

NGUYEN XUAN THANH

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SUMMARY

I am a PhD student in Electrical Engineering at KAIST, under the supervision of Professor [Chang Dong Yoo](#). My research focuses on **reinforcement learning, generative modeling, and robotics**. I aim to develop principled learning algorithms that enhance the decision-making accuracy, controllability, and robustness of autonomous agents.

My recent work explores **diffusion** and **flow-matching models** for **policy learning**, aiming to move beyond imitation learning toward more general and scalable robot learning frameworks. More broadly, I am interested in enabling robots to solve complex tasks in challenging environments, with a focus on safe training, reliable deployment, and diverse behaviors.

Prior to my doctoral studies, I worked as an **Embedded Software Engineer** with over **eight years** of experience, including four years in firmware development and four years as a freelance developer specializing in Qt applications for both domestic and international clients.

EDUCATION

Combine M.S. & Ph.D. in Electrical Engineering – KAIST Korea, 2018 – 2026

- Researching new algorithms for offline reinforcement learning and offline-to-online reinforcement learning.

B.E. in Electrical Engineering (Honors Program) – HCMUT Vietnam, 2010 – 2015

- Studied advanced control algorithms and designed fixed-wing aircraft systems (including aircraft hardware and ground control stations) for altitude stabilization and path following.

EXPERIENCE

Full-time Ph.D. – UAIM Lab Korea, 2018 – Present

- Research and publish papers in Deep Learning and Deep Reinforcement Learning.

Embedded Software Engineer – Freelancer Vietnam/Norway/Korea, 2016 – 2018

- AI aided Solar Management System – WEEV (Korea)
- Ground Control Station and Indoor Drone Navigation — Argosdyne (Korea)
- Yaskawa Filming Aided System — Libre Technology (Malaysia).
- Aurora Filming Aided System — KFX Technology (America).

Embedded Software Engineer – STEINSVIK Vietnam/Norway, 2016 – 2018

- Steinsvik underwater vision system for fish farming monitoring – Steinsvik (Norway).
- Steinsvik Camera Diagnostic Software – Used for quality assurance and maintenance- Steinsvik (Vietnam).

Embedded Software Engineer – SCTV Vietnam, 2015 – 2016

- SCTV Video Decoding – worked on cable set-top box systems.

Embedded Software Engineer – FPT Vietnam, 2014 – 2015

- AUTOSAR-compliant automotive firmware for Renesas automotive microcontrollers.

SKILLS

Deep Learning Programming

- Proficient in Pytorch, Jax, Tensorflow (with Python).

Embedded software programming

- Firmware (C/C++), GUI (Qt C++), ROS/ROS2 (C++/Python).

Other skills

- Proficient in Docker, Git, Bash Scripting, and related tools, enabling high-level PhD research.

ACADEMIC ACTIVITIES

UAIM Laboratory Leader - KAIST Korea, 2022 – 2024

Teaching Assistant - KAIST Korea, 2020 – 2024

- Introduction to Machine Learning – Spring 2020, Fall 2024.
- Statistical Learning Theory – Fall 2021.

Reviewer – NEURIPS, ICLR, ICML, AAAI, IROS, ... Korea, 2020 – 2026

KAIST Ambassador Korea, 2022 & 2024

AWARDS

Full Kaist Scholarship for Master-PhD program Korea, 2018 – 2026

HCMUT Excellent Student Scholarship for five consecutive years Korea, 2010 – 2015

