Andy Shih

Contact

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Education

Stanford University
Ph.D. in Computer Science
Concentration: Artificial Intelligence / Machine Learning
Sep 2019 - Mar 2024

University of California, Los Angeles
M.S. in Computer Science
Concentration: Artificial Intelligence
Jan 2018 - Jun 2019

University of California, Los Angeles
B.S. in Computer Science, *summa cum laude*
GPA: 3.907
Sep 2014 - Dec 2017

Experience

Research Assistant (PhD Student) (Sep 2019 - Mar 2024)
Stanford Computer Science Department
Stanford Artificial Intelligence Laboratory: Advisors - Stefano Ermon, Dorsa Sadigh

Research Assistant (Master's Student) (Jan 2018 - Jun 2019)
UCLA Computer Science Department
Automated Reasoning Group: Advisor - Adnan Darwiche

Software Engineering Intern (Jun 2017 - Sep 2017)
Google, San Francisco

Software Engineering Intern (Jun 2016 - Sep 2016)
Qualcomm Research, San Diego

Conferences

Andy Shih, Suneel Belkhale, Stefano Ermon, Dorsa Sadigh, and Nima Anari. Parallel sampling of diffusion models. In *Advances in Neural Information Processing Systems 36 (NeurIPS)*, 2023. Spotlight presentation.

Bidipta Sarkar, **Andy Shih**, and Dorsa Sadigh. Diverse conventions for Human-AI collaboration. In *Advances in Neural Information Processing Systems 36 (NeurIPS)*, 2023

Andy Shih, Dorsa Sadigh, and Stefano Ermon. Long horizon temperature scaling. In *40th International Conference on Machine Learning (ICML)*, 2023

Andy Shih, Dorsa Sadigh, and Stefano Ermon. Training and inference on any-order autoregressive models the right way. In *Advances in Neural Information Processing Systems 35 (NeurIPS)*, 2022. Oral presentation. Best paper honorable mention at UAI Workshop on Tractable Probabilistic Modeling 2023.

Mark Beliaev*, **Andy Shih***, Stefano Ermon, Dorsa Sadigh, and Ramtin Pedarsani. Imitation learning by estimating expertise of demonstrators. In *39th International Conference on Machine Learning (ICML)*, 2022

Andy Shih, Stefano Ermon, and Dorsa Sadigh. Conditional imitation learning for multi-agent games. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2022

Bidipta Sarkar*, Aditi Talati*, **Andy Shih***, and Dorsa Sadigh. PantheonRL: A MARL library for dynamic training interactions. In *Proceedings of the 36th AAAI Conference on Artificial Intelligence, Demo Track (AAAI Demo Track)*, 2022

Andy Shih, Dorsa Sadigh, and Stefano Ermon. HyperSPNs: Compact and expressive probabilistic circuits. In *Advances in Neural Information Processing Systems 34 (NeurIPS)*, 2021

Woodrow Wang, **Andy Shih**, Annie Xie, and Dorsa Sadigh. Influencing towards stable multi-agent interactions. In *Proceedings of the 5th Conference on Robot Learning (CORL)*, 2021

Andy Shih, Arjun Sawhney, Jovana Kondic, Stefano Ermon, and Dorsa Sadigh. On the critical role of conventions in adaptive Human-AI collaboration. In *Proceedings of the 9th International Conference on Learning Representations (ICLR)*, 2021

Andy Shih and Stefano Ermon. Probabilistic circuits for variational inference in discrete graphical models. In *Advances in Neural Information Processing Systems 33 (NeurIPS)*, 2020

Weijia Shi, **Andy Shih**, Adnan Darwiche, and Arthur Choi. On tractable representations of binary neural networks. In *Proceedings of the 17th International Conference on Principles of Knowledge Representation and Reasoning (KR)*, 2020

Andy Shih, Guy Van den Broeck, Paul Beame, and Antoine Amarilli. Smoothing structured decomposable circuits. In *Advances in Neural Information Processing Systems 32 (NeurIPS)*, 2019. Spotlight presentation.

Andy Shih, Adnan Darwiche, and Arthur Choi. Verifying binarized neural networks by Angluin-style learning. In *Proceedings of the 22nd International Conference on Theory and Applications of Satisfiability Testing (SAT)*, 2019

Andy Shih, Arthur Choi, and Adnan Darwiche. Compiling Bayesian network classifiers into decision graphs. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI)*, 2019. Oral presentation.

