

Qianou (Christina) Ma

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EDUCATION

2018 - 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
Relevant Coursework: Principles of Child Development; Neural Correlates of Learning and Memory; Human Learning Optimization; Educational Goal, Assessment, Instruction; Design Educational Game; Personalized Online Learning; Introduction to Machine Learning; Distributed Systems

SKILLS

Software: Adobe (AE/PR/PS/AU), Audacity, Figma, SPSS, ELAN, Gorilla, Google Analytics
Programming: [Intermediate]: Python, C, SML, R, Go, JavaScript, LaTeX, Git; [Basic]: HTML, CSS, React, Jekyll
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 game development workshop protocols, design support tools, and evaluation rubrics
- Submitted a work-in-progress as the first-author 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 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.*

GRANTS, AWARDS & FELLOWSHIPS

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| 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) |

TEACHING EXPERIENCE

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| 2021 Fall | Teaching Assistant, Principles of Computing (Undergrads), CMU, Pittsburgh, PA |
| 2021 Summer | Teaching Assistant, CS Scholar Pre-College Program (Grades 9-12), CMU, Pittsburgh, PA |
| 2021 Spring | Teaching Assistant, Functional Programming (Undergrads), 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 | Tutor, SAT Reading (Grades 9-11), Peer Insight Education, Beijing, China |
| 2018 Summer | Teaching Assistant, TOEFL R/L/S/W (Grades 9-11), Sanli, Shanghai, China |

LEADERSHIP & SERVICE EXPERIENCE

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| 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 interdisciplinary project-based learning opportunities to local high-schoolers, and facilitate weekly workshops in springs. |
| 2018 - present | Docent, Carnegie Museum of Art (CMOA) , Pittsburgh, PA <ul style="list-style-type: none">• Serve as a volunteer docent to talk with public visitors about artworks and offer K-12 school tours |
| 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 |
| 2019 | Member, CMU Initiating Meaningful Pittsburgh and Qatar Ties , Pittsburgh, PA <ul style="list-style-type: none">• Served as a member to help bridge cultural understandings between CMU Pittsburgh and Qatar campuses and hosted CMU-Qatar students |