PUBLICATIONS

International Conference

1. **Thanh Nguyen**, Tri Ton, Hongbin Choe, Tung M. Luu, Chang D. Yoo. **Fast and Highly Expressive Policy Learning for Offline Reinforcement Learning via Bootstrapped Flow Q-Learning** – *ICML 2026*.
2. **Thanh Nguyen**, Abu Hanif, Hwanhee Kim, Chang D. Yoo. **xxxxxxxxxxxxxxxxxxxxx Diffusion Offline Reinforcement Learning** – *IROS (Under Review) 2026*.
3. **Thanh Nguyen**, Chang D. Yoo. **One-Step Flow Q-Learning: Addressing the Diffusion Policy Bottleneck in Offline Reinforcement Learning** – *ICLR 2026*.
4. **Thanh Nguyen**, Tung M. Luu, Tri Ton, Chang D. Yoo. **Towards Robust Policy: Enhancing Offline Reinforcement Learning with Adversarial Attacks and Defenses** – *ICPRAI 2024*.
5. Tung Luu, **Thanh Nguyen**, Joshua Tian Jin Tee, Sungwoong Kim, Chang D. Yoo. **Mitigating Adversarial Perturbations for Deep Reinforcement Learning via Vector Quantization** – *IEEE IROS 2024*.
6. Thang Vu, Kookhoi Kim, Tung M. Luu, **Thanh Nguyen**, Chang D. Yoo. **SoftGroup for 3D Instance Segmentation on Point Clouds** – *CVPR 2022*.
7. **Thanh Nguyen**, Tung Luu, Thang Vu, Chang D. Yoo. **Sample-efficient Reinforcement Learning Representation Learning with Curiosity Contrastive Forward Dynamics Model** – *IROS 2021*.
8. **Thanh Nguyen**, Tung Luu, Trung Pham, Sanzhar Rakhimkul, Chang D. Yoo. **Robust MAML: Prioritization Task Buffer for Model-Agnostic Meta-Learning** – *ICASSP 2021*.

International Journal

1. **Thanh Nguyen**, Hee Suk Yoon, Tung M. Luu, Eunseop Yoon, Chang D. Yoo. **Object Hallucination Reduction in LVLMM-Based Image Captioning** – *IEEE ACCESS (Under Review) 2026*.
2. **Thanh Nguyen**, Tung M. Luu, Tri Ton, Sungwoong Kim, Chang D. Yoo. **Uncertainty-Aware Rank-One MIMO Q Network Framework for Accelerated Offline Reinforcement Learning** – *IEEE ACCESS 2024*.
3. Thang Vu, Kookhoi Kim, **Thanh Nguyen**, Tung M. Luu, Junyeong Kim, Chang D. Yoo. **Scalable SoftGroup for 3D Instance Segmentation on Point Clouds** – *TPAMI 2023*.
4. **Thanh Nguyen**, Trung Xuan Pham, Chaoning Zhang, Tung M. Luu, Thang Vu, Chang D. Yoo. **DimCL: Dimensional Contrastive Learning for Self-Supervised Learning** – *IEEE ACCESS 2023*.
5. Tung Luu, Thang Vu, **Thanh Nguyen**, Chang D. Yoo. **Visual Pretraining via Contrastive Predictive Model for Pixel-Based Reinforcement Learning** – *MDPI SENSORS 2022*.
6. Tung Luu, **Thanh Nguyen**, Thang Vu, Chang D. Yoo. **Utilizing Skipped Frames in Action Repeats for Improving Sample Efficiency in Reinforcement Learning** – *IEEE ACCESS 2022*.
7. Trung Xuan Pham, Jin Woong Choi, Rusty John Lloyd Mina, **Thanh Nguyen**, Sultan Rizky Madjid, Chang D. Yoo. **LAD: A Hybrid Deep Learning System for BPPV Diagnosis** – *IEEE ACCESS 2022*.

Domestic conference

1. **Thanh Nguyen**, Tung Luu, Thang Vu, Chang D. Yoo. **A Pre-training Framework for Visual Representation Learning in RL** – *Theieie 2021*.
2. **Thanh Nguyen**, Chang D. Yoo. **A Survey on Meta-Learning** – *KAIA 2020*.
3. **Thanh Nguyen**, Hieu Nguyen, Chang D. Yoo. **GDCA-GAN for Single Image Super-Resolution with Dual Discriminators** – *KAIA 2019*.

Workshop

1. **Thanh Nguyen**, Tung Luu, Chang D. Yoo. **Fast and Memory-Efficient Uncertainty-Aware Offline RL with Rank-One MIMO Q Network** – *IEEE IROS Workshop 2023*.
2. **Thanh Nguyen**, Tung Luu, Chang D. Yoo. **Towards Robust Robot Perception with Adversarial Attacks and Defenses** – *IEEE ROMAN Workshop 2023*.

Patent

1. Computing apparatus and method for end-to-end deep RL framework, KR-10-2022-0173811 (2022.12.13).
2. Computing apparatus and method for end-to-end deep RL framework, US Application.
3. Framework for representation learning using SSL and dimensional contrastive learning, KR Application.