

Jia-Fong Yeh

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Policy Learning, Deep Robotics, Computer Vision

Education

National Taiwan University (NTU), Taipei, Taiwan

Fall 2019 – Spring 2025

Ph.D., Dept. of Computer Science and Information Engineering

Advisor: **Prof. Winston H. Hsu**

National Taiwan Normal University (NTNU), Taipei, Taiwan

Fall 2013 – Spring 2019

B.S. & M.S., Dept. of Computer Science and Information Engineering

Advisor: **Prof. Tsung-Che Chiang** and **Prof. Shun-Shii Lin**

Research Interests and Selected Projects

My research focuses on advancing **policy learning**, and I have conducted separate projects to address **three major challenges** in this field: (1) the complexity of the environment, (2) the lack of reward signals, and (3) the safety concerns on policy's behavior, as described below.

Learning Multi-stage Manipulation Tasks from Few Demonstrations [AAAI 2022]

Keywords: few-shot learning, domain shift, imitation learning, stage-awareness

- We address three practical challenges in **few-shot imitation (FSI)**: (1) multi-stage tasks, (2) length-variant and misaligned demonstrations, and (3) experts with different appearance. We propose SCAN, which equips a novel **stage-conscious attention module** that can filter out useless frames in demonstrations. Our SCAN achieves superior performance and provides interpretable visualization results.

Vision-Instruction Correlation Reward Generation [ICLR 2025]

Keywords: VLM, cross-modality alignment, reward generation

- We study **generating nuanced rewards** from current visual observation and task instructions for long-horizon manipulation tasks. Our VICtoR leverages **GPT-4** to generate task knowledge and uses **CLIP**'s embeddings to evaluate the task progress. Classical RL methods can learn complex tasks when trained with our VICtoR reward model.

Monitoring Policy's Behaviors in Unseen Environments [NeurIPS 2024]

Keywords: erroneous behavior detection, domain shift, policy monitoring

- We introduce the novel adaptable error detection (AED) task, aiming to discover the **inconsistency** between the **policies' behavior** and the **intent** of **demonstrations**. We further propose Pattern Observer (PrObE) to learn the behavior pattern in the features extracted by the policies. From the experimental results on our AED benchmark, PrObE can detect the erroneous behavior timely across various tasks and policies.

Experiences & Services

Research Intern, Sony Group Corporation, Tokyo, Japan

2023/10 – 2024/03

- Mentor: Dr. Wang Zhao and Shingo Takamatsu
- Topic: *Reinforcement Learning with LLM/VLM guidance*

Reviewers: CVPR (2024-2025), NeurIPS (2024-2025), ICML (2025), ICLR (2025), ICCV (2025), AAAI (2023-2025), WACV (2024-2025), ICASSP (2024), ICDL (2024), ICMLW (2024), CVPRW (2022)

Skills

Programming Languages – C/C++ 、 Python 、 C# (Basic)

ML Packages – PyTorch 、 TensorFlow (Intermediate) 、 scikit-learn 、 numpy

Robot Simulation – Pybullet 、 Isaac Sim 、 Coppeliassim

Others – Git 、 HTML 、 CSS 、 mysql (Basic) 、 OpenMP (Intermediate) 、 WebGL (Intermediate)

Selected Awards

2024 | **NeurIPS 2024 Scholar Award** - *NeurIPS*, awarded with financial subsidies

2022 | **NOVATEK PhD Scholarship** - *NOVATEK*, one of eight recipients [\[link\]](#)

2019 | **Master Thesis Award** - *Operations Research Society of Taiwan* [\[link\]](#)

2018 | **ITSA Programing Contest** - *ITSA Annual Collegiate Programming Contest* [\[link\]](#)

2016-2022 | **Computer Games** – 16 medals in ICGA, TCGA, TAAI Competitions

First-author Works | AR = acceptance rate | citations: 360+ | h-index: 7 | i-10 index: 6

ICLR 2025

VICtoR: Learning Hierarchical Vision-Instruction Correlation Rewards for Long-horizon Manipulation (**co-first work, AR: 32.08%**)

NeurIPS 2024

AED: Adaptable Error Detection for Few-shot Imitation Policy (**AR: 25.8%**)

arXiv 2024

Shared-unique Features and Task-aware Prioritized Sampling on Multi-task Reinforcement Learning (**co-first work**)

AAAI 2022

Stage Conscious Attention Network (SCAN): A Demonstration-conditioned Policy for Few-shot Imitation (**co-first work, AR: 15%**)

arXiv 2020

Large Margin Mechanism and Pseudo Query Set on Cross-Domain Few-Shot Learning (**citation: 20+**)

CEC 2019

Modified L-SHADE for Single Objective Real-Parameter Optimization

TAAI 2016

Snake Game AI: Movement Rating Functions and Evolutionary Algorithm-Based Optimization

I also have publications in **IEEE TMM**, **IEEE TAI**, **CoRL**, **ICRA**, **ICASSP**, **BMVC**, **ICIP**, **ECCVW**, and **NeurIPS**, please find them from my [Google Scholar](#).