

Sonja Johnson-Yu

(425) 577-1703 | sjohnsonyu@g.harvard.edu | sjohnsonyu.github.io

EDUCATION

Harvard University

PhD Computer Science student ('27)

Stanford University

M.S. Computer Science ('21)

GPA – 3.91

Stanford University

B.S. Computer Science, B.A. Music w/ Honors ('21)

GPA – 3.80

EXPERIENCE

Harvard University

Graduate Research Assistant | September 2021 – present

Conducted research in multi-agent systems, using multi-agent reinforcement learning, machine learning, game theory, and optimization. Scaled a predictive-patrolling application for use in hundreds of conservation areas worldwide.

Joro Tech

Data Scientist | June 2020 – January 2022

Redesigned core carbon estimation algorithm in Python, Node, & PostgreSQL to integrate US EPA EEIO data and iteratively improved algorithm with a blend of bottom-up and top-down carbon estimates.

Stanford University

Stanford ML Group (Ng Lab) Research Assistant | September 2019 – August 2021

Developed a PyTorch deep learning model to classify direct drivers of deforestation in Indonesia using satellite imagery. Created a pipeline to deploy model over all forest loss events in Indonesia 2012-2018.

Stanford University

Section Leading (CS198) Coordinator | March 2018 – June 2019

Hired, trained, and managed over 100 CS106 section leaders. Restructured CS198 program to serve over 1000 students. Managed budget of over 500,000 dollars. Hosted community-building events.

Amazon Robotics

Software Development Engineering Intern | June 2018 – September 2018

Designed and implemented a closed-loop system for computer-vision-based inference in Python, Keras, and C++. Established data collection pipeline and leveraged data to train a convolutional neural network.

DataArts

Technology Intern | July – August 2017

Developed an interactive map of cultural organizations for use by grantmaking institutions using the Google Maps API, jQuery, and AngularJS, and integrated it into DataArts' web app.

PUBLICATIONS

Z. H. Lu, S. H. Singh, **S. Johnson-Yu**, A. Walsman, K. Rajan. "Emergent small-group foraging under variable group size, food scarcity, and sensory capabilities." Extended Abstract. In *COSYNE 2025*.

S. Johnson-Yu, S. H. Singh, F. Pedraja, D. Turcu, P. Sharma, N. Saphra, N. Sawtell, and K. Rajan. "Understanding biological active sensing behaviors by interpreting learned artificial agent policies." In *InterpPol Workshop @ RLC-2024*.

S. Johnson-Yu, S. H. Singh, F. Pedraja, D. Turcu, P. Sharma, N. Saphra, N. B. Sawtell, and K. Rajan. "Emergent active sensing behaviors in artificial electric fish agents." Extended Abstract. In *Cognitive Computational Neuroscience 2024*.

S. Johnson-Yu, J. Finocchiario, A. Sinha, K. Wang, Y. Vorobeychik, A. Taneja, and M. Tambe. "Characterizing and Improving the Robustness of Predict-Then-Optimize Frameworks." In *Conference on Decision and Game Theory for Security (GameSec)* 2023.

S. Johnson-Yu, K. Wang, J. Finocchiario, A. Taneja, and M. Tambe. "Modeling Robustness in Decision-Focused Learning as a Stackelberg Game." Extended Abstract. In *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)* 2023.

J. Killian*, L. Xu*, A. Biswas*, S. Verma*, V. Nair, A. Taneja, A. Hegde, N. Madhiwalla, P. Rodriguez Diaz, **S. Johnson-Yu**, M. Tambe. 2/9/2023. "Robust Planning over Restless Groups: Engagement Interventions for a Large-Scale Maternal Telehealth Program." In *AAAI Conference on Artificial Intelligence* 2023.

S. Johnson-Yu, N. Bowman, M. Sahami, C. Piech. "SimGrade: Using Code Similarity Measures for More Accurate Human Grading." *Educational Data Mining* 2021.

