Tuan-Anh VU

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Research goal

Develop learning-enabled robotic systems that achieve **robust perception**, **actionable 3D/4D world modeling**, and **safe autonomy**—unifying *perception–cognition–action* and validating performance on real platforms through rigorous, repeatable experimentation. My long-term goal is to build **trustworthy embodied intelligence** for real-world autonomy: robots that (i) perceive and reason under distribution shift and visual ambiguity, (ii) maintain accurate **3D/4D** representations of changing scenes, and (iii) safely execute autonomy for navigation, monitoring/inspection, and targeted intervention.

Education

2019 - 2024 **Ph.D. in Computer Science and Engineering**, The Hong Kong University of Science and Technology
Supervisor: Prof. Sai-Kit Yeung
Dissertation title: Robust Scene Understanding in Challenging Scenarios

2011 - 2016 **B.Sc. in Computer Science**, International University - Vietnam National University HCM City
Supervisor: Senior Lecturer Synh Viet-Uyen Ha
Thesis title: Extend Traffic Signs Detection and Recognition Algorithm in Nighttime in Viet Nam

Working Experience

2025 - now **Postdoctoral Scholar**, The University of California, Los Angeles.
Advisor: Prof. M. Khalid Jawed
Research Projects:
- Drone Navigation for Biological Pest Control in High Tunnels
- 3D Scene Reconstruction of Plants and Farms for Agricultural Robots
- Physics-Guided Latent Space Models for Detecting Occluded Objects
- Collision-Free Path Planning for Robotic Pollination

2026 - now **Executive Officers - Secretary**, IEEE Coastal Los Angeles Section, USA

2025 - now **CEO**, Computer Vision for Developing Countries (NPO). Entity No.: B20250147416, EIN: 39-2483919

2023 - 2025 **Researcher**, Centre for Frontier AI Research, A*STAR, Singapore

2020 - 2024 **Teaching Assistant**, The Hong Kong University of Science and Technology
Courses: COMP2011, COMP4431, ISDN2300, ISDN2400, ISDN5300, CSIT6000L

2015 - 2019 **Research Assistant**, HCMIU - Vietnam National University HCM City

Teaching Assistant, HCMIU - Vietnam National University HCM City
Courses: IT1301U, IT1311U, IT097IU , IT092IU

Honors & Awards

Jan 2025 **Doctoral Consortium (Travel Award)**, WACV'25, mentored by Prof. Richard Souvenir and Sharon X. Huang

Oct 2024 **UGC Research Travel Grant**, The Hong Kong University of Science and Technology (for attending ECCV'24)

Oct 2024 **Doctoral Consortium**, ECCV'24, mentored by Prof. Leonidas Guibas

June 2024 **Doctoral Consortium**, IEEE CAI'24, mentored by Prof. Ivor Tsang

Jan 2024 **2nd Place**, USV-based Obstacle Segmentation Challenge, WACV'24 Workshop on Maritime Computer Vision

Jan 2023 **ARAP Research Award**, Centre for Frontier AI Research, A*STAR

Jan 2023 **2nd Place**, USV-based Obstacle Segmentation Challenge, WACV'23 Workshop on Maritime Computer Vision

Nov 2022 **UGC Research Travel Grant**, The Hong Kong University of Science and Technology (for attending ECCV'22)

June 2022 **Travel Grant**, EPFL CIS Edge AI Summer School 2022

Aug 2020 **Best Poster Award**, Machine Learning Summer School - Indonesia (MLSS-Indo) 2020

2019 - 2024 **Postgraduate Scholarship**, The Hong Kong University of Science and Technology

Jul 2019 **Scholarship for SENG Summer Camp for Elite Students**, Hong Kong University of Science and Technology

2014 - 2015 **Scholarship for Excellent Academic Performance**, HCMIU-VNU

Selected Publications

∗ denotes equal contribution, † denotes guidance role for juniors, # denotes corresponding author

Peer-Reviewed Papers

2026 **Tuan-Anh Vu**, Ziqiang Zheng, Chengyang Song, Qing Guo, Ivor W. Tsang, and Sai-Kit Yeung, *"CamoVid60K: A Large-Scale Video Dataset for Moving Camouflaged Animals Understanding"*, **International Journal of Computer Vision (IJCV)** and CVPR'25 CV4Animal **(Oral with Travel Award)**. (Link)

