

Priscilla Zhao

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EDUCATION

Stanford University

Master in Education Data Science

Stanford, CA

Sep 2021 - Present

- **GPA:** 4.042/4.00
- **Highlighted Coursework:** Prevention Science and Community-Based Participatory Research; Cognition and Learning; Conversational Virtual Assistants with Deep Learning (Python, JavaScript); Data Management and Data Systems (SQL); Reinforcement Learning (Python, Pytorch); Natural Language Understanding (Python, Pytorch); Curiosity in Artificial Intelligence (Python); Experimental Research Design and Analysis (STATA); Powerful Ideas for Learning Sciences and Technology Design; Quasi-Experimental Research Design & Analysis (R); Language Issues in Educational Research and Practice; Parenting and Family Relationships in Childhood
- **Thesis:** Examining Family Stresses and Their Impacts on Child Development During Pandemic with NLP Techniques. Faculty Advisor: Professor Philip Fisher, Professor Dora Demszky, Dr.Sanne Smith

University of Michigan

Bachelor of Science in Pure Mathematics and Communication and Media

Ann Arbor, MI

Jan 2018 – Dec 2020

- **GPA:** 3.816/4.00
- **Highlighted Coursework:** Complex Analysis; Real Analysis; Probability Theory; Linear Algebra; Introduction to Numerical Methods; Honors Differential Equations; Modern Algebra; Introduction to Differential Geometry; Education Policy; Elementary Programming Concepts (C++); Digital Media Foundation (HTML and CSS)
- **Thesis:** Tuition Free Community College and the Undermatching Problem: A Literature Review. Faculty Advisor: Professor Brian Jacob, Professor Kevin Stange, Professor Hang Lu

Macau University of Science and Technology

Bachelor of Arts in Journalism and Communication

Macau

Sep 2015 – Jun 2017

- **GPA:** 3.63/4.00 (top10/200)

RESEARCH EXPERIENCES

CS Research Projects:

Autonomous Agents Lab & Center on Early Childhood, Stanford University

Research Assistant

Stanford, CA

May 2022 – Present

Faculty Advisor: Professor Philip Fisher and Professor Nick Haber

- Implemented Gaze360, Attention Target Detection, Openpose, Sound Visualization and Speaker Diazaiation of child-caregiver's interaction videos, aiming to extract their gaze, pose and audio information from the video and detect Serve and Return elements of FIND(Filming Interactions to Nurture Development) project
- Designed joint attention detection algorithms by creating geometry gaze cones and detecting attended visual targets and validated the algorithms by running videos with and without joint attention.
- Designed multimodal interface, to automatically identify the Serve and Return elements and provide video feedback for child-caregiver's interaction videos, as a means to scale up the FIND project.

Center on Early Childhood, Stanford University

Research Assistant

Stanford, CA

May 2022 – Present

Faculty Advisor: Professor Philip Fisher

- Led the open-ended responses analysis of the Rapid Assessment of Pandemic Impact on Development(RAPID) survey project, focusing on investigating the well-being of households with young children and child care workforces during the pandemic nationally.
- Implemented the structural topic model to analyze open-ended responses, manually checked the labeling topic solutions, and found a nearly 20% error rate of sample labels.
- Leveraged Natural Language Processing techniques, e.g., GPT-3, BERTopic modeling and Little Mallet Wrapper, to improve the labeling performances and lowered the error rate by 13%, with the aim of generating a clearer picture of pandemic-related health and educational inequity and informing policy decisions.

Child Development and Education Research Projects:

Spark Lab, Stanford University

Research Assistant

Stanford, CA

Jan 2022 – Present

Faculty Advisor: Professor Jelena Obradović

- Collected 32 children’s social, emotional, and academic skills data with tablet games, e.g. AMES from San Francisco Unified School District(SFUSD) Pre-K centers and elementary schools for Kimochis studies.
- Led data cleaning on 900 individual-level data and double entry of its data using R, compared across two datasets to find inconsistency cells, and checked the original records to ensure the accuracy and consistency of the cleaned data, aiming to understand SFUSD students’ social-emotional skills and evaluating their socio-emotional learning curriculum’s effectiveness.
- Conducted factor analysis of the cleaned dataset to investigate the relationship between children’s demographic data and socio-emotional skills, in order to understand the disparities in social-emotional development.

Digital Learning Lab, UC Irvine

Research Assistant

Remote
Jan 2021 – Present

Faculty Advisor: Professor Mark Warschauer, Professor Penelope Collins

- Coded 50 observational videos with CHAT coding scheme to record the bilingual interactions, e.g. conversation, gaze, etc., between children and parents and e-books for the bilingual ebook project.
- Leveraged R and Python to clean and analyze the clickstream data, children’s vocabulary scores of pre- and post-tests, children’s satisfaction survey, and children’s gaze, posture and distance-to-screen during reading.
- Led a group to study the association between e-book features and children’s learning outcomes and motivation using structural equation modeling, and presented it on AERA poster session.
- Led a group to investigate children’s reading behaviors in terms of gaze, posture, and distance-to-screen and their association with vocabulary learning outcomes using k-means clustering techniques, and submitted to Society for Research in Child Development 2023
- Participated in the literature review writing of conversational agents in language learning, and submitted to China Computer-Assisted Language Learning Association, 2023.

