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Pouyan Navard

Columbus, OH boreshnavard.1@osu.edu https://bnavard.github.io/

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

BSc **University of Isfahan**, Photogrammetric Computer Vision — Sept 2014 – Sept 2018

- Thesis: 3D Reconstruction using Structure from Motion
- GPA: 3.60

Publications

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

SegFormer3D: an Efficient Transformer for 3D Medical Image Segmentation

Feb 2025
Seattle, USA

Pouyan Navard, Shehan Perera, Alper Yilmaz

CVPR - 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 Intern — Columbus, OH, Nov 2024 - Present

- 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 Associate — 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

- introduce 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

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

- Led end-to-end ML-ops pipeline—automated data processing, PyTorch-Lightning training and Hydra configuration.
- 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

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

Awards and Honors

- Robert E. Altenhofen Memorial Scholarship 2022
- Graduate Student Travel Awards 2025

Services

Invited Reviewer: CVPR, ECCV, ICCV, ICLR, AVSS, ACCV, SIBGRAPI 2023-2025
Invited Talk: Intro to Diffusion Probabilistic Models OSU, 2025

Technologies

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

Languages: C++, Python