J. Irvin, H. Sheng, N. Ramachandran, **S. Johnson-Yu**, et al. "ForestNet: Classifying Drivers of Deforestation in Indonesia using Deep Learning on Satellite Imagery." *Tackling Climate Change with Machine Learning at NeurIPS* 2020.

TEACHING

Harvard University

CS290 (*Seminar on Effective Research Practices & Academic Culture*) Teaching Fellow | Aug 2023 – May 2025

Leading a discussion-based seminar for first-year CS PhD students developing research skills (e.g. paper reading), meta-skills (e.g. managing advising relationships), and understanding of academic culture.

Harvard University

CS288 (*AI for Social Impact*) Teaching Fellow | August 2022 – December 2022

Created infrastructure for second offering of CS288, developing curriculum, mentoring graduate students pursuing final projects, and administering the course.

Stanford University

CS100A ACE Instructor | December 2019 – June 2021

Designed curriculum for CS106A support class targeting students from educationally disadvantaged backgrounds (ACE) and held weekly sections and office hours. Trained and led team of section leaders to assist in the classroom.

Stanford University

CS109 (*Probability*) Course Assistant | September 2019 – December 2019

Taught weekly sections on probability for computer scientists and graded assignments.

Stanford University

CS106AP (*Programming Methodology*) Lecturer | June 2019 – August 2019

Taught a class of over 150 students. Restructured the curriculum of CS106A in Python to replace the Java version of the introductory class. Developed assignments, practice exercises, and exams.

Stanford University

Section Leading (CS198) Coordinator | March 2018 – June 2019

Hired, trained, and managed over 100 CS106 section leaders. Restructured CS198 program to serve over 1000 students. Managed budget of over 500,000 dollars. Hosted community-building events.

Stanford University

CS198B Section Leader | March 2017 – June 2017

Led workshops for other section leaders on advancing teaching technique.

Stanford University

Music 19B (*Intermediate Music Theory*) Teaching Assistant | March 2017 – June 2017

Taught weekly ear training sections, held office hours, and graded assignments.

Stanford University

CS106 Section Leader | September 2016 – March 2018

Taught weekly sections on programming methodology in CS106 classes. Assisted students in design and debugging.

AWARDS & HONORS

NSF Graduate Research Fellowship Program – Honorable Mention

2022

National graduate research funding program. Received 5 scores of “Excellent” and 1 “Very Good.”

Centennial Teaching Assistant Award

Stanford University | 2021

University-wide award for excellence in teaching.

Louis Sudler Prize in the Performing & Creative Arts

Stanford University | 2021

Awarded to seniors who have demonstrated excellence in the highest standards of proficiency in performance or execution of the arts.

Carolyn Applebaum Prize

Stanford University | 2021

Awarded to graduating students whose entrepreneurial endeavors demonstrate an adopted responsibility for making the University music community especially robust and engaged.

National Latin Exam Maureen O'Donnell Oxford Classical Dictionary Award

2013, 2014

Awarded to students with four or more gold medals on the National Latin Exam.

SERVICE

CCN 2024 (Reviewer)

AAMAS 2023 AI4SG Workshop (Reviewer)

Try AI Micro-Internship 2023 (Mentor)

Friends of Music Stanford (Board of Directors) **2022 – present**

AAMAS 2022 AI4SG Workshop (Reviewer)

Code in Place 2020 (Curriculum Development, Section Leader, Small Group Leader)

ACTIVITIES

Ferris Choral Fellows

2022 – present

Harvard University Choir

2022 – present

Stanford Talisman A Cappella | Director

2014 – 2018

Stanford Ethics in Computer Science | Co-Founder

2017 – 2018

Stanford Chamber Chorale

2016 – 2021

Fossil Free Stanford

2015 – 2016

PHOTOGRAPHY

Neuron. Dec 07, 2022. Volume 110, Issue 23. Cover photo.

Neuron. Feb 17, 2021. Volume 109, Issue 4. Cover photo.