

Anh-Dzung Doan

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EDUCATION

The University of Adelaide

Ph.D. in Computer Science

Supervisors: [Prof. Tat-Jun Chin](#) and [Dr. Yasir Latif](#)

South Australia, Australia

Mar. 2018 - Mar. 2022

Vietnam National University (University of Science)

B.Sc. (with Honours) in IT, with a focus on Computer Science.

Overall GPA: 3.82/4.0

Rank: 3/47 (the Honours program), 3/303 (the faculty) and 5/1635 (the university)

Ho Chi Minh City, Vietnam

Sept. 2009 - Sept. 2013

EXPERIENCE

Postdoctoral researcher

Australian Institute for Machine Learning

July 2021 - Present

South Australia, Australia

- Project: [Edge domain adaptation for maritime situational awareness](#).
 - * Industry partner: [Safran](#).
 - * Develop a human-in-the-loop test time adaptation method, effectively mitigating the domain disparity between simulated and real images, including visible and infrared modalities captured by [Vigy](#).
 - * Develop a “when to adapt” method, saving 50%-90% energy usage for continual domain adaptation without sacrificing the overall performance of the object detection.
- Project: Quantum robust fitting.
 - * Develop a hybrid quantum-classical algorithm for robust fitting by formulating a 0-1 integer linear program to a quadratic unconstrained binary optimisation solvable by a quantum annealer.
 - * The algorithm offers a global solution or an error bound—an improvement over randomised heuristics like RANSAC.

Casual academic staff

The University of Adelaide

July 2019 - Aug. 2022

South Australia, Australia

- Mentored 5 master students, resulting in one winning a full Ph.D. scholarship.
- Teaching assistant in courses “Foundation of Computer Science” and “Programming MATLAB & C”.

Ph.D. student

Australian Institute for Machine Learning

Mar. 2018 - July 2021

South Australia, Australia

- Project: [Life-long visual place recognition](#).
 - * Using state estimation frameworks to develop scalable algorithms for place recognition, exhibiting a sub-linear space-time complexity, particularly effective for scenarios involving continuous accumulation of new data.
 - * Won [IEEE RA-L Best Paper Award 2021](#) and [APRS/IAPR Best Paper Award in DICTA 2019](#).
- Project: [Synthesis of urban scenes from games](#).
 - * Using C++ and Scripthook to develop G2D—an interactive software to collect data from Grand Theft Auto V.
 - * G2D has been widely adopted by robotics and computer vision researchers worldwide.
- Project: [Space robotics and rovers](#)
 - * Using Kalman filter, pose estimation, and deep learning to develop a localisation method for rover navigation.
 - * [Won 3rd place and an innovation award](#) in [NASA Space Robotics Challenge \(Final stage\)](#).

Research intern

Niantic

June 2020 - Oct. 2020

Remote

- Project: Visual positioning system.
 - * Using camera pose estimation and deep learning to develop a 3D map summarisation method.
 - * The method is currently under a [US patent pending](#).

Research assistant

Temasek Laboratories, Singapore University of Technology and Design

Oct. 2014 - Sept. 2017

Singapore

- Project: [Urban-area scene-based localisation](#).
 - * Using quantisation, hashing, and camera pose estimation to develop algorithms for on-device visual localisation.
 - * The system can be processed entirely on a mobile device.

Co-founder

Mobile Vision

Aug. 2013 - July 2014

Ho Chi Minh City, Vietnam

- *Project:* Fine-grained object recognition.
 - * Using Java, C++, OpenCV, and quantisation to develop algorithms, back-end, and front-end architectures.
 - * The software can be deployable on an Android OS.

Research intern

Japan Advanced Institute of Science and Technology

Feb. 2013 - Mar. 2013

Ishikawa, Japan

- Conducted research in human action recognition.

AWARDS

2022	IEEE RA-L Best Paper Award 2021
2021	3rd place & Innovation award in NASA Space Robotics Challenge.
2018-2021	University of Adelaide International Wildcard Scholarship (100% tuition fee, living expense for 3 years, and other expenses (insurance, relocation allowance, thesis allowance, etc)).
2019	IAPR/IPRS Best Paper Award, DICTA 2019.
2013	1st Prize - The Award for Excellent Research in 2013, awarded by Vietnam National University. Top 5 Highest GPA of the graduating class Chancellor's Award for Excellent Achievement in Scientific Research.

