Anh-Dzung Doan

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EDUCATION

The University of Adelaide　　　　　　　　　　　　　　　　South Australia, Australia
Ph.D. in Computer Science　　　　　　　　　　　　　　　　　　*Mar. 2018 - Mar. 2022*
Supervisors: Prof. Tat-Jun Chin and Dr. Yasir Latif

Vietnam National University (University of Science)　　　Ho Chi Minh City, Vietnam
B.Sc. (with Honours) in IT, with a focus on Computer Science.　　*Sept. 2009 - Sept. 2013*
Overall GPA: 3.82/4.0
Rank: 3/47 (the Honours program), 3/303 (the faculty) and 5/1635 (the university)

EXPERIENCE

Postdoctoral researcher　　　　　　　　　　　　　　　　　July 2021 - Present
Australian Institute for Machine Learning　　　　　　　　　　*South Australia, Australia*
- *Project:* Edge Domain Adaptation for Maritime Situational Awareness.
  - ∗ Industry partner: Safran.
  - ∗ Our humain-in-the-loop test time adaptation method exhibits promising outcomes in mitigating the domain disparity between simulated and real images, including visible and infrared modalities captured by Vigy.
  - ∗ Our "when to adapt" strategy helps save 50%-90% energy usage for continual domain adaptation without sacrificing the overall performance of the object detector.
- *Project:* Quantum robust fitting.
  - ∗ Developed a hybrid quantum-classical algorithm for robust fitting
  - ∗ Our method offers a global solution or an error bound—a practical improvement over randomised heuristics like RANSAC.

Casual academic staff　　　　　　　　　　　　　　　　　　July 2019 - Aug. 2022
The University of Adelaide　　　　　　　　　　　　　　　　　*South Australia, Australia*
- Mentored five master students in their final projects
- Teaching assistant in courses "Foundation of Computer Science" and "Programming MATLAB & C"

Ph.D. student　　　　　　　　　　　　　　　　　　　　　　Mar. 2018 - July 2021
Australian Institute for Machine Learning　　　　　　　　　　*South Australia, Australia*
- *Project:* Semantics for Localisation and Place Recognition.
  - ∗ Developed algorithms for Life-long Visual Place Recognition.
  - ∗ Won IEEE RA-L Best Paper Award 2021 and APRS/IAPR Best Paper Award in DICTA 2019
- *Project:* Synthesis of urban scenes from games
  - ∗ Developed G2D (website)—an interactive software to collect data from Grand Theft Auto V .
  - ∗ G2D has been widely adopted by robotics and computer vision researchers worldwide.
- *Project:* NASA Space Robotics Challenge (Final stage)
  - ∗ Led the development of the localisation solution for The University of Adelaide team.
  - ∗ Won 3rd place and an innovation award.

Research intern　　　　　　　　　　　　　　　　　　　　　June 2020 - Oct. 2020
Niantic　　　　　　　　　　　　　　　　　　　　　　　　　　*Remote*
- *Project:* Visual positioning system.
  - ∗ Developed a 3D map summarisation method **(US patent pending)**.

Research assistant　　　　　　　　　　　　　　　　　　　　Oct. 2014 - Sept. 2017
Temasek Laboratories, Singapore University of Technology and Design　　*Singapore*
- *Project:* Urban-Area Scene-Based Localisation
  - ∗ Developed algorithms for on-device visual localisation.
  - ∗ Our visual localisation system could be processed entirely on a mobile device.

Co-founder Aug. 2013 - July 2014
Mobile Vision *Ho Chi Minh City, Vietnam*
- *Project:* Fine-grained object recognition mobile.
  - ∗ Developed algorithms, back-end, and front-end architectures.

Research intern Feb. 2013 - Mar. 2013
Japan Advanced Institute of Science and Technology *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
"Repeatability predictions of interest points"
US Patent Application Number 17730555

Journals

2024   **(SJR Q1)** Anh-Dzung Doan, Bach Long Nguyen, Surabhi Gupta, Ian Reid, Markus Wagner, Tat-Jun Chin
"Assessing Domain Gap for Continual Domain Adaptation in Object Detection"
Computer Vision and Image Understanding (CVIU)

Andrew Du, Anh-Dzung Doan, Yee Wei Law, Tat-Jun Chin
"Domain Adaptation for Satellite-Borne Hyperspectral Cloud Detection"
Under review

(SJR Q1) Bach Long Nguyen, Anh-Dzung Doan, Tat-Jun Chin, Christophe Guettier, Estelle Parra, Ian Reid, Markus Wagner
"Sensor Allocation and Online-Learning-based Path Planning for Maritime Situational Awareness Enhancement: A Multi-Agent Approach"
IEEE Transactions on Intelligent Transportation Systems (T-ITS)

2021   **(SJR Q1)** Anh-Dzung Doan, Yasir Latif, Tat-Jun Chin, Ian Reid
"HM^4: Hidden Markov Model with Memory Management for Visual Place Recognition"
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
"Visual Localization Under Appearance Change: Filtering Approaches"
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 Jawaid, 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 Learnin (ACML).
- AAAI Conference on Artificial Intelligence.
- Digital Image Computing: Techniques and Applications (DICTA).

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
School of Computer Science.
Professorial Chair of Sentient Satellites, SmartSat CRC.
Director for AI for Space, Australian Institute for Machine Learning.
The University of Adelaide, Australia.
Email: tat-jun.chin@adelaide.edu.au
Website: https://cs.adelaide.edu.au/~ssl/

Assoc. Prof. Markus Wagner
Department of Data Science and AI, Faculty of Information Technology
Smart Energy Systems Associate Director, Monash Energy Institute
Monash University, Australia.
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Dr. Yasir Latif
Senior Research Associate, Australian Institute for Machine Learning.
The University of Adelaide, Australia
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Website: http://ylatif.github.io