Curriculum Vitae

Caryn Thien Ngan Tran

Pronouns: she/her/hers
caryntran@u.northwestern.edu

Education

September 2022—Current
Degree: Ph.D. in Computer Science and Learning Sciences
Where: Northwestern University, Evanston, IL

August 2018—August 2019
Degree: M.S. in Electrical Engineering and Computer Science
Where: University of California, Berkeley, CA
Concentration in Artificial Intelligence
Minor Concentration in Education

January 2014—December 2017
Degree: B.A. in Computer Science
Where: University of California, Berkeley

Research

December 2017—August 2019
Lab: Berkeley Wireless Research Center
Where: University of California, Berkeley
Advisor: Anant Sahai
Contributions:

- Implemented a Polynomial-based learning agent and demonstrated that it is possible to cooperate between agents with different underlying model representations (i.e. neural network) to learn modulation via the echo private preamble protocol. Additionally, showed diverse results with cases in which learning was faster and slower between dissimilar agents.
- Overhauled the machine learning code-base to PyTorch in order to implement custom gradient passing across different agents. These gradient passing agents were used to compare the optimal supervised learning solution to the echo unsupervised learning approach.
- Managed the cloud infrastructure to run the experiments in Google Cloud and on UC Berkeley's high performance compute clusters. Using high throughput compute, trained and tested various agent combinations for the sake of demonstrating robustness of the echo protocol.

September 2016—December 2016

Lab: Berkeley Institute for Data Science URAP
Where: University of California, Berkeley
Advisor: Cyrus Dioun
Contributions:

- Using the Vuforia Augmented Reality SDK, implemented an Android phone app that was used in conjunction with trained image recognition models to identify different marijuana brands.

November 2015—August 2016

Lab: Bio-Nanosensor Interface URAP
Where: University of California, Berkeley
Advisor: Khalid Waqas
Contributions:

- Worked with a team to develop a graphical user interface using the Swing framework in Java to visualize the current of the 16 sensors on the board in real-time for testing.
- Cleaned and formatted sensor data for analysis. Implemented k-means clustering and support vector machines for outlier detection and classification of sensor activity.

Teaching

January 2020—July 2022

Position: Middle School Computer Science Teacher
Where: Synapse School, Menlo Park, CA

Currently teaching computer science to 5-8th grade at an independent, lab school. Have been creating a project-based curriculum centered around functional programming. Students learn computational and design thinking via game design, computational art, artificial intelligence, and web design. Created digital artifacts of student learning.

August 2017—August 2019

Position: Teaching Assistant for CS188
Where: University of California Berkeley, CA

CS188 teaches search, game trees, reinforcement learning, probabilistic graphical models and introductory machine learning.

- Prepared course materials including slides, notes, problem sets, programming assignments, and exams.
- Taught problem-based discussions to up to 50 students, led review sessions, and held 1:1 office hours weekly.

Was an Undergraduate TA for 2 semesters and Head Graduate TA for 1 semester.

September 2017—December 2017

Position: Volunteer Teacher for Girls Who Code
Where: Albany Community Library in Albany, CA

Gave elementary and middle school girls exposure to computer science using Code.org and Girls Who Code curriculum.

January 2016—May 2016

Position: Student Instructor for CS61AS
Where: University of California Berkeley, CA

61AS is the lab based version of the first class in the lower division computer science course series. Taught in scheme and python, CS61AS, broadly teaches programming techniques, data structures, algorithms, and paradigms via functional programming. As student instructor, I was responsible for running the course including but limited to editing course material, writing tests, grading, class logistics, holding mini-lectures and office hours, managing the course website, and teaching labs.

Professional Experience

September 2019—February 2021

Position: Software Engineer (6th employee)
Where: TeachFX in CA

TeachFX automatically measures teacher talk vs. student talk, wait time, open-ended questions, academic language, and equitable participation using voice AI.

- Full stack software engineering using React/NodeJS and Python/Django/GraphQL. Improved mobile navigation and created the Equity Tracker on the web app to display individual student talk percentages.
- Machine learning development and infrastructure around speaker diarization using Kubernetes and Airflow. Modularized the diarization pipeline for more flexible deployment and better model testing.
- Leading the Microsoft Teams integration in .NET framework in C#. Created a bot in Microsoft Teams to record and identify individual speakers.

January 2019—June 2019

Position: Nonprofit Board Director
Where: Berkeley Student Cooperatives in Berkeley, CA

"The BSC is a 501(c)(3) nonprofit housing cooperative. Our mission is to provide a quality, low-cost, cooperative housing community to university students, thereby providing an educational opportunity for students who might not otherwise be able to afford a university education. Presently the BSC has over 1,300 student members living in or eating at our 17 houses and 3 apartment cooperatives around the UC Berkeley campus. Each house is

democratically run, and we all contribute our labor to help keep our housing costs affordable."

November 2017—August 2018

Position: Computer Scientist
Where: Adobe in San Francisco, CA

- Front-end engineering in React for Adobe PhoneGap Website guided by Spectrum, Adobe's design system.
- Developed authentication tooling/libraries for Adobe's OAuth protocol for Creative Cloud, Document Cloud, and Marketing Cloud on web and Android.
- **Taught weekly introductory Machine Learning to engineers on the SF site using University of Washington curriculum.**

May 2016—August 2016

Position: Computer Scientist Intern
Where: Adobe in San Francisco, CA

- contributed fixes, tests, features to Cordova and published resulting packages to NPM
- Earned committership to the Apache Cordova open-source project
- Architected and completed an extensive refactor of Adobe PhoneGap and Apache Cordova to decouple version dependency

Technical skills

- **Machine Learning:** TensorFlow/Keras, PyTorch, Kubernetes, Airflow
- **Back-end and Cloud:** Python, Django, SQL, Google Cloud Platform, Azure Cloud, SLURM workload orchestration
- **Front-end:** JavaScript, React, Java, Android, C#/.NET

Publications

- Anant Sahai, Joshua Sanz, Vignesh Subramanian, Caryn Tran, and Kailas Vodrahalli. "Blind Interactive Learning of Modulation Schemes: Multi-Agent Cooperation Without Co-Design". *IEEE Access* PP. DOI: 10.1109/ACCESS.2020.2984218 (Mar. 2020): 1–1. Web. <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9050734>
- Anant Sahai, Josh Sanz, Vignesh Subramanian, Caryn Tran, and Kailas Vodrahalli. "Learning to Communicate with Limited Co-design". *2019 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*. 2019. 184–191. Web. <https://ieeexplore.ieee.org/abstract/document/8919749>

Master's Thesis

- Caryn Tran, Vignesh Subramanian, Kailas Vodrahalli, and Anant Sahai. "Effect of Model Dissimilarity on Learning to Communicate in a Wireless Setting with Limited Information". MA thesis. EECS Department, University of California, Berkeley, 2019. Web. <http://www2.eecs.berkeley.edu/Pubs/TechRpts/2019/EECS-2019-129.html>