Iou-Jen Liu

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Education

University of Illinois at Urbana-Champaign (UIUC), IL, U.S.A.
- Doctor of Philosophy in Computer Engineering, 2021 (Expected)
- Master of Science in Mathematics, 2021 (Expected)

National Taiwan University (NTU), Taipei, Taiwan
- Master of Science in Electrical Engineering, 2014
- Bachelor of Science in Electrical Engineering, 2012

Research Interests

Reinforcement Learning, Multi-Agent Reinforcement Learning

Publications

7. **Iou-Jen Liu***, Raymond A. Yeh*, Alexander G. Schwing, "PIC: Permutation Invariant Critic for Multi-Agent Deep Reinforcement Learning", in Conference on Robot Learning (CORL), 2019 **(Spotlight)**
6. Youjie Li, **Iou-Jen Liu**, Deming Chen, Alexander G. Schwing, Jian Huang, "Accelerating Distributed Reinforcement Learning with In-Switch Computing", in ACM/IEEE International Symposium on Computer Architecture (ISCA), 2019 **(Oral)**
5. **Iou-Jen Liu**, Jian Peng, Alexander G. Schwing, "Knowledge Flow: Improve upon Your Teachers", in International Conference on Learning Representations (ICLR), 2019
4. **Iou-Jen Liu**, Shao-Yun Fang, Yao-Wen Chang, "Overlay-Aware Detailed Routing for Self-Aligned Double Patterning Lithography Using the Cut Process", in IEEE Transactions on CAD (TCAD), Vol. 35, 2016
3. **Iou-Jen Liu**, Shao-Yun Fang, Yao-Wen Chang, "Stitch-Aware Routing for Multiple E-Beam Lithography", in IEEE Transactions on CAD (TCAD), Vol. 34, 2015
2. **Iou-Jen Liu**, Shao-Yun Fang, Yao-Wen Chang, "Overlay-Aware Detailed Routing for Self-Aligned Double Patterning Lithography Using the Cut Process", in ACM/IEEE Design Automation Conference (DAC), 2014 **(Oral)**
1. Shao-Yun Fang, **Iou-Jen Liu**, Yao-Wen Chang, "Stitch-Aware Routing for Multiple E-Beam Lithography", in ACM/IEEE Design Automation Conference (DAC), 2013 **(Oral)**

Selected Awards

- Graduate Student SSBG Fellowship, University of Illinois, 2020
- Third Place, ACM/IEEE ICCAD Programming Contest, 2012
- Best Master Thesis Award, Taiwan IC Design Society, 2014
- Teachers Ranked as Excellent, University of Illinois, **Spring'17, Spring'18, Fall'18, Spring'19, Fall'19**
  Average student rating higher than 4.3 (out of 5.0)
- ICLR Travel Award, 2019
- Graduate Scholarship, National Taiwan University, 2014

Work History

University of Illinois at Urbana-Champaign (2018 - present)
Research Assistatnt
Advisor: Professor Alexander Schwing
- **Permutation Invariant Critic (PIC) for MARL** studies the ordering issue in centralized MARL. PIC significantly improves the sample efficiency over baseline MARL method, and scales to 200 agents. (CORL'19)
- **Coordinated Exploration for MARL** allows agent to share sub-goals and explore the environment in a coordinated manner, which achieves better performance than conventional entropy or noise-based exploration.
- **Knowledge Flow** transfers knowledge from multiple (pre-trained) teacher models to a student model. Student trained with knowledge flow achieves top results in both supervised learning and RL tasks. (ICLR'19)

University of Illinois at Urbana-Champaign (2017 - present)
Teaching Assistant (Head TA)
ECE220 - Computer System and Programming

- Teach weekly lab sections on C/C++.
- Maintain online grading system (Prairie Learn) for machine-based quizes.

D-wave Systems (2017)
Machine Learning Research Intern

- Work on DCGAN with RBM, where sampling steps could be performed on D-wave quantum computers.

Skills

- Programming Languages: Python, C, C++, CUDA C/C++, Matlab
- Deep Learning Platform: Pytorch, Tensorflow