Ping-Chun Hsieh

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Professional Experience

National Yang Ming Chiao Tung University	Aug. 2023 - present
• Associate Professor, Department of Computer Science	
National Yang Ming Chiao Tung University	Aug. 2019 - July. 2023
• Assistant Professor, Department of Computer Science	
Texas A&M University, College Station, TX	Oct. 2018 - Jun. 2019
• Postdoctoral Researcher	
AT&T Labs, Austin, TX	Jul. 2017 - Aug. 2017
• Research Intern with AT&T Network Ready Lab	
MediaTek USA Inc, San Jose, CA	May 2016 - Aug. 2016
• Wireless Systems Research Intern in Communication System Design	
Noveltek Semiconductor, Hsinchu, Taiwan	Jul. 2013 - Jul. 2014
• R&D Engineer in IC Design for Power Converters	

Education

Texas A&M University, College Station, TX, USA	Aug. 2014 - Aug. 2018
• Ph.D. in Electrical and Computer Engineering	
National Taiwan University, Taipei, Taiwan	Sep. 2011 - Jun. 2013
• M.S. in Electronics Engineering	
National Taiwan University, Taipei, Taiwan	Sep. 2007 - Jun. 2011
• B.S. in Electrical Engineering	

Honors

1. **Award for Excellent Teaching in English**, College of Computer Science, National Yang Ming Chiao Tung University, 2023
2. **Excellent Teaching Award**, National Yang Ming Chiao Tung University, 2022
3. **Award for Excellent Teaching in English**, College of Computer Science, National Yang Ming Chiao Tung University, 2022
4. **Best Paper Award** in APNOMS 2022
5. **Best Paper Award** in ACM MobiHoc 2020 (Best paper among 196 submissions)
6. **P.-C. Huang Junior Chair Professorship**, National Yang Ming Chiao Tung University, 2020.
7. **Young Scholar Fellowship**, Ministry of Science and technology, 2019
8. **Best Paper Award** in ACM MobiHoc 2017 (Best paper among 179 submissions)

Research Interests

Reinforcement learning, multi-armed bandits, Bayesian optimization, and wireless networking

Funded Projects

1. **Jumpstarting Online RL With Offline Data: Towards Data-Efficient RL Deployment in the Real World**
   • Source: National Science and Technology Council (NSTC); My Role: PI; Duration: 2023/08/01-2027/07/31;

2. **Automated Anesthesia: Design and Implementation of Reinforcement Learning for Automated Closed-Loop Anesthesia Delivery**
   • Source: National Science and Technology Council (NSTC); My Role: Co-PI; Duration: 2023/08/01-2024/07/31;

3. **Deep Reinforcement Learning for Real-Time Wireless Sensing in Massive IoT**
   • Source: Ministry of Science and Technology (MOST); My Role: PI; Duration: 2019/09/01-2023/08/31; Total Grants: NTD 11,124,000;

4. **A New RL Framework via Large-Margin Classification Algorithms, Global Convergence, and Applications**
   • Source: Research Center for Information Technology Innovation (CITI), Acamedia Sinica; My Role: Co-PI; Duration: 2022/01/01-2022/12/31; Total Grants: NTD 1,615,000;

5. **Deep Reinforcement Learning: Theory to Applications**
   • Source: Research Center for Information Technology Innovation (CITI), Acamedia Sinica; My Role: Co-PI; Duration: 2021/01/01-2021/12/31; Total Grants: NTD 1,280,000;

6. **Automated Anesthesia: Design and Implementation of Reinforcement Learning for Automated Closed-Loop Anesthesia Delivery**
   • Source: Taichung Veterans General Hospital (TCVGH) & NYCU; My Role: Co-PI; Duration: 2022/08/01-2023/07/31; Total Grants: NTD 500,000;

7. **Design and Implementation of Reinforcement Learning for Automatic Closed-Loop Anesthesia Delivery System: Future of Precise Anesthesia**
   • Source: Taichung Veterans General Hospital (TCVGH) & NYCU; My Role: Co-PI; Duration: 2021/08/01-2022/07/31; Total Grants: NTD 700,000;

Publications   (∗ indicates student authors under my advisement)

1. Nai-Chieh Huang∗, **Ping-Chun Hsieh**, Kuo-Hao Ho∗, and I-Chen Wu, "PPO-Clip Attains Global Optimality: Towards Deeper Understandings of Clipping," in *AAAI Conference on Artificial Intelligence (AAAI)*, 2024.