Education Policy Initiative (EPI), University of Michigan

Research Assistant

Ann Arbor, MI
Jan 2020 – Dec 2020

Faculty Advisor: Professor Brian Jacob, Professor Gloria Yeomans-Maldonado

- Conducted data cleaning and data analysis using EPI early childhood education (ECE) enrollment data in STATA, then compared the cleaned dataset to Michigan official data to ensure the reliability of the data work.
- Examined correlations between ECE programs, enrolled students’ characteristics, and program features using STATA, then made visualizations of these correlations using Tableau.
- Participated in the policy memo writing of Michigan public-funded ECE programs, specifically in the description of target population, teacher qualifications, curriculum and settings of those programs.

CS PROJECTS

Educational Virtual Assistant for Elementary Math Education.

Final Project, CS224V

Stanford, CA
Oct 2022 – Dec 2022

Faculty Advisor: Professor Monica Lam

- Created prompts for more than 100 math questions from Khan Academy using Large Language Models(LLM), the goal of which was to provide math principles and step-by-step hints for students to solve problems.
- Leveraged LLMs (text-davinci-002) to generate training data sets, and verified the accuracy of designed prompts by checking the accuracy of generated concepts, formulas and answers.
- Designed and developed the web application for the virtual assistant, led the pilot study to gather feedback from elementary school students, then fine-tuned the designed prompts to improve the design of the app.

Model Predictive Curiosity for Self-Supervised Dynamics Models

Final Project, EDUC 234

Stanford, CA
Mar 2022 – Jun 2022

Faculty Advisor: Professor Nick Haber

- Conducted literature review on curiosity-driven learning of physical dynamics and model predictive control(MPC) paradigm, and designed model predictive curiosity(MPCu) paradigm.
- Generated 50000 training scenarios of a force being applied to a circle adjacent to a tower in a Box2D environment and trained a dynamics model to predict forward motion of circle, and a curiosity model to predict the loss in the dynamics model. Final presentation linked here

Text Summarization For News

Final Project, CS224U

Stanford, CA
Mar 2022 – Jun 2022

Faculty Advisor: Professor Christopher Potts

- Literature reviewed text summarization models, e.g. frequency-based model and Seq2seq model, determinants of summary quality, and evaluation metrics, e.g. latent semantic analysis and ROUGE.
- Designed and implemented frequency-based model and Seq2seq(RNN) model with the recent media text, run ROUGE-1;-2;-L to compare and analyze baseline and Seq2seq model, and generated the final report

Predicting Stackoverflow Post Answer Votes

Final Project, CS145

Stanford, CA
Sep 2021 – Dec 2021

Faculty Advisor: Dr. Narayanan Shivakumar

- Used SQL to explore the stackoverflow dataset from BigQuery Public Dataset, analyzed the popularity of stack overflow's answers based on its votes and other characteristics, and visualized the correlations.
- Created and trained the prediction model of the popularity of stackoverflow's answers with logistic regression, and improved the performance of the model using boosted tree classifier. Final Project linked here.

MANUSCRIPTS AND CONFERENCE EXPERIENCES

- **P, Zhao**, R, Li, C, Du, Z, Zheng, Y, Zheng, H, Bai, D, Yang, P, Collins, M, Warschauer (2022, April) Investigating the Association Between E-Book Interactive Features and Story Comprehension During Bilingual Shared Reading [Paper presentation]. *2022 AERA Annual Meeting, San Diego, CA, USA*.
- **P, Zhao**, F, Xiao, H, Zeng, D, Yang, M, Warschauer, P, Collins (2022, September) Understanding Children's Reading Patterns and their Associations with Learning Outcomes Using Machine Learning Techniques [Paper Accepted]. *2023 SRCD Annual Meeting, Salt Lake City, Utah, USA*.
- F, Xiao, **P, Zhao**, H Sha, D, Yang, M, Warschauer (2022, October) Conversational Agents in Language Learning [Under Review]. *China Computer-Assisted Language Learning Association, 2023*

TEACHING AND COMMUNITY SERVICE EXPERIENCE

Course Assistant and Designer for Comm362 (Digital Media Foundation)

University of Michigan, Department of Communication & Media Studies

Ann Arbor, MI
Sep 2020 – Dec 2020

Instructor: Professor Christian Sandvig

Created Slack channel for teaching group and the class, held office hour and helped students with programming homework, e.g. html and CSS, and writing homework.

Teaching Assistant, External Outreach Program of UMich

Super Saturdays in Ypsilanti

Ann Arbor, MI
Jan 2020 - Jun 2021

Met 7-9th grade students from Math Corps weekly and assisted them with math questions, with a focus on developing their interest in math, their math identities, and their skill of pattern recognition.

Volunteer Teacher

Middle School English & Math Teacher

Rural Hebei Province, China
Jun 2017- Jul 2017

Volunteer Teacher

Middle School Math Teacher

Ho Chi Minh City, Vietnam
Sep 2017- Oct 2017

AWARDS, HONORS, AND SCHOLARSHIPS

Master's Student Award for Research and Academic Excellence, 2022

Stanford University

The Fulton Fellowship Fund, 2022

Stanford University

Stanford GSE Leadership Fellowship, 2021-2023

Stanford University

Claude Sifritt Undergraduate Award, 2020

University of Michigan, Ann Arbor

James B. Angell Scholar, 2019

University of Michigan, Ann Arbor

University Honors, 2 terms

University of Michigan, Ann Arbor

SKILLS AND INTERESTS

Python, Pytorch, R, SQL, STATA, HTML, CSS, Tableau, Photography