2026 **Tuan-Anh Vu**, Hai Nguyen-Truong, Ziqiang Zheng, Binh-Son Hua, Qing Guo, Ivor W. Tsang, and Sai-Kit Yeung, *"Power of Boundary and Reflection: Semantic Transparent Object Segmentation using Pyramid Vision Transformer with Transparent Cues"*, **WACV'26** and ECCV'24 Transparent & Reflective Objects In the wild Workshop. (Link)

2026 Gyusam Chang, **Tuan-Anh Vu**†, Vivek Alumootil, Harris Song, Deanna Pham, Sangpil Kim#, and M. Khalid Jawed#, *"Reconstruction Using the Invisible: Intuition from NIR and Metadata for Enhanced 3D Gaussian Splatting"*, **AAAI'26** and CVPR'25 - 2nd Workshop on Neural Fields Beyond Conventional Cameras. (Link)

2026 Bohao Qu, Xiaofeng Cao, Bing Li, Menglin Zhang, **Tuan-Anh Vu**, Di Lin, and Qing Guo, *"Exploiting Geometric Structures for Modeling Multi-Agent Behaviors: A New Thinking"*, **AAAI'26**. **Oral - 4.3% of 23,680 submissions**. (Link)

2025 Hai Nguyen-Truong∗, E-Ro Nguyen∗, **Tuan-Anh Vu#**, Binh-Son Hua, Minh-Triet Tran, and Sai-Kit Yeung, *"Vision-Aware Text Features in Referring Image Segmentation: From Object to Context Understanding"*, **WACV'25**. (Link)

2024 Ziqiang Zheng, Yiwei Chen, Huimin Zeng, **Tuan-Anh Vu**, Binh-Son Hua, Sai-Kit Yeung, *"MarineInst: A Foundation Model for Marine Image Analysis with Instance Visual Description"*, **ECCV'24**. **Oral - 2.3% of 8,585 submissions** (Link)

2024 Yingshu Chen, Huajian Huang#, **Tuan-Anh Vu**, Ka-Chun Shum, Sai-Kit Yeung, *"StyleCity: Large-Scale 3D Urban Scenes Stylization"*, **ECCV'24**, ECCV'24 CV4Metaverse workshop **Oral** and US Patent (Filling). (Link)

2024 **Tuan-Anh Vu**∗, Srinjay Sarkar∗, Zhiyuan Zhang, Binh-Son Hua, and Sai-Kit Yeung, *"Test-Time Augmentation for 3D Point Cloud Classification and Segmentation"*, **3DV'24**. (Link)

2023 Tan-Sang Ha∗, Hai Nguyen-Truong∗, **Tuan-Anh Vu**†, and Sai-Kit Yeung, *"MarineVRS: Marine Video Retrieval System with Explainability via Semantic Understanding"*, **OCEANS'23**, Limerick. **Oral** (Link)

2023 Quang-Trung Truong, **Tuan-Anh Vu**†, Tan-Sang Ha, Jakub Lokoc, Ajay Joneja, and Sai-Kit Yeung, *"Marine Video Kit: A New Marine Video Dataset for Content-based Analysis and Retrieval"*, **MMM'23**. **Oral** (Link)

2022 **Tuan-Anh Vu**, Duc-Thanh Nguyen, Binh-Son Hua, Quang-Hieu Pham, and Sai-Kit Yeung, *"RFNet-4D: Joint Object Reconstruction and Flow Estimation from 4D Point Clouds"*, **ECCV'22**. **Oral - 2.7% of 5,803 submissions** (Link)

2022 Yingshu Chen, **Tuan-Anh Vu**, Binh-Son Hua and Sai-Kit Yeung, *"Time-of-Day Neural Style Transfer for Architectural Photographs"*, **IEEE ICCP'22**. **Oral** (Link)

Preprints

2025 Jaehwan Jeong∗, **Tuan-Anh Vu**∗, Radha Lahoti, Vivek Alumootil, Sangpil Kim#, M. Khalid Jawed#, *"Vision-Guided Targeted Grasping and Vibration for Robotic Pollination in Controlled Environments"*, RA-L (under review). (Link)