2. Kuo-Hao Ho∗, **Ping-Chun Hsieh**, Chiu-Chou Lin, You-Ren Luo, Feng-Jian Wang, and I-Chen Wu, "Towards Human-Like RL: Taming Non-Naturalistic Behavior in Deep RL via Adaptive Behavioral Costs in 3D Games," in *Asian Conference on Machine Learning (ACML)*, 2023.

3. Wei Hung∗, Bo-Kai Huang∗, **Ping-Chun Hsieh**, and Xi Liu, "Q-Pensieve: Boosting Sample Efficiency of Multi-Objective RL Through Memory Sharing of Q-Snapshots," in *International Conference on Learning Representations (ICLR)*, 2023.

4. Yun-Hsuan Lien∗, **Ping-Chun Hsieh**, and Yu-Shuen Wang, "Revisiting Domain Randomization via Relaxed State-Adversarial Policy Optimization," in *International Conference on Machine Learning (ICML)*, 2023.

5. Hsin-En Su∗, Yen-Ju Chen∗, **Ping-Chun Hsieh**, and Xi Liu, "Coordinate Ascent for Off-Policy RL with Global Convergence Guarantees," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023

6. Yu-Heng Hung∗ and **Ping-Chun Hsieh**, "Reward-Biased Maximum Likelihood Estimation for Neural Contextual Bandits: A Distributional Learning Perspective," in *Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2023.

7. Yung-Han Ho, Chia-Hao Kao, Wen-Hsiao Peng, and **Ping-Chun Hsieh**, "Neural Frank-Wolfe Policy Optimization for Region-of-Interest Intra-Frame Coding with HEVC/H.265," in *Proceedings of IEEE Visual Communications and Image Processing (VCIP)*, 2022.

8. Bing-Jing Hsieh*, **Ping-Chun Hsieh**, and Xi Liu, "Reinforced Few-Shot Acquisition Function Learning for Bayesian Optimization," in *Proceedings of Conference on Neural Information Processing Systems (NeurIPS)*, 2021.

9. Khaled Nakhleh, Santosh Ganji, **Ping-Chun Hsieh**, I-Hong Hou, and Srinivas Shakkottai, "NeurWIN: Neural Whittle Index Network For Restless Bandits Via Deep RL," in *Proceedings of Conference on Neural Information Processing Systems (NeurIPS)*, 2021.

10. Jyun-Li Lin*, Wei Hung*, Shang-Hsuan Yang*, **Ping-Chun Hsieh**, and Xi Liu, "Escaping from Zero Gradient: Revisiting Action-Constrained Reinforcement Learning via Frank-Wolfe Policy Optimization," in *Proceedings of Conference on Uncertainty in Artificial Intelligence (UAI)*, 2021

11. Yu-Heng Hung*, **Ping-Chun Hsieh**, Xi Liu, and P. R. Kumar, "Reward-Biased Maximum Likelihood Estimation for Linear Stochastic Bandits," in *Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2021.

