Jinwei (Karl) Xing

jinweix1@uci.edu | 949-774-9756

Education

University of California, Irvine — Irvine, CA
PhD in Cognitive Neuroscience; GPA: 4.0/4.0 — *Sep 2018 - Jul 2023(Expected)*

Courses: Neural Networks for Reinforcement Learning, Machine Learning, Evolutionary Neural Networks, Computational Neuroscience

Sichuan University — Chengdu, China
Bachelor of Engineering in Computer Science and Technology; GPA: 3.82/4.0 — *Sep 2013 - Jul 2017*

Courses: Probability and Mathematical Statistics, Introduction to Artificial Intelligence, Data Structure

Experience

Lieluobo Co., Ltd. — Shanghai, China
Machine Learning Engineer — *Dec 2017 - Jun 2018*

- Lieluobo is a startup company which provides a headhunting and recruitment platform
- Utilized word2vec to train the word embeddings for words in job description and candiates' experience
- Trained models to compute the matching degree of job description and candidates' experience

Projects

- **Reinforcement Learning Based Explainable Autonomous Driving in CARLA Simulator**: (video)
  - Designed reinforcement learning tasks for autonomous driving in CARLA simulator
  - Used PPO to learn continous vehicle control to drive in CARLA simulator at desired speeds
  - Generated perturbation-based saliency maps to explain the learned policy
- **Domain Adaptation in Reinforcement Learning Via Latent Unified State Representation**: (video)
  - Proposed to improve domain adaptation in reinforcement learning by training a specialized VAE to extract generalized state representation for states across different RL tasks. In this proposed latent state representation, domain-specific information is filtered and only domain-general information is kept.
  - Utilized RLlib to train PPO algorithms in two driving tasks to demonstrate the effectiveness of our approach
  - Our approach achieved better domain adaptation performance than the SOTA approaches such as DARLA.
  - One paper is in submission.
- **RLCodebase: Model-Free Reinforcement Learning Codebase**: (code)
  - Designed and implemented a modular framework for model-free reinforcement learning algorithms
  - RLCodebase now supports popular reinforcement learning algorithms such as DQN, A2C, PPO, DDPG, TD3 and SAC. It also supports prioritized experience replay.
  - The modularity of RLCodebase makes it easy for beginners to get started with RL and convenient for researchers to try ideas.
- **Outdoor Self Driving Robot Vehicles With Reinforcement Learning**: (video)
  - Designed and implemented an Android app which supports manual robot vehicle control, socket communication and data collection
  - Finished pixel-level image annotations and implemented real-time semantic segmentation as state preprocessing
  - Utilized Pytorch and Deep Q Learning to train the robot vehicle to drive on road and navigate safely in Aldrich Park
  - Set up experiments for demonstrations of neuromodualtion mechanism and implemented the application of patience modulation on self-driving robot navigation
  - This work was accepted by IJCNN 2020.
- **CARLsim5:A GPU-accelerated Biologically Plausible Spiking Neural Network Simulator**: (code)
  - Designed and implemented the benchmark system for CARLsim
  - Implemented short-term plasticity learning rule for CPU (C++) and GPU (CUDA) mode
  - Supported CARLsim with saving and loading functions

Skills

- **Languages**: Python, Java, C, C++, Matlab
- **Tools & Frameworks**: Pytorch, Tensorflow, Docker, Git, Kubernetes, CARLA, RLlib