Yu-Guan Hsieh

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Research interest

• Online learning • Distributed optimization • Learning in games • Generative model

Education

2019 – present **Université Grenoble Alpes, Grenoble, France**
Ph.D. in optimization and machine learning
Thesis: Decision Making in Multi-Agent Systems
Advisors: Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos

2018 – 2019 **École normale supérieure Paris-Saclay, Cachan, France**
MSc degree in Mathematics, Computer Vision, Machine Learning (MVA)
Grade: 18.05/20 (Success with Highest Honors)

2016 – 2020 **École normale supérieure, Paris, France**
BSc degree and MSc in computer science. Grades: 17.22/20 and 17.6/20.
ENS graduate degree as *normalien*

2014 – 2016 **Lycée du Parc, Lyon, France**
Intensive preparatory program leading to entrance exams to French Grandes Écoles

Industrial and Academic Internships

2022 Aug. – 22 Nov. **Amazon Web Services, Santa Clara, USA**
Applied science internship—Diffusion Prior for Multi-Armed Bandits
Supervised by Shiva Kasiviswanathan

This internship explores the intriguing problem of how deep generative model can help decision making. I propose here to use it to learn a prior as inductive bias in a meta-learning for bandits setup. (Published at ICML 2023)

2021 Oct. – 22 Jan. **Amazon Web Services, Tübingen, Germany**
Applied science internship—Multi-Armed Bandits and Causality
Supervised by Shiva Kasiviswanathan

The focus of this internship is on the interplay between multi-armed bandits and causality, with the general goal of understanding how causal knowledge can help improve bandit algorithms. I showed via a specific model that this is possible when the arms influence the reward through sparse intermediate variables. (Published at NeurIPS 2022)

2019 Apr. – Sept. **Jean Kuntzmann Laboratory (UMR 5224 CNRS), Grenoble, France**
Research internship—Extragradient and its variants
Supervised by Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos

In this internship I derived convergence guarantees for extragradient-type methods in solving variational inequalities, with a focus on stochastic setting. (Published at NeurIPS 2019)

2018 Mar. – Aug. **RIKEN Center for Advanced Intelligence Project, Tokyo, Japan.**
Research internship—Weakly supervised learning
Supervised by Gang Niu and Masashi Sugiyama

During this internship I worked on semi-supervised learning, learning with noisy labels and positive-unlabeled learning. I particularly designed an algorithm for a setup where we have access to positive, unlabeled, and biased negative data. (Published at ICML 2019)

Publications

Conferences

- Yu-Guan Hsieh, Shiva Kasiviswanathan, Branislav Kveton, and Patrick Bloebaum. *Thompson Sampling with Diffusion Generative Prior.* In **International Conference on Machine Learning (ICML)**, 2023.
- Yu-Guan Hsieh, Kimon Antonakopoulos, Volkan Cevher, and Panayotis Mertikopoulos. *No-Regret Learning in Games with Noisy Feedback: Faster Rates and Adaptivity via Learning Rate Separation.* In **Conference on Neural Information Processing Systems (NeurIPS)**, 2022.
- Yu-Guan Hsieh, Shiva Kasiviswanathan, and Branislav Kveton. *Upliting Bandits.* In **Conference on Neural Information Processing Systems (NeurIPS)**, 2022.
- Yu-Guan Hsieh, Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos. *Optimization in Open Networks via Dual Averaging.* In **IEEE Conference on Decision and Control (CDC)**, 2021.
- Yu-Guan Hsieh, Kimon Antonakopoulos, and Panayotis Mertikopoulos. *Adaptive Learning in Continuous Games: Optimal Regret Bounds and Convergence to Nash Equilibrium.* In **Conference on Learning Theory (COLT)**, 2021.
- Yu-Guan Hsieh, Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos. *Explore Aggressively, Update Conservatively: Stochastic Extragradient Methods with Variable Stepsize Scaling.* In **Conference on Neural Information Processing Systems (NeurIPS)**, 2020.
- Yu-Guan Hsieh, Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos. *On the Convergence of Single-Call Stochastic Extra-Gradient Methods.* In **Conference on Neural Information Processing Systems (NeurIPS)**, 2019.
- Yu-Guan Hsieh, Gang Niu, and Masashi Sugiyama. *Classification from Positive, Unlabeled and Biased Negative Data.* In **International Conference on Machine Learning (ICML)**, 2019.

Journals

- Yu-Guan Hsieh, Yassine Laguel, Franck Iutzeler, and Jérôme Malick. *Push–Pull with Device Sampling.* **IEEE Transactions on Automatic Control (TAC)**, 2023.
- Yu-Guan Hsieh, Franck Iutzeler, Jérôme Malick, and Panayotis Mertikopoulos. *Multi-agent Online Optimization with Delays: Asynchronicity, Adaptivity, and Optimism.* **Journal of Machine Learning Research (JMLR)**, 2022.

Selected Talks

- Making Optimistic Gradient Adaptive and Robust to Noise. In Workshop on Learning in games at National University of Singapore, April 2023.
- Uplifting Bandits. In ECML/PKDD'22 Uplift Modeling Workshop, at Grenoble / online, September 2022.
- Anticipating the Future for Better Performance: Optimistic Gradient Methods for Learning in Games. At National Taiwan Normal University, July 2022.

Service, Distinction, and Awards

- Reviewer at ICML (2020–), NeurIPS (2019–), ICLR (2021–), Operations Research, IEEE-TAC, and JMLR
- Spotlight at NeurIPS 2020
- Silver medal in International Mathematical Olympiad 2013

Teaching

2020 – 2022	Teaching assistant for the master course **Numerical Optimization** at ENSIMAG The course covers basic notions of convexity, optimality conditions, algorithms for continuous optimization, and duality.