FELIX YANWEI WANG

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EDUCATION

Massachusetts Institute of Technology **Cambridge, MA**
Ph.D. EECS (Robot Learning) | GPA: 4.5/5.0 (Advisor: Julie Shah) *2019 - Current*

Northwestern University **Evanston, IL**
M.S. Robotics | GPA: 4.0/4.0 *2019*

Middlebury College **Middlebury, VT**
B.A. Physics & Computer Science | GPA: 3.75/4.0 *2017*

RESEARCH

Ph.D. thesis: Interactive Task and Motion Imitation (Prof. Julie Shah) **Cambridge, MA**
Temporal Logic Imitation: Learning Plan-Satisficing Motion Policies from Demonstrations *2021 - Current*

- Proved that our LfD algorithm (imitate at both the task abstraction and motion level) produces continuous policies that are guaranteed to simulate a discrete plan of successful task replay despite arbitrary perturbations
- Demonstrated 100% empirical success rate of a non-prehensile multi-step scooping task on a Franka robot
- Recording large-scale motion trajectory dataset by VR and TAMP in simulated kitchen environments
- Designing an interactive diffusion policy that affords human-robot interaction as a way of task specification

Learning Grounding Classifiers for LLM Planning (Prof. Julie Shah) **Cambridge, MA**
Grounding Language Plans in Demonstrations through Counterfactual Perturbations *2019 - 2021*

- Augmented a few demonstrations with local perturbations to produce more successful and failing trajectories
- Trained an end-to-end explanation-based network to differentiate successes from failures and as a by-product learned classifiers that map continuous states to discrete manipulation mode families without dense labeling
- Robustified motion policies against external perturbations with learned classifiers and LLM-based replanning

Self-Supervised Embodied Visual Navigation (Prof. Pulkit Agrawal) **Cambridge, MA**
Visual Pre-training for Navigation: What Can We Learn from Noise? *2019 - 2021*

- Collected robot interaction dataset in a photo-realistically simulated Habitat environments
- Generated large-scale noise dataset consisting of fractal noise, Perlin noise and random shapes
- Pretrained a visual model with crop prediction on noise images that leads to efficient learning of a downstream navigation policy with a few robot interactions

Deep Reinforcement Learning (Prof. Mitra Hartmann) **Evanston, IL**
Deep Q-Network to model active whisking of rats for shape detection *2018 - 2019*

- Modeled rats' whisking behavior to sense objects as optimizing an active sensing sequence
- Built a dataset of randomized shapes and a visualization tool for observing measurements
- Designed reward function to favor high information content, which leads to biologically realistic behavior

Active Learning (Prof. Todd Murphey) **Evanston, IL**
Infotaxis and Ergodic Exploration for target localization *2018 - 2019*

- Expedited a single target search with an imperfect sensor model using information gain method
- Extended to multi-target search using ergodicity to attain a good coverage over exploration space

PUBLICATIONS

- Patent No. 17120790: Anatomical Feature Identification and Targeting
- Temporal Logic Imitation: Learning Plan-Satisficing Motion Policies **(CoRL 2022 Oral)**
- Visual Pre-training for Navigation: What Can We Learn from Noise? **(IROS 2023)**
- Improving Small Language Models on PubMedQA via Generative Data Augmentation **(KDD 2023)**
- Grounding Language Plans in Demonstrations Through Counter-Factual Perturbations **(ICLR 2024)**