

# Qianou (Christina) Ma

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## EDUCATION

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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 and Optimization; Educational Goal, Assessment, and Instruction; Introduction to Machine Learning; Design Educational Game; Personalized Online Learning

## SKILLS

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*Software:*         Adobe (AE/PR/PS/AU), Audacity, Figma, SPSS, ELAN, Gorilla, Google Analytics  
*Programming:*   [Intermediate]: Python, C, SML, R, JavaScript, LaTeX, Git; [Basic]: HTML, CSS, React, Jekyll  
*Natural Language:* Mandarin (Native), English (Fluent)

## RESEARCH EXPERIENCE

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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

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**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>

**Ma, Q.**, & Harpstead, E. (Accepted 8/20/2021) Support Designer-Teacher Collaboration in Educational Game Design Using Learning Science Principles. In *CHI Play '21: Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion*, October 18–21, 2021, Virtual. ACM, New York, NY, USA, 8 pages.

## PRESENTATIONS

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**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><br>CMU Dietrich College Senior Honors Fellowship (Role: Principal Investigator; \$6500)        |
| 2021 | <i>VR-Enabled Pedagogy in a First-Year Seminar.</i><br>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><br>CMU Summer Undergraduate Research Fellowship (Role: Principal Investigator; \$3500) |
| 2020 | <i>Improving Art Museums' Websites to Support Teachers &amp; Parents: a Case Study of the Carnegie Museum of Art.</i><br>CMU Small Undergraduate Research Grant (Role: Principal Investigator; \$500)      |
| 2019 | <i>Patterns of linguistic input differentially predict relatedness in children's semantic structure.</i><br>Ireland Undergraduate Research Fund (Role: Research Assistant; \$1750)                         |

## TEACHING EXPERIENCE

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| 2021 Fall   | <b>Teaching Assistant, Principles of Computing</b> (Undergrads), CMU, Pittsburgh, PA         |
| 2021 Summer | <b>Teaching Assistant, CS Scholar Pre-College Program</b> (Grades 9-12), CMU, Pittsburgh, PA |
| 2021 Spring | <b>Teaching Assistant, Functional Programming</b> (Undergrads), CMU, Pittsburgh, PA          |
| 2019 Spring | <b>Teaching Assistant, Gelfand Outreach</b> (Grades K-2), CMU LGC, Pittsburgh, PA            |
| 2019 Spring | <b>Advisor, Machine Learning Project</b> (Grades 9-12), CMU Project Ignite, Pittsburgh, PA   |
| 2019 Spring | <b>Tutor, Girls' Maker Night After School Program</b> (Grades 5-8), Assemble, Pittsburgh, PA |
| 2018 Fall   | <b>Tutor, Writing Center</b> (Grades 9-10), Taylor Allderdice High School, Pittsburgh, PA    |
| 2018 Summer | <b>Tutor, SAT Reading</b> (Grades 9-11), Peer Insight Education, Beijing, China              |
| 2018 Summer | <b>Teaching Assistant, TOEFL R/L/S/W</b> (Grades 9-11), Sanli, Shanghai, China               |

## LEADERSHIP & SERVICE EXPERIENCE

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| 2018 - present | <b>President, CMU Project Ignite</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>• Serve as the President (2021, 2022), VP of Communications (2020), Project Advisor (2019)</li><li>• Collaborate with other organizations to recruit college students, provide interdisciplinary project-based learning opportunities to local high-schoolers, and facilitate weekly workshops in springs.</li></ul> |
| 2018 - present | <b>Docent, Carnegie Museum of Art (CMOA)</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>• Serve as a volunteer docent to talk with public visitors about artworks and offer K-12 school tours</li></ul>  |
| 2019 - present | <b>Member, CMU Univ. Disciplinary Committee &amp; Acad. Review Board</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>• Serve as a board member to review student violations of community standards in hearings</li></ul>  |
| 2019           | <b>Member, CMU Initiating Meaningful Pittsburgh and Qatar Ties</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>• Served as a member to help bridge cultural understandings between CMU Pittsburgh and Qatar campuses and hosted CMU-Qatar students</li></ul>  |