Yajie (Lesley) Zhou

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RESEARCH INTERESTS

Networking and **Machine Learning**

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) Aug. 2020
M.S. in Electrical Engineering

- Advisors: Prof. Yung Yi, Prof. Dongsu Han

XIDIAN UNIVERSITY Jul. 2018
B.E. in Computer Science and Technology

- Bachelor Dissertation Award: Top 1% in CS Dept.

BOSTON UNIVERSITY Jul. 2017 - Aug. 2017
Exchange student for Future STEM Leaders

- The First Prize of Research Poster Presentation

NETWORKING EXPERIENCE

Generalizability of DL based Networking Systems Sep. 2020 - Present
Research with Prof. Junchen Jiang (UChicago), Dr. Francis. Yan (MSR)
Motivation: What is the practicality and generalizability of existing deep learning based networking solutions?

- Analyzing the robustness and generalizability of deep learning based networking algorithms: Pensieve, Decima, etc.
- Experimenting on networking simulators, identify the necessary principles for simulator/environment design to ground the solution from sim to real.
- Proposing new approaches for improving the generalizability of existing networking models.

Video Streaming QoE improvement Oct. 2019 - Aug. 2020
Research with Prof. Dongsu Han, Prof. Yung Yi (KAIST)
Motivation: how to adapt to various end user preferences in video streaming algorithm?

- Proposed a Multi-objective Reinforcement learning based adaptive-bitrate framework to optimize QoE for various user preferences.
- Achieved a whole Pareto-frontier solution for adaptive user preferences, without the need for hyperparameters tuning or model retraining.

- Implemented the framework to systematically handle both video-on-demand and live video streaming.

Virtual Network Embedding Feb. 2019 - Feb. 2020

Project support by Korean government

- Implemented distributed virtual network embedding systems with coordinated node and link Mapping.
- Designed and improved node mapping, link mapping and bandwidth allocation algorithms.
- Evaluated deep learning algorithms for dynamic resource management in virtual network embedding systems.

MACHINE LEARNING EXPERIENCE

Reinforcement Learning Sep. 2019 - Feb. 2020

M.S. Researcher (KAIST)

- Proved the theoretical convergence on the convex coverage set of multiple Multi-Objective Reinforcement Learning algorithms.
- Improved the application on Multi-Objective Reinforcement Learning with an action-inference module: helped the RL model to infer the policy without knowing the prior objective preferences.
- Implemented the communication scheme in Cooperative Multi-Agent Reinforcement Learning with the StarCraft environment.

Data Mining Feb. 2017 - Jun. 2018

Undergraduate Researcher (Xidian University)

- Algorithms implementation and evaluation for on direct group-linked communities analysis in the Social Network field.

PUBLICATIONS

- Multi-objective Reinforcement Learning for Adaptive QoE Maximization in Video Delivery
  Yajie Zhou, Kasim Te, Jinhwan Jung, Yung Yi, Dongsu Han.
  In Proceeding of INFOCOM 2021

PATENT

- Zhou, Y. 2020. "Mthod and Apparatus for Transimitting Video Data."
  Korean Patent Application 10-2020-0141018, filed October 2020.
  Patent pending

INTERNSHIP

Tencent Corp. Academy Jun. 2016 - Aug. 2016

Internship Software Engineer

- Learned to build application on iOS and Android platform.
- Designed back-end and front-end for a mobile chatting app with Tencent offered APIs, tested inside school internet users.

HONORS AND AWARDS

- **First Prize in Shaanxi Province**, China Undergraduate Mathematical Contest in Modeling (CUMCM), 2017
- **Computer and Engineering Scholarship**, Shaanxi Province, 2017
- **Honorable Mention**, International Interdisciplinary Contest In Modeling, 2017

SKILLS

Programming Languages: Python, C++, MATLAB, LaTeX, etc.
Machine Learning Frameworks: PyTorch, Tensorflow, Keras, etc.
Editor: Emacs, PyCharm, Visual Studio, etc.