PUBLICATIONS

Published 10+ papers in top (A*) conferences & (Q1) journals of AI fields: robotics (e.g., ICRA, IROS, RA-L), computer vision (e.g., CVPR, ICCV, ECCV, TIP), and multimedia (e.g., TMM). See also [Google Scholar](#)

Patent

2022	Dung Anh Doan, Daniyar Turmukhambetov, Soohyun Bae <i>"Repeatability predictions of interest points"</i> US Patent Application Number 17730555
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Journals

2024	(SJR Q1) Anh-Dzung Doan, Bach Long Nguyen, Surabhi Gupta, Ian Reid, Markus Wagner, Tat-Jun Chin <i>"Assessing Domain Gap for Continual Domain Adaptation in Object Detection"</i> Computer Vision and Image Understanding (CVIU) Andrew Du, Anh-Dzung Doan, Yee Wei Law, Tat-Jun Chin <i>"Domain Adaptation for Satellite-Borne Hyperspectral Cloud Detection"</i> Under review (SJR Q1) Bach Long Nguyen, Anh-Dzung Doan, Tat-Jun Chin, Christophe Guettier, Estelle Parra, Ian Reid, Markus Wagner <i>"Sensor Allocation and Online-Learning-based Path Planning for Maritime Situational Awareness Enhancement: A Multi-Agent Approach"</i> IEEE Transactions on Intelligent Transportation Systems (T-ITS)
2021	(SJR Q1) Anh-Dzung Doan, Yasir Latif, Tat-Jun Chin, Ian Reid <i>"HM⁴: Hidden Markov Model with Memory Management for Visual Place Recognition"</i> IEEE Robotics and Automation Letters (RA-L). IEEE RA-L Best Paper Award
2020	(SJR Q1) Anh-Dzung Doan, Yasir Latif, Tat-Jun Chin, Yu Liu, Shin-Fang Ch'ng, Thanh-Toan Do, Ian Reid <i>"Visual Localization Under Appearance Change: Filtering Approaches"</i> Neural Computing and Applications (NCAA). Special Issue on Best of DICTA 2019

- 2019 **(SJR Q1)** Thanh-Toan Do, Tuan Hoang, Dang-Khoa Le Tan, Anh-Dzung Doan, Ngai-Man Cheung
"Compact Hash Code Learning with Binary Deep Neural Network"
 IEEE Transactions on Multimedia (TMM).
- 2018 **(SJR Q1)** Ngoc-Trung Tran, Dang-Khoa Le Tan, Anh-Dzung Doan, Thanh-Toan Do, Tuan-Anh Bui, Mengxuan Tan, Ngai-Man Cheung
"On-device Scalable Image-based Localization via Prioritized Cascade Search and Fast One-Many RANSAC"
 IEEE Transactions on Image Processing (TIP).

