Kaiqian Han

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EDUCATION

Tsinghua University   Beijing, China
Bachelor of Engineering in Automation; GPA: 3.72/4.00   Rank:top 10%   *Expected July 2020*

Selected 4.0 courses: Calculus, Linear Algebra, Fundamentals of Computer Program Design, Introduction to complex analysis, Data Structures, Probability and Statistics, Signals and system analysis, Automatic control theory, Operations Research, Fundamental Pattern Recognition

Tsinghua University   Beijing, China
Minor in Statistics; GPA: 4.00/4.00   *Expected July 2020*

Courses: Elementary Probability Theory, Statistical Inference, Linear Regression Analysis, Multivariate Statistical Analysis, Introduction to Bayesian Statistics

SKILLS

- **Languages:**Python, C++, C, Matlab, R, Verilog, JavaScript
- **Technologies**: Git, Latex
- **Libraries**: TensorFlow, PyTorch, Keras, Scikit-Learn, Numpy, Gym
- **English proficiency**: GRE:329, Toefl:108

RESEARCH INTERESTS

My research interests lie in the general area of machine learning, particularly in reinforcement learning. I am interested in modeling agents with statistical tools. Currently I am focusing on several directions:

- **Representational learning in reinforcement learning:** Subgoal discovery, State abstraction, Auxiliary tasks.
- **Machine Learning:** Lifelong Learning.
- **Applications:** Multi-agent systems, Autonomous driving.

PUBLICATIONS

Structural Multi-agent Learning

Kaiqian Han, LiangLiang Ren, Jiwen Lu, Jie Zhou

- Submitted to IEEE Conference on Computer Vision and Pattern Recognition.(**CVPR 2020**)

RESEARCH EXPERIENCE

Rethinking samples in Incremental Learning   Department of Automation, Tsinghua University
Advisor: Prof. Gao Huang   *October 2019 - Present*

- Introduced active learning with lifelong learning to keep influential samples and outperformed iCaRL on ImageNet and CIFAR100.
- Undergraduate thesis in Tsinghua University.

Learning to ask questions in time-agnostic prediction   CS department, University of Illinois at Urbana-Champaign
Advisor: Prof. Nan Jiang   *July 2019 - Present*

- Designed a time-agnostic method to ask questions in uncontrolled tasks.
- Proposed a practical way for paper **Temporal Difference Network** and a framework for asking and answering high-level questions in model-based reinforcement learning.
- Preparing to be submitted to ICML 2020.

Structural Multi-agent Learning   Department of Automation, Tsinghua University
Advisor: Prof. Jiwen Lu   *March 2019 - September 2019*

- Developed a multi-agent reinforcement learning algorithm dealing with the cooperation setting, which outperformed several MARL algorithms: MADDPG and IC3Net.
- Modeled the communication between agents with a graph where agents share their messages and rewards and update the whole system with policy gradient.
- Paper **Structural Multi-agent Learning** submitted to CVPR 2020.

Domain adaptive reinforcement learning for Autonomous Driving EECS, UC Berkeley
Collaborator: Xinlei Pan *July 2018 - October 2018*

- Implemented DQN and collected segmentations of car-racing simulator torcs.
- Carried out ablation studies to test the efficiency of the domain adaptive algorithm.

Generation of face images with Pix2pix GAN Department of Automation, Tsinghua University
Advisor: Prof. Jiwen Lu *September 2018 - November 2018*

- Developed a variant of Pix2pix GAN to generate face images with different features.

INTERNSHIPS

Research Intern Baidu Robotics and Auto-driving Lab
Advisor: Prof. Ruigang Yang *November 2019 - Present*

HONORS AND AWARDS

- **Academic Excellence Scholarship (10%)**, Tsinghua University, 2018

- **Academic Excellence Scholarship (10%)**, Tsinghua University, 2017

- **Chinese National Mathematics Olympaid, Silver medal**, 2014