FELIX YANWEI WANG

(802) 349-7611 | felixwang@u.northwestern.edu | **portfolio:** https://yanweiw.github.io

EDUCATION

Northwestern University   **Evanston, IL**
M.S. Robotics | GPA: 4.0   *December 2018*

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

RESEARCH

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

- 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
- Initialized a Long Short Term Memory (LSTM) network to predict shape based on offline observations
- Trained a Deep Q-Network (DQN) to optimize a measurement sequence based on online observations
- Shaped 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   *Spring 2018*

- Researched exploration strategies under partially observable Markov decision process (POMDP) assumption
- 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

Swarm Robotics (Prof. Michael Rubinstein)   **Evanston, IL**
Multi-agent simulation and hovercraft localization   *Spring 2018*

- Implemented coordination, segregation and locomotion of a robot swarm on the Kilobot simulation engine
- Designed a localization algorithm for a rotating hovercraft using a single light sensor
- Prototyped a low-cost hovercraft to realize simulation on hardware

Computational Fluid Dynamics (Prof. Richard Wolfson)   **Middlebury, VT**
Physics thesis: Energy efficiency of a bird-flight inspired wind generator   *2016 - 2017*

- Modeled air dynamics of Dual Wing Generator (DWG) with computational fluid dynamics software
- Verified the higher efficiency of DWG than traditional wind turbines in low wind environments

WORK EXPERIENCE

Auris Surgical Robotics   **Redwood City, CA**
Computer Vision Engineer   *Summer 2018*

- Processed and annotated endoscopic images of porcine anatomy to build an anomaly instance dataset
- Implemented semantic segmentation on the dataset using Fully Convolutional Network (FCN)
- Designed and built an instance segmentation network based on Mask-RCNN
- Augmented instance segmentation capability with instance tracking
- Fine-tuned the instance tracking pipeline on the dataset I produced to track anomaly
- Undergoing patent application

SKILLS

Computer Skills: Python, C++, MATLAB, TensorFlow, Keras, ROS, Git, Linux
Language Skills: Native Chinese, Fluent English
Domain Knowledge: Reinforcement Learning, Deep Learning, Active Learning, Probabilistic Robotics, Dynamics, Robotic Manipulation, Swarm Robotics, Computer Vision