Max Chen

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RESEARCH INTERESTS

Max Chen is a PhD student in Interactive Media and Game Development at Worcester Polytechnic Institute, where she is a member of Crafting Computational Crafting Lab, Intentional Design Studio, and HCI Lab. Her research focuses on computational design, with a particular emphasis on developing novel interfaces for gaming and learning in VR/AR environments. Specifically, Max is interested in exploring design strategies that leverage biofeedback and neurofeedback to enhance user experiences in immersive environments such as video games, VR, and AR.

EDUCATION

PhD in Interactive Media & Game Development Aug 2022 - Present
Worcester Polytechnic Institute (WPI), Worcester, MA
Advisors: Prof. Gillian Smith and Prof. Erin Solovey

Master of Science in Interactive Media & Game Development Aug 2020 – Dec 2022
Worcester Polytechnic Institute (WPI), Worcester, MA
Advisors: Prof. Gillian Smith and Prof. Erin Solovey

Bachelor of Engineering in Pharmaceutical Engineering Aug 2016 – June 2020
Wuhan University of Technology, Wuhan, China

RELEVANT SKILLS AND COURSEWORK

Programming: C#, Python, MATLAB, Java, HTML/CSS/JavaScript, C++

Software and Tools: Unity3D, Unreal Engine, GitHub, Plastic, Adobe Creative Suite, Qualtrics, Turbo Satori (NIRx)

Courses: Tangible and Embodied Interaction, Brain-Computer Interaction, Design of Interactive Experiences, Multidisciplinary Research Methods in Computational Media, System Dynamics, Learning Sciences

PUBLICATIONS

JOURNAL ARTICLE

- **Max Chen**, Yichen Li, Hilson Shrestha, Noëlle Rakotondravony, Lane Harrison, and Robert E. Dempski, *FlowAR: An effective mixed reality program to introduce continuous flow concepts.* [Manuscript in progress]

CONFERENCE FULL PAPERS

- **Max Chen**, Erin Solovey, Gillian Smith. *Impact of BCI-Informed Visual Effect Adaptation in a Walking Simulator.* Foundations of Digital Games (FDG 2023). Lisbon, Portugal, April 2023 [Accepted]
- **Max Chen**, and Shamsnaz Virani Bhada. *Converting Natural Language Policy Article into MBSE Model.* INCOSE International Symposium. Vol. 32. 2022.

PRESENTATIONS

- Robert Dempski, Claire Li, **Max Chen**, and Shano Liang. Integrating Biophysics Immersive Learning Tools Across Campus. Building a Network of Biophysics Education, Virtual, June 2022
- Robert Dempski, Andrew Texeira, Claire Li, Shano Liang, and **Max Chen**. Integrating Immersive Learning Tools across Campus and Beyond. Advanced Manufacturing and Processing Conference, Washington DC, June 2022
- **Max Chen**. The Importation of Murder Mystery Games in China – Game Localization and Creativity. Canadian Game Studies Association Annual Conference, June 2022

INVITED TALK

- IEEE VR 2023 Workshop on VR for Exergaming (VR4Exergame) [Planned, March 2023]

PROFESSIONAL EXPERIENCE

Research Assistant, WPI Academic & Research Computing, Worcester, MA — Feb 2021 - Present

- Provide AR/VR training & technical expertise to students and faculties.
- Showcase/prototype AR/VR and media technology for various needs
- Write and maintain intuitive and accessible documentation on equipment (HoloLens 2, Quest 2, Matterport)
- Developed internal website for demonstrating VR showcases

Senior Member, WPI Intentional Design Studio, Worcester, MA — Sep 2020 - Present

- Delivered **4** VR/AR apps, from design to maintenance phase, working on teams of 3-6 programmers, designers, and artists.
- Collaborated with research teams and clients from WPI, Delsys Technology, and UMass Lowell, and Doherty Memorial High School

AWARDS & GRANTS

- 2023 Supporting WPI Women in STEM Education Research (Award $11,478)

- 2022 Research Assistant
- 2022 Third Place in WPI 14th Annual Sustainability Project Competition (Award $500)
- 2022 Mentor, Women in Research and Mentorship Program (Award $1500)

PROJECTS

BCI-informed Game Visuals (MS Thesis) Oct 2021 - Dec 2022

- Explored the use of brain-computer interface (BCI)-adapted visual effects to support atmosphere in a walking simulator game and investigated its impact on player-reported immersive experience.
- Developed an open-sourced interface from functional near-infrared spectroscopy (fNIRS) acquisition and processing tool to Unity3D.
- Accepted as full paper to Foundations of Digital Games (FDG 2023)

Food Chain AR Sep 2022 - Present

- Explored a participatory design framework for creating AR-based learning tool with educators, students and learning scientists.
- Mentored 3 students on creating the AR food chain book prototype for 5 graders.

Flow Chemistry AR Sep 2020 - Present

- Collaborated in a team of 6, developed a HoloLens AR application to teach students how to set up packed bed column for a flow chemistry laboratory session. Assisted in IRB human protocol application, conducted user study with 33 participants, led qualitative and quantitative data analysis.
- Write manuscript for Journal of Chemical Education (in progress)

WheelUp: Co-design a VR Wheelchair Simulator Sep 2022 - Present

- Collaborated in a team of 5, developed a VR wheelchair simulator to train users in driving electric wheelchair using various input mechanics (joystick, EMG, EEG)
- User study in progress

WPI IMGD Annual Escape Room (2021) Nov 2021 - Jan 2022

- Led puzzle design and iteration as lead designer, built puzzle prototypes using Arduino, arcade buttons, and rapid prototyping techniques.

VOLUNTEER/SERVICES

- Graduate Student Representative for IMGD Program Committee (2023)
- Graduate Student Union Member (2022)

- Workshop Mentor at Latino Education Institute, Worcester State University (November 2022)

TEACHING/MENTORING EXPERIENCE

Undergraduate Major Qualifying Project

- Amanda Jones, Megan Letendre, Elise Nerden. "Sewn into Memory: Reliving Feelings through an AR Quilt" (2023)
- Alex Jozitis, Shawn Finnigan, Warren Andress. "Tabletop AR Role-playing Game" (2023)

Women's Research and Mentorship Program

- Rachel Foye, Ava Stockton, and Dinah Agyemang. "Food Chain AR: Co-design an Augmented Reality Book with Educators and Students" (2022)

Guest Lectures

- WPI IMGD 3100: Novel Interfaces for Interactive Environment, "Brain-computer Interfaces and Games" (2023)
- Massachusetts College of Art and Design Artward Bound Program, "Implementing Augmented Reality to Emphasize the Impact of Climate Change" (2022)