Phuc, Nguyen Duc Anh

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EDUCATION

University of Information Technology - Vietnam National University Ho Chi Minh, Vietnam
B.Sc. in Computer Science *Nov 2020 − Aug 2023*

High School for the Gifted - Vietnam National University Ho Chi Minh, Vietnam
Specialized in Physics *Sep 2017 − July 2020*

RESEARCH INTERESTS

My research centers on Computer Vision, with a specific emphasis on employing Vision-Language Models to achieve comprehensive understanding of 2D and 3D environments without vocabulary restrictions. Additionally, I am deeply engaged in integrating Multimodal Large-Language Models to facilitate interactive comprehension of 3D scenes. My efforts include the development of algorithms designed to extract both geometric and semantic data from 3D environments, with applications spanning robotics, autonomous driving, and augmented reality domains.

EXPERIENCE

VinAI Research Hanoi, Vietnam
AI Research Resident − Supervised by Dr. Anh Tran and Prof. Cuong Pham *Feb 2023 − Present*

- Research Project: Open-Vocabulary 3D Instance Segmentation
    * Developing an algorithm for tackling the open-vocabulary 3D point cloud instance segmentation by using 2D prior, achieves state-of-the-art results on five different dataset benchmarks. One paper accepted to the CVPR'24, winning two workshop challenges ICCV'23, and CVPR'24.

- Research Project: Class-agnostic 3D Instance Segmentation
    * Developed an algorithm for high-quality class-agnostic 3D instance segmentation by leveraging a tracking foundation model and an optimization-based mask aggregation approach. One paper accepted to the CVPR'25.

- Research Project: Vocabulary-Free 3D Point Cloud Understanding
    * Introducing a new benchmark and algorithms for open-ended 3D point cloud instance segmentation, leveraging Large-Language Models to establish several baselines. One paper detailing this work is currently under review.

- Applied R. Project: Vietnam Geographic Map Understanding − *Advised by Prof. Minh Hoai*
    * VinAI Research collaborates with the Ministry of Information and Communications on a project utilizing computer vision to identify counterfeit Vietnam geographic maps online, facilitated by the introduction of the extensive VinMap dataset. One paper accepted to the Vietnam local conference MAPR'24.

University of Information Technology - Vietnam National University Ho Chi Minh, Vietnam
Research Student *Nov 2020 − Aug 2023*

- Graduate Thesis: Hybrid-Anchor Rotation Detector for Oriented Object Detection (9.8/10.0)
    * Developing a hybrid model for Oriented Object Detection achieves state-of-the-art performance with the least training resource on three dataset benchmarks. Best thesis award.

- Research Project: Aerial Oriented Object Detection
    * Investigating Oriented Object Detection in Aerial Images. Algorithms implementations and dataset development for adverse weather conditions. Four papers accepted at the local conferences/journals.

- Research Project: Page Object Detection
    * Evaluating the new YOLOF on two dataset benchmarks of page object detection. One paper accepted at the local conferences NICS'21.

PUBLICATIONS

- **Phuc Nguyen**, Minh Luu, Anh Tran, Cuong Pham, Khoi Nguyen, "Any3DIS: Class-Agnostic 3D Instance Segmentation by 2D Mask Tracking", in *Computer Vision and Pattern Recognition Conference (**CVPR**), 2025.*

- **Phuc Nguyen**, Minh Luu, Anh Tran, Cuong Pham, Khoi Nguyen, "Open-Ended 3D Point Cloud Instance Segmentation", in *Arxiv Preprint.*

- **Phuc Nguyen***, Tuan Duc Ngo*, Evangelos Kalogerakis, Chuang Gan, 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.*

- **Phuc Nguyen**, Anh Do, Minh Hoai, "Detecting Omissions in Geographic Maps through Computer Vision", in *International Conference on Multimedia Analysis and Pattern Recognition (**MAPR**), 2024.*

- Francis Engelmann, Ayca Takmaz, Jonas Schult, Elisabetta Fedele, Johanna Wald, Songyou Peng, Xi Wang, Or Litany, Siyu Tang, Federico Tombari, Marc Pollefeys, Leonidas Guibas, Hongbo Tian, Chunjie Wang, Xiaosheng Yan, Bingwen Wang, Xuanyang Zhang, Xiao Liu, **Phuc Nguyen**, Khoi Nguyen, Anh Tran, Cuong Pham, Zhening Huang, Xiaoyang Wu, Xi Chen, Hengshuang Zhao, Lei Zhu, Joan Lasenby, "OpenSUN3D: 1st Workshop Challenge on Open-Vocabulary 3D Scene Understanding", in *International Conference on Computer Vision (**ICCV**) Workshops, 2023.*

- **Phuc Nguyen**, "HA-RDet: Hybrid Anchor Rotation Detector for Oriented Object Detection", ***Bachelor's Thesis, 2022.***

- Nguyen Vo, **Phuc Nguyen**, Thang Truong, Luu Ngo, Kiet Huynh, Dung Dinh, Khang Nguyen, "Analysis of Fog density on oriented object detection in aerial images", in *RIVF International Conference on Computing and Communication Technologies (**RIVF**), 2022.*

- Nguyen Vo, **Phuc Nguyen**, Thang Truong, Hoan Nguyen, Khang Nguyen, "Foggy-DOTA: An adverse weather dataset for object detection in aerial images", in *NAFOSTED Conference on Information and Computer Science (**NICS**), 2022.*

- **Phuc Nguyen**, Thang Truong, Nguyen Vo, Khang Nguyen, "Rethinking Classification of Oriented Object Detection in Aerial Images", in *International Journal of Advanced Computer Science and Applications (**IJACSA**), 2022.*

- Khang Nguyen, **Phuc Nguyen**, Doanh Bui, Minh Tran, Nguyen Vo, "Analysis of the influence of de-hazing methods on vehicle detection in aerial images", in *International Journal of Advanced Computer Science and Applications (**IJACSA**), 2022.*

- **Phuc Nguyen**, Luu Ngo, Thang Truong, Thuan Trong Nguyen, Nguyen Vo, Khang Nguyen, "Page object detection with YOLOF", in *NAFOSTED Conference on Information and Computer Science (**NICS**), 2021.*

AWARDS & ACHIEVEMENTS

First Prize CVPR Workshop: VinAI-3DIS ranked top-1 in OpenSUN3D CVPR workshop. (2024)
Second Prize ICCV Workshop: VinAI-3DIS ranked top-2 in OpenSUN3D ICCV workshop. (2023)
Best Thesis Award: Awarded to thesis with the highest grade. (2023)
Third Prize UIT AI Challenge: The team ranked top-3 in Scene Text recognition challenge. (2023)
Second Prize UCPC: Ranked top-2 in UIT Collegiate Programming Contest. (2022)
Expert Codeforces: Reaching Expert title on Codeforces – Competitive Programming platform. (2022)
First Prize UIT-AlgoBootcamp: Winning Competitive Programming Competition at UIT. (2021)
Outstanding Student Scholarship: Awarded to students with the best academic performance. (2021)
Outstanding Student in Physics: Awarded to students with the highest GPA in Physics. (2020)