

Qianou (Christina) Ma

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EDUCATION

May 2022 **Carnegie Mellon University (CMU), Pittsburgh, PA**
B.S. in Cognitive Science, B.S. in Computer Science, Minor in Design for Learning; QPA: 3.91/4.0
Honors: Phi Beta Kappa (1 of 16 seniors selected in Fall)
Relevant Coursework: Child Development Principles; Neural Correlates of Learning & Memory; Human Learning Optimization; Educational Goal, Assessment, Instruction; Design Educational Game; Personalized Online Learning; AI & Humanities; Intro to Machine Learning; Parallel Distributed Processing; Distributed Systems

SKILLS

Software: Adobe (AE/PR/PS/AU), Audacity, Figma, Google Analytics, SPSS, ELAN, Gorilla, CTAT
Programming: Python, C, SML, R, Go, JavaScript, HTML, CSS, React, LaTeX, Git, Nools, Prolog
Natural Language: Mandarin, English

RESEARCH EXPERIENCE

Feb. 2021 - present **Principal Investigator, CS Game Design Support Study**, CMU, Pittsburgh, PA
Advisors: Dr. Erik Harpstead & Dr. Sharon Carver

- Conduct a quasi-experiment case study to investigate how the forms and presentation of learning science principles influence designer-teacher collaboration in CS educational game design
- Created ideation workshop protocols, rubrics, and a web-based design support tool with click-tracking
- Published a work-in-progress as the first-author and presented at 2021 CHI-Play Conference

Jan. 2021 - present **Principal Investigator, VR-Enabled Pedagogies Case Study**, CMU, Pittsburgh, PA
Advisor: Dr. Lauren Herckis

- Collected and analyzed student learning and perception of VR data using descriptive coding
- Conducted literature review on VR pedagogies, implemented a case study on the integration of VR technologies into an interdisciplinary first-year seminar, *Unreality: Immersive and Spatial Media*
- Published a work-in-progress as the first-author and presented at 2021 iLRN Conference

Sept. 2020 - Dec. 2020 **Research Assistant, Cognitive Linguistics Lab**, CMU, Pittsburgh, PA
Advisor: Dr. Bonnie Nozari

- Selected stimulus set and designed a counterbalanced experiment with PMI & log-likelihood scores to explore associative & taxonomic semantic relation's distinct influence on language production
- Implemented a picture-naming typing online experiment using jspsych, psiTurk, and MTurk

Dec. 2019 - Feb. 2020 **Research Assistant, Multimodal Analytics with Math Learning**, CMU, Pittsburgh, PA
Advisor: Dr. Lujie (Karen) Chen

- Helped specify coding scheme of math tutoring, help-seeking, and problem-solving dynamics
- Annotated multimodal data of parent-children math tutoring video clips using ELAN and R

Sept. 2019 - May 2020 **Principal Investigator, Carnegie Museum of Art Website Study**, CMU, Pittsburgh, PA
Advisor: Dr. Sharon Carver

- Conducted a case study to improve information design of art museums' websites for educators
- Designed website rubrics; conducted a comparative analysis, a survey, and a card sorting user study

Feb. 2019 - Aug. 2020 **Research Assistant & PI, Cognitive Development Lab**, CMU, Pittsburgh, PA
Advisors: Dr. Anna Fisher & Dr. Catarina Vales

- Investigated word relations' influence on children's semantic acquisition; cleaned data, calculated, and analyzed statistical measures (GloVe, LSA, PMI) from corpus (e.g., Childes, Common Crawl)
- Presented progress reports and findings at lab meetings and undergraduate research symposium
- Assisted lab tasks including PPVT coding & SpAM tasks data collection with 3- to 5-year-olds

PEER-REVIEWED PUBLICATIONS

Ma, Q., & Harpstead, E. (2021, October). Support Designer-Teacher Collaboration in Educational Game Design Using Learning Science Principles. In *Extended Abstracts of the 2021 Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '21)*. Virtual Event, Austria. ACM. <https://doi.org/10.1145/3450337.3483494>

