

Pouyan Navard

Work Authorization: F-1 OPT, valid through 08/25/2029

📍 Columbus, OH ✉ boreshnavard.1@osu.edu ☎ 380 710 3895 🔗 <https://bnavard.github.io/> in 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

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| PhD | The Ohio State University (OSU) , Computer Science | Feb 2021 – Aug 2025 |
| | <ul style="list-style-type: none">• Focus: computer vision• GPA: 3.85 | |
| MSc | The Ohio State University (OSU) , Computer Science | Sept 2021 – Dec 2023 |
| | <ul style="list-style-type: none">• Non-Thesis degree obtained through my PhD, GPA: 3.75 | |
| BSc | University of Isfahan , Computer Vision | Sept 2014 – Sept 2018 |
| | <ul style="list-style-type: none">• Thesis: 3D Reconstruction using Structure from Motion• GPA: 3.60 | |

Publications

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| A 3D Self-supervised Video Transformer for 3D Echo Ultrasound Images | Under preparation July 2025 |
| Pouyan Navard , Sirikar Adhikari, Alper Yilmaz | |
| <i>The Journal of the American Medical Association</i> | |
| A Benchmark for 3D Eye Ultrasound Analysis | Under preparation June 2025 |
| Pouyan Navard , Yasemin Ozkut, Sirikar Adhikari, Alper Yilmaz | |
| <i>Nature Scientific Data</i> | |
| 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 | |
| <i>CVPR 2025 - AI for Creative Visual Content Generation Editing and Understanding (CVEU) Workshop</i> | |
| SegFormer3D: an Efficient Transformer for 3D Medical Image Segmentation | Feb 2024 Seattle, USA |
| Pouyan Navard , Shehan Perera, Alper Yilmaz | |
| <i>CVPR 2024 - Workshop on Domain adaptation, Explainability, Fairness in AI for Medical Image Analysis</i> | |
| A Probabilistic-based Drift Correction Module for Visual Inertial SLAMs | Oct 2024 Las Vegas, USA |
| Pouyan Navard , Alper Yilmaz | |
| <i>The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences</i> | |
| 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 | |
| <i>International Journal of Remote Sensing</i> | |

Experience

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| Path Robotics Inc. , Computer Vision Engineer | Columbus, OH Nov 2024 - Now |
| <ul style="list-style-type: none">• 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.

Selected 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.
- Multi-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 reverberation 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](#) 
- Graduate Student Travel Awards

ISPRS, 2022
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