

Sophia Sun

1 (617) 777-0906 | sophiasun@eng.ucsd.edu | huiwenn.github.io

EDUCATION

University of California San Diego, San Diego, CA — Ph.D. 2018 - present
Artificial Intelligence Group, Computer Science and Engineering
Advisor: Prof. Rose Yu

Wellesley College, Wellesley, MA — B.A. 2016 – 2018
Double Major in Mathematics and Computer Science.

Massachusetts Institute of Technology, Cambridge, MA — *Cross Registration* 2016 – 2018
Coursework: 6.006 Introduction to Algorithms, 6.034 Artificial Intelligence, 21M.380 Music and Technology, 6.S094 Deep Learning for Self-Driving Cars (winter session), 6.867 Machine Learning (graduate level)

RESEARCH EXPERIENCE

Graduate Student Researcher, UC San Diego AI Lab San Diego, CA 2018.9 – present
PI: Prof. Rose Yu
* Machine learning for spatiotemporal data.
* Uncertainty quantification for machine learning models; decision making under uncertainty.

Research Assistant, Johns Hopkins University Baltimore, MD 2017.6 – 2018.6
PI: Prof. Suchi Saria; NSF Research Experience for Undergraduate program
* Poster: *Predicting in-Hospital Cardiac Deterioration from Heterogeneous Medical Time-Series*.
* Data pipelining and machine learning for of multi-modal and multi-resolution medical time-series data.

Research Assistant, music21 (MIT) <http://web.mit.edu/music21/> Cambridge, MA 2016.10 – 2018.2
PI: Prof. Michael Cuthbert
* Investigated the expression of sentiments in songs based on lyrics, melodic, harmonic, and other musical data extracted from sheet music through computational methods. (Paper in Empirical Musicology Review)

INDUSTRY EXPERIENCE / PROJECTS

Research Scientist Intern, Amazon Robotics RAD 2020.6 – 2020.9
(*reinforcement learning, multi-agent planning, optimization*)
* Machine learning for multi-robot trajectory planning in amazon's fulfillment centers.
* Help built simulation for multi-robot trajectory planning and improved overall throughput by 3% in simulation.

Amazon Alexa Prize Challenge, team UC San Diego 2019.9 – 2020.5
(*reinforcement learning, natural language processing*)
* Principal member of one of the 10 final participating teams. Incorporation of RL in to conversational AI.

Software Engineer Intern, Google DeepMind London, U.K. 2018.6 – 2018.9
(*Golang, backend engineering*)
* Secure Electronic Health Records data pipelining, analysis, and verification.
* Improved interpretability and verifiability of analytical algorithms deployed in Deepmind's Streams App.

Data Science Intern, Musical.ly (now TikTok) Shanghai, China 2016.6 – 2016.8
(*Java, Hadoop on Spark, SQL, JavaScript/JQuery*)
* Social media data analytics and monitoring pipelines using Hadoop on Spark and AWS's Elastic MapReduce.

PUBLICATIONS

Sophia Sun, Rose Yu. "Copula Conformal Prediction for Multi-horizon Time Series." In Preparation, 2022

Sophia Sun, Robin Walters, Jinxi Li, Rose Yu. "Improved Probabilistic Trajectory Forecasting with Equivariant Continuous Convolution." In Submission ([arxiv](https://arxiv.org/abs/2205.12345)), 2022

Sofy Yuditskaya*, **Sophia Sun***, and Margaret Schedel*. “Synthetic Erudition Assist Lattice.” *New Interfaces for Musical Expression (NIME)*, 2021

Sofy Yuditskaya*, Derek Kwan*, **Sophia Sun***. “Karaoke of Dreams: A multi-modal neural-network generated music experience.” *Proceedings of the Joint Conference on AI Music Creativity (CIMC+MUME)*, 2020

Bodhisattwa Prasad Majumder, Shuyang Li, Jianmo Ni, Huanru Henry Mao, **Sophia Sun**, Julian McAuley. “Bernard: A Stateful Neural Open-domain Socialbot.” *Alexa Prize Proceedings*, 2020

Sophia Sun, Michael Scott Cuthbert. “Emotion painting: lyric, affect, and musical relationships in a large lead-sheet corpus.” *Empirical Musicology Review* 12.3-4. 2018

REVIEWER

ICML 2022, NeurIPS 2022

TALKS & WORKSHOPS

Conformal Methods for Quantifying Uncertainty in Spatiotemporal Data	San Diego, CA	2022
Talk at UCSD CSE		
Probabilistic Symmetry for Improved Trajectory Forecasting	San Diego, CA	2022
Talk at UCSD CSE Research Open House AI spotlight		
Creative Coding for Robotics and Art	San Diego, CA	2022
Outreach keynote at Sweetwater High School		
Reinforcement Learning 101	online	2020
Three-part workshop series for artists at Arts Counsel Korea (ARKO)		
Natural Language Processing for Creatives	Bombay Beach, CA	2020
Workshop at mars.college tech/art residency		

TEACHING

Teaching Assistant , CSE101 Design & Analysis of Algorithms, UC San Diego	Summer 2022
Teaching Assistant , CSE20 Discrete Mathematics, UC San Diego	Summer 2022
Teaching Assistant , CSE251C Machine Learning Theory, UC San Diego	Spring 2021
Teaching Assistant , CSE291: Topics in Search and Optimization, UC San Diego	Winter 2020
Tutor , CS231 Algorithms, Wellesley College	2017, 2018
Tutor , CS230 Data Structures, Wellesley College	2016

LEADERSHIP

UCSD ACM-W Student Chapter , UC San Diego	Chair, 2020 – 2022
Graduate Women in Computing (GradWIC) , UC San Diego	Vice President, 2019 – 2022
The Center for Ethics in Science & Technology , UC San Diego	Board Member, 2018 – 2020
Slater International Center , Wellesley College	Student Mentor, 2015 – 2018

SCHOLARSHIPS & HONORS

Sigma Xi Honors Research Society , Wellesley College	2018
Research Experience for Undergraduates at Johns Hopkins University, National Science Foundation	2017
O'Hanlon Conference Scholarship (Grace Hopper), Wellesley College	2017

SKILLS

Software Engineering: Competent in **Java** and **Python**, experience in **C**, **C++**, **R**, **Go**, **JavaScript/JQuery**
Data Science / Machine Learning: **SQL**, **PostgreSQL**; distributed system **Hadoop on Spark**; machine learning models and algorithms (familiar with frameworks **TensorFlow** and **Pytorch**).
Robotics: Experience with **ROS** and physics simulation engine **Mujoco**.