Andy Shih, Arthur Choi, and Adnan Darwiche. Formal verification of Bayesian network classifiers. In *Proceedings of the 9th International Conference on Probabilistic Graphical Models (PGM)*, 2018

Andy Shih, Arthur Choi, and Adnan Darwiche. A symbolic approach to explaining Bayesian network classifiers. In *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI)*, 2018

Workshops

Arthur Choi, **Andy Shih**, Anchal Goyanka, and Adnan Darwiche. On symbolically encoding the behavior of random forests. Presented at the 3rd Workshop on Formal Methods for ML-Enabled Autonomous Systems (FoMLAS), 2020

Arthur Choi, Weijia Shi, **Andy Shih**, and Adnan Darwiche. Compiling neural networks into tractable Boolean circuits. Presented at the AAAI Spring Symposium on Verification of Neural Networks (VNN), 2019

Talks

TPM 2023 Contributed Talk: Training and Inference on Any-Order Autoregressive Models the Right Way

University of Maryland MARL Seminar: Diverse Conventions for Human-AI Collaboration

Autodesk AI: Tractable Probabilistic Inference in the Era of Large Models

Symposium for PNAS Special Issue on Cooperative AI: Diverse Conventions for Human-AI Collaboration

NeurIPS 2022: Training and Inference on Any-Order Autoregressive Models the Right Way

Donders Institute Inference and Control Group Seminar, June 2022: Tractable Inference with Probabilistic Circuits and Any-Order Autoregressive Models

HRI 2022: Conditional Imitation Learning for Multi-Agent Games

Stanford CS422 (Interactive and Embodied Learning, Nick Haber & Fei-Fei Li)
Guest Lecturer: "Learning and Influencing Partner Strategies for Improved Coordination"

NeurIPS 2021: HyperSPNs: Compact and expressive probabilistic circuits

ICLR 2021: On the Critical Role of Conventions in Adaptive Human-AI Collaboration

NeurIPS 2020: Probabilistic Circuits for Variational Inference in Discrete Graphical Models

NeurIPS 2019: Smoothing Structured Decomposable Circuits

VNN 2019: Verifying Binarized Neural Networks by Local Automaton Learning

AAAI 2019: Compiling Bayesian Network Classifiers into Decision Graphs

PGM 2018: Formal Verification of Bayesian Network Classifiers

IJCAI 2018: A Symbolic Approach to Explaining Bayesian Network Classifiers

Awards

2023 NeurIPS Spotlight Presentation

2023 UAI Workshop on Tractable Probabilistic Modeling Best Paper Honorable Mention

2022 NeurIPS Top Reviewer Award

2022 NeurIPS Oral Presentation (top 1.9%)

2019 NeurIPS Spotlight Presentation (top 2.4%)

International Collegiate Programming Contest (ICPC) World Finals (x2)

2019 UCLA Computer Science Outstanding Master's Student Award

Teaching

Winter 2023 Head TA for Stanford CS 228 - Probabilistic Graphical Models.

Mentoring

Stanford Ignite Program Student Mentor (Summer 2021): Helped create robotics outreach/educational modules for elementary/middle/high schools.

Mentored undergraduate/Master's students: Bidipta Sarkar, Aditi Talati, Jovana Kondic, Arjun Sawhney

Helped prepare course material for undergraduate (CS 161) and graduate (CS 262A, CS264A) course on Artificial Intelligence, for over 100 students.

Tutored computer science undergraduates with UPE honor society.

Taught data structure and algorithms at training sessions for ACM-ICPC.

Others

Service
Reviewer
    ICML 2020/2021/2022/2023
    NeurIPS 2020/2021/2022/2023
    ICLR 2021/2022/2023
    CoRL 2020/2021
    AISTATS 2022
    AAAI 2022
Coach - Stanford ICPC (2020-2023)
UCLA UPE Officer 2016-2018, Outstanding Chapter Award (1/200 chapters)
UCLA ACM-ICPC Officer 2016-2018, Student Chapter Excellence Award

Competitions
ACM-ICPC World Finals 2017 and 2020 (top 0.7% of contestants)
ACM-ICPC North American Championship 2020
Google Code Jam 2020 - top 200 worldwide
Facebook Hacker Cup 2020 - top 200 worldwide
Bloomberg CodeCon - School Champion (2016, 2018), 11th nationally (2018 Finals)
Caltech Hackathon 2017 - Best Data-Driven, Best Cloud Machine Learning Project