12. Daojing Guo, **Ping-Chun Hsieh**, and I-Hong Hou, "Optimal Wireless Scheduling for Remote Sensing Through Brownian Approximation," in *Proceedings of IEEE International Conference on Computer Communications (INFOCOM)*, 2021. (acceptance rate = 19.9%)

13. Xi Liu†, **Ping-Chun Hsieh**†, Yu-Heng Hung*, Anirban Bhattacharya, and P. R. Kumar, "Exploration Through Reward Biasing: Reward-Biased Maximum Likelihood Estimation for Stochastic Multi-Armed Bandits," in *Proceedings of International Conference on Machine Learning (ICML)*, 2020. (†: equal contributions)

14. **Ping-Chun Hsieh**, Xi Liu, and I-Hong Hou, "Fresher Content or Smoother Playback? A Brownian-Approximation Framework for Scheduling Real-Time Wireless Video Streams," in *Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2020. (**Best Paper Award**)

15. Kai-Chun Hu*, **Ping-Chun Hsieh**, Ting-Han Wei, and I-Chen Wu, "Rethinking Deep Policy Gradient via State-Wise Policy Improvement," in *Annual Conference on Neural Information Processing Systems (NeurIPS) ICBINB Workshop*, 2020.

16. **Ping-Chun Hsieh**†, Xi Liu†, Anirban Bhattacharya, and P. R. Kumar, "Stay With Me: Lifetime Maximization Through Heteroscedastic Linear Bandits With Reneging," in *Proceedings of International Conference on Machine Learning (ICML)*, 2019. (†: equal contributions)

17. Xi Liu, **Ping-Chun Hsieh**, Nick Duffield, Rui Chen, Muhe Xie, and Xidao Wen, "Real-Time Streaming Graph Embedding Through Local Actions," in *Proceedings of World Wide Web Conference (WWW) DL4G-SDE Workshop*, 2019.

18. **Ping-Chun Hsieh** and I-Hong Hou, "Heavy-Traffic Analysis of QoE Optimality for On-Demand Video Streams Over Fading Channels," *IEEE Transactions on Networking*, Vol. 26, pp. 1768-1781, June 2018.

19. **Ping-Chun Hsieh** and I-Hong Hou, "A Decentralized Medium Access Protocol for Real-Time Wireless Ad Hoc Networks With Unreliable Transmissions," in *Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS)*, April 2018.

20. Simon Yau, **Ping-Chun Hsieh**, Rajarshi Bhattacharyya, Kartic Bhargav, Srinivas Shakkottai, I-Hong Hou, and P. R. Kumar, "PULS: Processor-Supported Ultra-Low Latency Scheduling," in *Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, March 2018. (acceptance rate = 17%, **Best Paper Finalist**)

21. **Ping-Chun Hsieh**, Yupeng Jia, Darwin Parra, and Prabha Aithal, "An Experimental Study on Coverage Enhancement of LTE Cat-M1 for Machine-Type Communication," in *Proceedings of IEEE International Conference on Communications (ICC)*, January 2018.

22. **Ping-Chun Hsieh**, Xi Liu, Jian Jiao, I-Hong Hou, Yunlong Zhang, and P.R. Kumar, "Throughput-Optimal Scheduling for Networked Transportation Systems With Switch-Over Delay," in *Proceedings of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, July 2017. (**Best Paper Award**)

23. I-Hong Hou and **Ping-Chun Hsieh**, "The Capacity of QoE for Wireless Networks with Unreliable Transmissions," *Queueing Systems: Theory and Applications (QUESTA)*, May 2017.

24. **Ping-Chun Hsieh** and I-Hong Hou, "Heavy-Traffic Analysis of QoE Optimality for On-Demand Video Streams Over Fading Channels," in *Proceedings of IEEE International Conference on Computer Communications (INFOCOM)*, April 2016. (acceptance rate = 18%)

25. I-Hong Hou and **Ping-Chun Hsieh**, "QoE-Optimal Scheduling for On-Demand Video Streams over Unreliable Wireless Networks," in *Proceedings of ACM MobiHoc*, June 2015. (acceptance rate = 14.8%)

26. Simon Yau, Liang Ge, **Ping-Chun Hsieh**, I-Hong Hou, Shuguang Cui, P. R. Kumar, Amal Ekbal, and Nikhil Kundargi, "WiMAC: Rapid Implementation Platform for User Definable MAC Protocols Through Separation," in *Proceedings of ACM SIGCOMM (Demo paper)*, August 2015.