Conferences

- 2024 Anh-Dzung Doan, Bach Long Nguyen, Terry Lim, Madhuka Jayawardhana, Ian Reid, Markus Wagner, Tat-Jun Chin.
"Human-in-the-Loop Test-Time Domain Adaptation for Object Detection".
 Under review
- 2022 **(CORE A*)** Anh-Dzung Doan, Michele Sasdelli, Tat-Jun Chin, David Suter.
"A Hybrid Quantum-Classical Algorithm for Robust Fitting".
 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR).
- (CORE A*)** Ragav Sachdeva, Ravi Hammond, James Bockman, Alec Arthur, Brandon Smart, Dustin Craggs, Anh-Dzung Doan, Thomas Rowntree, Elijah Schutz, Adrian Orenstein, Andy Yu, Tat-Jun Chin, Ian Reid
"Robotic Vision for Space Mining"
 International Conference on Robotics and Automation (ICRA).
- 2021 **(CORE A*)** Anh-Dzung Doan, Daniyar Turmukhambetov, Yasir Latif, Tat-Jun Chin, Soohyun Bae
"Learning to Predict Repeatability of Interest Points"
 International Conference on Robotics and Automation (ICRA).
- 2020 **(CORE A*)** Yasir Latif, Anh-Dzung Doan, Tat-Jun Chin, Ian Reid
"SPRINT: Subgraph Place Recognition for INtelligent Transportation"
 International Conference on Robotics and Automation (ICRA).
- 2019 **(CORE A*)** Anh-Dzung Doan, Yasir Latif, Tat-Jun Chin, Yu Liu, Thanh-Toan Do, Ian Reid
"Scalable Place Recognition Under Appearance Change for Autonomous Driving"
 IEEE/CVF International Conference on Computer Vision (ICCV) **(Oral)**.
- Anh-Dzung Doan, Yasir Latif, Thanh-Toan Do, Yu Liu, Shin-Fang Ch'ng, Tat-Jun Chin, Ian Reid
"Visual Localization Under Appearance Change: A Filtering Approach"
 International Conference on Digital Image Computing: Techniques and Applications (DICTA)
APRS / IAPR Best paper award.
- (CORE A)** Shin-Fang Ch'ng, Alireza Khosravian, Anh-Dzung Doan, Tat-Jun Chin
"Outlier-Robust Manifold Pre-Integration for INS/GPS Fusion"
 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
- 2016 **(CORE A*)** Thanh-Toan Do, Anh-Dzung Doan, Ngai-Man Cheung
"Learning to Hash with Binary Deep Neural Network"
 European Conference on Computer Vision (ECCV).
- (CORE A*)** Thanh-Toan Do, Anh-Dzung Doan, Duc-Thanh Nguyen, Ngai-Man Cheung
"Binary Hashing with Semidefinite Relaxation and Augmented Lagrangian"
 European Conference on Computer Vision (ECCV) **(Spotlight)**.
- 2013 Dung A. Doan, Ngoc-Trung Tran, Phong D. Vo, Bac Le, Atsuo Yoshitaka
"Combining Descriptors Extracted from Feature Maps of Deconvolutional Networks and SIFT Descriptors in Scene Image Classification"
 The International Conference on Computational Science and Its Applications (ICCSA) **(Oral)**.
- 2013 Dung A. Doan, Ngoc-Trung Tran, Phong D. Vo, Bac Le
"Learned and Designed Features for Sparse Coding in Image Classification"
 The 10th International Conference on Computing and Communication Technologies (RIVF) **(Oral)**.

Technical reports

2019 Anh-Dzung Doan, Abdul Mohsi Jawaaid, Thanh-Toan Do, Tat-Jun Chin
"G2D: from GTA to Data"
arXiv preprint arXiv:1806.07381.
[\[Project page\]](#)

MENTORSHIP

I co-supervise four Ph.D. students

- Andrew Du - Topic: Edge domain adaptation.
- Ryan Faulkner - Topic: Diffusion models for LiDAR.
- Tam Nguyen - Topic: Neuromorphic computing for robust fitting.
- Anh Vu Nguyen - Topic: Active learning for streaming data.

ACTIVITIES

Member of Technical Program Committee

- RSS 2023 Workshop on Towards Safe Autonomy: New Challenges and Trends in Robot Perception ([website](#))

Regular reviewer for top AI conferences and journals (robotics, computer vision, machine learning):

- IEEE Robotics and Automation Letters (RA-L).
- International Journal of Robotics Research (IJRR).
- IEEE Transactions on Multimedia (TMM).
- APSIPA Transactions on Signal and Information Processing.
- IEEE Transactions on Emerging Topics in Computational Intelligence.
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition.
- IEEE/CVF International Conference on Computer Vision (ICCV).
- European Conference on Computer Vision (ECCV).
- Asian Conference on Computer Vision (ACCV).
- Asian Conference on Machine Learning (ACML).
- AAAI Conference on Artificial Intelligence.
- Digital Image Computing: Techniques and Applications (DICTA).

ENGINEERING SKILLS

Languages: C/C++, Python, MATLAB, Java, SQL.

Frameworks: Robot Operating System (ROS), Pytorch, Streamlit.

Developer Tools: Git, Eclipse, PyCharm, Visual Studio.

Libraries: Detectron2, Faiss, OpenCV, Gurobi, COLMAP, Numpy, Matplotlib.

REFERENCES

Prof. Tat-Jun Chin.
Professorial Chair of Sentient Satellites, SmartSat CRC.
Director of AI for Space, Australian Institute for Machine Learning.
School of Computer and Mathematical Sciences.
The University of Adelaide, Australia.
Email: tat-jun.chin@adelaide.edu.au
Website: <https://cs.adelaide.edu.au/~ssl/>

Dr. Yasir Latif.
Senior Researcher Associate.
Australian Institute for Machine Learning.
The University of Adelaide, Australia.
Email: yasir.latif@adelaide.edu.au
Website: <http://ylatif.github.io>

Assoc. Prof. Markus Wagner.
Smart Energy Systems Associate Director, Monash Energy Institute.
Department of Data Science and AI.
Monash University, Australia.
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