Tuan Duc Ngo

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CONTACT INFORMATION

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RESEARCH INTERESTS

My primary research interest is about Computer Vision, specifically in 3D Understanding. Given a scene represented by various kinds of 3D data, my ultimate research question is to understand the geometry as well as the semantic meaning of each location in the scene, giving rise to a holistic understanding of the scene. Additionally, I am also interested in developing real-time deep learning models on edge devices.

EDUCATION

Ho Chi Minh City University of Technology (HCMUT), Ho Chi Minh City, Vietnam
Bachelor of Computer Engineering, Aug 2017 - Nov 2021

- English Program, rank 1/3000 (valedictorian)
- GPA: 9.62/10.00 ≈ A+, Excellent Degree
- Thesis: "Real-time monocular 3D object detection system on embedded device" – Thesis Grade: 10.00/10.00
- Advisors: Dr. Duc Dung Nguyen and Dr. Hoang-Anh Pham

Le Hong Phong High School for the gifted, Ho Chi Minh City, Vietnam
Major in *Mathematics*, Aug 2014 - Jun 2017

PUBLICATIONS

Conferences

- **Duc-Tuan Ngo**, Binh-Son Hua, Khoi Nguyen, "ISBNet: a 3D Point Cloud Instance Segmentation Network with Instance-aware Sampling and Box-aware Dynamic Convolution", Under review at *Computer Vision and Pattern Recognition Conference (**CVPR**), 2023*
- **Duc-Tuan 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 (a Q1 Computer Science Journal), 2021*

RESEARCH EXPERIENCE

VinAI Research, Ha Noi, Vietnam
AI Research Resident, Aug 2021 - now

- Advisor: Dr. Khoi Nguyen, AI Research Scientist
- Main research topics: 3D Object Detection, 3D Point Cloud Instance Segmentation
- Project: "3D Point Cloud Instance Segmentation"
  - Introduce an efficient and robust sampling strategy and propose to leverage the bounding box as a geometric cue for the task 3D point cloud instance segmentation.
- 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

- Advisor: Mr. Tuan Ho, AI Research Engineer
- 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.
- Propose a new model deployment approach to optimize the model runtime from 120ms to 60ms on embedded device.

- Awarded as the best Applied Rotation Program project.

Technical talks

- Geodesic-Former: a Geodesic-Guided Few-shot 3D Point Cloud Instance Segmenter, *VinAI Research*, slide, video — Nov, 2022
- Monocular 3D Object Detection, *VinAI Research*, slide — Feb, 2022
- 3D Point Cloud Instance Segmentation, *VinAI Research*, slide — Sep, 2021

Honors and Awards

- Class of 2021 **Valedictorian** of HCMUT (Rank 1/3000, graduated with the highest GPA (9.62/10.0 $\approx$ A+)) — 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
- First Prize in The 6^{th} Science and Technology Symposium for OISP Students, HCMUT — 2020
- KMS Talent Scholarship (Awarded to top 4 students in the CSE Faculty at HCMUT) — 2019
- Gold Medals in Vietnam Southern Regional Olympiad in Physics — 2015, 2016

Technical Skills

Programming skills:

- Proficient: Python (PyTorch, TensorFlow, numpy, scikit-learn)
- Familiar: C++, C#, Latex

Tools:

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

Languages

- Vietnamese: Native
- English: Proficient (IELTS 7.0)

References

Dr. Khoi Nguyen
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VinAI Research, Vietnam
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Dr. Binh-Son Hua
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VinAI Research, Vietnam
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