Ma, Q., & Herckis, L. (2021, May). Work-in-Progress-VR-Enabled Pedagogy in a First-Year Seminar. In *2021 7th International Conference of the Immersive Learning Research Network (iLRN)* (pp. 1-3). IEEE. <https://doi.org/10.23919/ilrn52045.2021.9459331>

PRESENTATIONS

Ma, Q., Vales, C., & Fisher, A. (2021). The contribution of taxonomic and associative language statistics to the development of structured semantic networks. *Presentation at Carnegie Mellon University's Meeting of the Minds Undergraduate Research Symposium, Pittsburgh, PA.*

AWARDS, FELLOWSHIPS & GRANTS

2021	<i>Support Designer-Teacher Collaboration in Educational Game Design Using Learning Science Principles.</i> CMU Dietrich College Senior Honors Fellowship (Role: Principal Investigator; \$6500)
2021	<i>VR-Enabled Pedagogy in a First-Year Seminar.</i> Travel Award. Dietrich College Parents Fund (Role: Principal Investigator; \$250)
2020	<i>The contribution of local and global language statistics to the development of structured semantic networks.</i> CMU Summer Undergraduate Research Fellowship (Role: Principal Investigator; \$3500)
2020	<i>Improving Art Museums' Websites to Support Teachers & Parents: a Case Study of the Carnegie Museum of Art.</i> CMU Small Undergraduate Research Grant (Role: Principal Investigator; \$500)
2019	<i>Patterns of linguistic input differentially predict relatedness in children's semantic structure.</i> Ireland Undergraduate Research Fund (Role: Research Assistant; \$1750)
2019	<i>Bravery.</i> First Place, College Prose. The 20th Annual Martin Luther King, Jr. Day Writing Awards (\$200)

TEACHING EXPERIENCE

2021 Fall	Teaching Assistant, Principles of Computing (Undergraduates), CMU, Pittsburgh, PA
2021 Summer	Teaching Assistant, CS Scholar Pre-College Program (Grades 9-12), CMU, Pittsburgh, PA
2021 Spring	Teaching Assistant, Functional Programming (Undergraduates), CMU, Pittsburgh, PA
2019 Spring	Teaching Assistant, Gelfand Outreach (Grades K-2), CMU LGC, Pittsburgh, PA
2019 Spring	Advisor, Machine Learning Project (Grades 9-12), CMU Project Ignite, Pittsburgh, PA
2019 Spring	Tutor, Girls' Maker Night After School Program (Grades 5-8), Assemble, Pittsburgh, PA
2018 Fall	Tutor, Writing Center (Grades 9-10), Taylor Allderdice High School, Pittsburgh, PA
2018 Summer	Teaching Assistant & Tutor, TOEFL & SAT (Grades 9-11), Sanli & Peer Insight, China

LEADERSHIP & SERVICE EXPERIENCE

2021 - present	Member, CMU Teaching Innovation Award Selection Committee , Pittsburgh, PA <ul style="list-style-type: none">Serve to review nominations of faculty and students for the CMU teaching innovation award
2019 - present	Member, CMU Univ. Disciplinary Committee & Acad. Review Board , Pittsburgh, PA <ul style="list-style-type: none">Serve as a board member to review student violations of community standards in hearings
2018 - present	President, CMU Project Ignite , Pittsburgh, PA <ul style="list-style-type: none">Serve as the President (2021, 2022), VP of Communications (2020), Project Advisor (2019)Collaborate with other organizations to recruit college students, provide free interdisciplinary project-based learning opportunities to local high-schoolers, and facilitate about 100 workshops per year
2018 - present	Docent, Carnegie Museum of Art (CMOA) , Pittsburgh, PA <ul style="list-style-type: none">Serve as a volunteer docent to lead public tours and developed a STEAM theme K-12 school tour
2019	Member, CMU Initiating Meaningful Pittsburgh and Qatar Ties , Pittsburgh, PA <ul style="list-style-type: none">Host CMU Qatar students to foster cultural understandings between Pittsburgh and Qatar campuses