Tuan Duc Ngo

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CONTACT INFORMATION

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RESEARCH INTERESTS

My research interests are in computer vision, specifically focusing on 3D understanding. I am developing algorithms and techniques for understanding the geometry and semantics of 3D scenes, with applications in autonomous driving, robotics, and augmented reality. I am also interested in 3D AI-generated content, including 3D Motion Generation and 3D Scene Generation.

EDUCATION

University of Massachusetts Amherst, Massachusetts, US
Ph.D. in Computer Science Sep 2023 - Present

- Advisors: Prof. Evangelos Kalogerakis, Prof. Chuang Gan
- GPA: 4.00/4.00

Ho Chi Minh City University of Technology (HCMUT), Ho Chi Minh City, Vietnam
B.E in Computer Engineering Aug 2017 - Aug 2021

- Graduated with the *Highest honor*.
- GPA: 9.62/10.00

SELECTED PUBLICATIONS

Conferences

- Phuc Nguyen*, **Tuan Duc Ngo***, Chuang Gan, Evangelos Kalogerakis, Anh Tran, Cuong Pham, Khoi Nguyen, "Open3DIS: Open-vocabulary 3D Instance Segmentation with 2D Mask Guidance", in *Computer Vision and Pattern Recognition Conference (**CVPR**), 2024.*
- **Tuan Duc Ngo**, Binh-Son Hua, Khoi Nguyen, "GaPro: Box-Supervised 3D Point Cloud Instance Segmentation Using Gaussian Processes as Pseudo Labelers", in *International Conference on Computer Vision (**ICCV**), 2023.*
- **Tuan Duc Ngo**, Binh-Son Hua, Khoi Nguyen, "ISBNet: a 3D Point Cloud Instance Segmentation Network with Instance-aware Sampling and Box-aware Dynamic Convolution", in *Computer Vision and Pattern Recognition Conference (**CVPR**), 2023.*
- **Tuan Duc Ngo** and Khoi Nguyen, "Geodesic-Former: a Geodesic-Guided Few-shot 3D Point Cloud Instance Segmenter", in *European Conference on Computer Vision (**ECCV**), 2022.*

Journals

- Bui MV*, **Ngo DT***, Pham H, Nguyen DD., "GAC3D: improving monocular 3D object detection with ground-guide model and adaptive convolution", *PeerJ Computer Science Journal, 2021*

RESEARCH EXPERIENCE

UMass Amherst, Massachusetts, US
Research Assistant Sept 2023 - present

- Main research topics: 3D Generative Model, 3D Animation and 3D Motion Synthesis.
- Project: "Text-to-3D-motion"
  - Generating diverse 3D human motions from textual description.
- Project: "Reconstructing Articulated 4D Object from monocular videos"

VinAI Research, Ha Noi, Vietnam
AI Research Resident Aug 2021 - July 2023

- Advisors: Dr. Khoi Nguyen, Prof. Binh-Son Hua.
- Main research topics: 3D Point Cloud Instance Segmentation, 3D Object Detection, and 3D Scene Completion.
- Project: "Camera-based 3D Occupancy Prediction"
  - Enhancing bird's-eye-view 3D object detectors for 3D occupancy prediction task.
- Project: "3D Point Cloud Instance Segmentation"
  - Introduce an efficient and robust sampling strategy and propose leveraging the bounding box as a geometric cue for the 3D point cloud instance segmentation task.
- Project: "Weakly Supervised 3D Point Cloud Instance Segmentation"
  - Introduce using Gaussian Process to generate high-quality pseudo instance masks from the axis-aligned GT bounding boxes for the 3D point cloud instance segmentation task.
- Project: "Few-shot 3D Point Cloud Instance Segmentation"
  - Propose a new task of 3D understanding, Few-shot 3D point cloud instance segmentation, and address it with a transformer-based 3D instance segmenter leveraging geodesic distance as a strong geometric cue.

AI Engineer (Applied Rotation Program) Jul 2022 - Oct 2022

- Project: "Bird-eye-view semantic segmentation from multi-view fisheye images"
  - Participate in the Surrounding-View-Monitoring team to design and develop a new "Bird-eye-view semantic segmentation" feature, including data preparation, modeling, and deploying.
  - Awarded as the best Applied Rotation Program project.

Technical talks

- ISBNet: a 3D Point Cloud Instance Segmentation Network with Instance-aware Sampling and Box-aware Dynamic Convolution, at *ScanNet Indoor Scene Understanding Challenge CVPR 2023 Workshop*, slide, video, poster Jun, 2023
- Geodesic-Former: a Geodesic-Guided Few-shot 3D Point Cloud Instance Segmenter, at *VinAI 2022 Winter Workshop*, slide, video, poster Nov, 2022

Academic Services

- Reviewer of CVPR (2024), ECCV (2024), IEEE Transactions on Image Processing.

Honors and Awards

- 2023 CICS Scholarship, UMass Amherst. 2023
- Class of 2021 **Valedictorian** of HCMUT (graduated with the highest GPA) 2021
- Scholarships for outstanding academic achievements, HCMUT 2017 - 2021
- Honda Award (Awarded to top 100 undergraduate students in Vietnam) 2020
- Third Prize in the final round of Digital Race, FPT 2020
- Gold Medals in Vietnam Southern Regional Olympiad in Physics 2015, 2016

Technical Skills

Programming skills:

- Proficient: Python (PyTorch, TensorFlow, Numpy, Scikit-learn, Pytorch3D)
- Familiar: C++, C#, Latex

Tools:

- ROS, Microsoft Azure, Docker, TensorRT, TensorFlow Lite

Languages

- Vietnamese: Native
- English: IELTS: 7.5 (L: 8.0, R: 7.5, W: 7.0, S: 7.0)