

# Qianou (Christina) Ma

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## 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  
*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

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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 - 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

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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><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)                         |
| 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>   |