27. **Ping-Chun Hsieh**, Chia-Jung Chang, and Chern-Lin Chen, "A Primary-Side-Control Quasi-Resonant Flyback Converter With Tight Output Voltage Regulation and Self-Calibrated Valley Switching," in *Proceedings of Energy Conversion Congress and Exposition (ECCE)*, September 2013.

Teaching

- **Reinforcement Learning**: Spring 2020, Spring 2021, Spring 2022, Spring 2023, and Spring 2024
- **Probability**: Fall 2019, Fall 2020, Fall 2021, Fall 2022, and Fall 2023
- **Optimization Algorithms**: Fall 2022

Selected Invited Talks

- **Department of Computer Science, National University of Tainan** (Title: On Reinforcement Learning With Multiple Objectives and Action Constraints), April 2023
- **Augmented Intelligence and Interaction (AII) Workshop** (Title: Q-Pensieve: Boosting Sample Efficiency of Multi-Objective RL via Memory Sharing), March 2023
- Guest lecture at the "Deep Learning and Computer Vision" Course, Department of Electrical Engineering, National Taiwan University (Title: Model-Free Reinforcement Learning in a Nutshell: Fundamentals and Surprises), October 2022 • **Institute of Information Systems and Applications, National Tsinghua University** (Title: Rethinking Policy Improvement in RL), June 2022
- **Institute of Statistical Science, Academia Sinica** (Title: Exploration Through Reward Biasing in Bandits), June 2022
- **Graduate Institute of Brain and Mind Sciences, College of Medicine, National Taiwan University** (Title: Rethinking Policy Improvement in RL), March 2022
- **Taiwan International Graduate Program, Academia Sinica** (Title: Rethinking Policy Improvement in Reinforcement Learning), March 2022
- **Taiwanese Association for Artificial Intelligence (TAAI) AI Forum** (Title: Exploration Through Reward Biasing: Bandit Learning via Reward-Biased Maximum Likelihood Estimation), October 2021
- **Institute of Neuroscience, National Yang Ming Chiao Tung University** (Title: Rethinking Policy Improvement in RL: Two Case Studies), September 2021
- **Chunghwa Telecom** (Title: Reinforcement Learning: Action Constraints and Fast Adaptation), September 2021
- **Department of Computer Science, National Taiwan Normal University** (Title: Reinforcement Learning and Bandits: Two Case Studies), April 2021
- **Institute of Information Science, Academia Sinica** (Title: Bandit Learning: Optimality, Scalability, and Reneging), December 2019

Professional Services	**Program Committee Members of International Conferences** • Conference on Neural Information Processing Systems (NeurIPS), 2020-2023 • International Conference on Machine Learning (ICML), 2020-2024 • International Conference on Learning Representations (ICLR), 2021-2024 • International Conference on Network Protocols (ICNP), 2023 **Journal Reviewers** • IEEE Transactions on Mobile Computing, 2020-2023 • IEEE Transactions on Networking, 2019-2022 • IEEE Transactions on Vehicular Technology, 2021-2022 • IEEE Transactions on Communications, 2019-2020 • IEEE Transactions on Cognitive Communications and Networking, 2019-2020 • IEEE Transactions on Multimedia, 2019 • ACM Computing Surveys, 2021-2023 **Conference Reviewers** • International Conference on Artificial Intelligence and Statistics (AISTATS), 2023 • International Conference on Robotics and Automation (ICRA), 2022 • IEEE Wireless and Optical Communication Conference (WOCC), 2021 • Asia-Pacific Network Operations and Management Symposium (APNOMS), 2021 **Organizing Committee of Conferences and Seminars** • Organizing committee member, Asia-Pacific Network Operations and Management Symposium (APNOMS), 2020-2021 • Organizing committee member, UI-NYCU H&J Global Chair Seminar, 2022 • Organizing committee member, NYCU Brain and AI Colloquium, 2023 • Host, Machine Learning Summer School, 2021