

# Qianou (Christina) Ma

qianoum@andrew.cmu.edu | <https://mqo00.github.io/> | +1(412) 736-8371

## EDUCATION

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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  
*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; Parallel Distributed Processing; Distributed Systems

## SKILLS

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*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

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Feb. 2021 -      **Principal Investigator, CS Game Design Support Study**, CMU, Pittsburgh, PA  
present          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 -      **Principal Investigator, VR-Enabled Pedagogies Case Study**, CMU, Pittsburgh, PA  
present          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 -      **Research Assistant, Cognitive Linguistics Lab**, CMU, Pittsburgh, PA  
Dec. 2020          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 -      **Research Assistant, Multimodal Analytics with Math Learning**, CMU, Pittsburgh, PA  
Feb. 2020          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 -      **Principal Investigator, Carnegie Museum of Art Website Study**, CMU, Pittsburgh, PA  
May 2020          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 -      **Research Assistant & PI, Cognitive Development Lab**, CMU, Pittsburgh, PA  
Aug. 2020          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.**, & 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

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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.*

## AWARDS, FELLOWSHIPS & GRANTS

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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 &amp; 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

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2021 Fall	<b>Teaching Assistant, Principles of Computing</b> (Undergraduates), 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> (Undergraduates), 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>Teaching Assistant &amp; Tutor, TOEFL &amp; SAT</b> (Grades 9-11), Sanli & Peer Insight, China

## LEADERSHIP & SERVICE EXPERIENCE

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2021 - present	<b>Member, CMU Teaching Innovation Award Selection Committee</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>Serve to review nominations of faculty and students for the CMU teaching innovation award</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>
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 free interdisciplinary project-based learning opportunities to local high-schoolers, and facilitate about 100 workshops per year</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 lead public tours and developed a STEAM theme K-12 school tour</li></ul>
2019	<b>Member, CMU Initiating Meaningful Pittsburgh and Qatar Ties</b> , Pittsburgh, PA <ul style="list-style-type: none"><li>Host CMU Qatar students to foster cultural understandings between Pittsburgh and Qatar campuses</li></ul>