- Graduate Student Travel Awards — OSU, 2025

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