Jiawei Lu

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Education

Columbia University **Dec 2022 Expected**
Master of Science in Electronic Engineering *New York, NY*
Overall GPA: 3.75/4.00
Related Courses: Deep Learning, Computer Vision, Reinforcement Learning, NLP

Nanjing University **Sep 2017 – Jun 2021**
Master of Science in Electronic Engineering *Nanjing, China*
Overall GPA: 4.46/5.00
Honors and Awards: National Scholarship (8/600), Sep 2019

Technical Skills

Programming Languages: Python(PyTorch, TF), C, Java, C++, SQL, MATLAB, HTML/CSS
Machine Learning: Vision(object detection, video tracking), RL(DQN), Optimization, NLP (RNNs)
Cloud Services: Google Cloud Platform, Amazon Web Services

Recent Projects

Improvements of Active Object Localization with Deep Reinforcement Learning **Oct 2021 – Dec 2021**

- Replaced feature extractor part of Q-Network with several advanced CNNs.
- Proposed a more flexible 25-action model and used extra trigger training to avoid the unbalance of trigger samples.
- Changed reward function to avoid undesired activity in the agent.
- Improved Inhibition of Return mechanism by a new prediction algorithm.

A New Backbone for Hyperspectral Image Construction and Improvement based on Mask Mixture Training and Energy Normalization **Oct 2021 – Dec 2021**

- Implemented a modified version of U-Net named SSI-ResU-Net.
- Utilized Mixed Training and Energy Normalization to increase the generalization ability of SSI-ResU-Net.

Research Experience

Motion Planning in Understructured Road Environments with Stacked Reservation Grids **Feb 2020 – Oct 2021**
***Supervisor**: Prof. Alexandre Bayen, University of California, Berkeley* *Berkeley, CA*

- Created vehicle trajectory datasets for training autonomous vehicles.
- Applied Faster R-CNN for detecting vehicles and pedestrians in traffic.
- Used QGIS and wrote Python script to achieve the correspondence between image pixel coordinates and QGIS coordinates, thus realizing image re-projection.
- Realized video stabilization by applying the color detection algorithm.

Application of Reinforcement Learning in Single-Channel Speech Enhancement System **Jan 2021 – Jun 2021**
***Supervisor**: Prof. Jing Lu, Nanjing University* *Nanjing, China*

- Designed a reward function for the output a priori signal-to-noise ratio of the Deep Xi system based on the Q-Learning algorithm of reinforcement learning.
- Predicted the action-value function Q between the input signal and the output a priori signal-to-noise ratio estimation using a deep neural network.
- Utilized Perceptual Evaluation of Speech Quality to validate the effectiveness of the proposed reinforcement learning-based self-optimization Xi-Q Algorithm.

Publication

Wu, F., Wang, D., Hwang, M., Hao, C., **Lu, J.**, Darrell, T., & Bayen, A. Motion Planning in Understructured Road Environments with Stacked Reservation Grids. Perception, Action, Learning (PAL) @ ICRA (2020).

Patent

A Refined Path Planning Method for Intelligent Transportation based on the Grid Expansion Model (patent No.: CN109959388A), 04/2019