2025 Harris Song∗, **Tuan-Anh Vu**∗†, Sanjith Menon, Sriram Narasimhan, M. Khalid Jawed, *"HiddenObject: Modality-Agnostic Fusion for Multimodal Hidden Object Detection"*, CVPR'26 (under review). (Link)

2025 Jaehwan Jeong, **Tuan-Anh Vu**†, Mohammad Jony, Shahab Ahmad, Md Mukhlesur Rahman, Sangpil Kim#, M. Khalid Jawed#, *"AgriChrono: A Multi-modal Dataset Capturing Crop Growth and Lighting Variability with a Field Robot"*, CVPR'26 (under review). (Link)

2025 Vivek Alumootil, **Tuan-Anh Vu**†, M. Khalid Jawed, *"DePT3R: Joint Dense Point Tracking and 3D Reconstruction of Dynamic Scenes in a Single Forward Pass"*, CVPR'26 (under review). (Link)

2024 **Tuan-Anh Vu**, Duc-Thanh Nguyen#, Nhat Minh Chung, Qing Guo#, Binh-Son Hua, Ivor W. Tsang, and Sai-Kit Yeung#, *"Catch Me If You Can Describe Me: Open-Vocabulary Camouflaged Instance Segmentation with Diffusion"*, ECCV'24 CV4Ecology workshop and IJCV SI Invitation (minor revision). (Link)

2024 **Tuan-Anh Vu**, Duc-Thanh Nguyen, Binh-Son Hua, Quang-Hieu Pham, and Sai-Kit Yeung, *"RFNet-4D++: Joint Object Reconstruction and Flow Estimation from 4D Point Clouds with Cross-Attention Spatio-Temporal Features"*, IEEE TNNLS, under review. (Link)

2024 Nhat Minh Chung, Sensen Gao, **Tuan-Anh Vu**, Jie Zhang, Aishan Liu, Yun Lin, Jin Song Dong, Qing Guo, *"Towards Transferable Attacks Against Vision-LLMs in Autonomous Driving with Typography"*, preprint. (Link)

2024 Ziqiang Zheng, Jipeng Zhang, **Tuan-Anh Vu**, Shizhe Diao, and Sai-Kit Yeung, *"MarineGPT: Unlocking Secrets of "Ocean" to the Public"*, preprint. (Link)

2023 Ziqiang Zheng, Yiwei Chen, Jipeng Zhang, **Tuan-Anh Vu**, Huimin Zeng, Yue W. Tim, and Sai-Kit Yeung, *"Exploring Boundary of GPT-4V on Marine Analysis: A Preliminary Case Study"*, preprint. (Link)

Professional Activities

2026 - now **Session Co-Chair**, AAAI'26

2025 - now **Area Chair**, ICASSP'26

2024 - now **Organizer**, Computer Vision for Developing Countries (CV4DC) Workshop (ACCV'24 - ICCV'25, Website)

CV4Animals: Computer Vision for Animal Behavior Tracking and Modeling Workshop (CVPR'26, Website)

2021 - now **Conference Reviewer:** CVPR'22-26, ICCV'23-25, ECCV'22-24, NeurIPS'24-25, ICML'25, ICLR'25-26, AAAI'25-26, IJCAI'25, AISTATS'25-26, ICRA'25-26, WACV'22-26, ACM MM'25, ECAI'25, ICMI'25, ISVC'25, ACCV'22-24, ICME'23

2021 - now **Journal Reviewer:** Springer (International Journal of Computer Vision, Visual Intelligence), ACM Transactions on Graphics, IEEE (Transactions on Image Processing, Transactions on Multimedia, Transactions on Big Data, Robotics and Automation Letters, Transactions on Artificial Intelligence), Elsevier (Expert Systems With Applications, Neurocomputing, Computer-Aided Design, Engineering Applications of Artificial Intelligence), IET Image Processing, PeerJ Computer Science, Vietnam Journal of Computer Science

References

Prof. Sai-Kit Yeung
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The Hong Kong University of Science and Technology

Assoc. Prof. M. Khalid Jawed
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Nankai University, China
Adj. Asst. Prof. at National University of Singapore, Singapore