

Chao Mei

Rank: Assistant Professor of Software Engineering and Game Development

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PROFESSIONAL EMPLOYMENT HISTORY

Year	Institution	Role
08/2016 – Present	Kennesaw State University	Assistant Professor
08/2012 – 08/2016	The University of Texas at San Antonio	Research Assistant
08/2011 – 08/2012	The University of Texas at San Antonio	Teaching Assistant

EDUCATION

THE UNIVERSITY OF TEXAS AT SAN ANTONIO

SAN ANTONIO, TEXAS

Ph.D. in Computer Science

2011 – 2016

- Ph.D. Dissertation: “**Improving Virtual Reality ASD Intervention Training with 3DUI and 3D Virtual Humans**”

UNIVERSITY OF WISCONSIN-LA CROSSE

LA CROSSE, WISCONSIN

Master of Software Engineering

2009 - 2011

- Thesis: “**A Tool for Teaching Petri nets**”

SOUTH-CENTRAL UNIVERSITY FOR NATIONALITIES

WUHAN, CHINA

- Bachelor of Science in Software Engineering (major)
- Bachelor of Art in English Literature (minor)

2005 - 2009

RESEARCH GRANTING ACTIVITIES

- Adaptive Virtual Environments for a Prolonged Exposure Therapy of Attention Deficits on Autism Spectrum
 - Role: PI
 - Funding source: National Science Foundation (NSF), Requested: \$ 174,498.00, Approved: \$ 174,498.00
- OVPR Pilot/Seed Grants: Affective Gaming System using Virtual Environment for Depression Detection
 - Role: Co-PI
 - Funding source: Kennesaw State University, Requested: ~\$15,000, Approved: ~\$15,000.
- OVPR Pilot/Seed Grants: Self-adaptive Virtual Reality System for ASD Joint Attention Therapy
 - Role: PI
 - Funding source: Kennesaw State University, Requested: \$15,000, Approved: \$15,000.

- MS Entrepreneurs grant: Virtual Reality Walk MS San Antonio (Phase II Wheelchair Simulation)
 - Role: PI
 - Funding source: National MS Society, Requested: \$5,000, Approved: \$5,000.

INTELLECTUAL PROPERTIES

[1]. SYSTEM AND METHOD FOR THE TREATMENT OF AUTISM SPECTRUM DISORDER –U.S. Patent Application Serial No. 16/047,224, pending

RESEARCH/SCHOLARLY/CREATIVE ACTIVITIES

Research areas: **Human-Computer Interaction - Virtual/Augmented Reality, Special Education, CS Education, Medical Simulation and Training, Gaming, Software Engineering**

Publications in Refereed Journal/Transactions/Conference Proceedings

- [1]. Isaza, M., Zhang, J., Kim, K., **Mei, C.** and Guo, R. “Mono-Stereoscopic Camera in a Virtual Reality Environment: Case Study in Cybersickness”, *In 2019 10th International Conference on Virtual Worlds and Games for Serious Applications (VS-Games)*. IEEE, 2019. (In press)
- [2]. **Mei, C.**, Zahed, B.T., Mason, L. and Quarles, J. "Towards Joint Attention Training for Children with ASD-a VR Game Approach and Eye Gaze Exploration", *In 2018 IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)*. IEEE, 2018 (**Paper acceptance rate: ~20.6%**)
- [3]. **Mei, C.**, Guo, R. "Enable an Innovative Prolonged Exposure Therapy of Attention Deficits on Autism Spectrum through Adaptive Virtual Environments", *In 2018 10th International Conference on Virtual Worlds and Games for Serious Applications (VS-Games)*. IEEE, 2018.
- [4]. Murphy, N., Patel, D., Savas, D., Martin, D, **Mei, C.**, Guo, R. "Recreating Virtual Environments From User Traffic Patterns", *In 2018 10th International Conference on Virtual Worlds and Games for Serious Applications (VS-Games)*. IEEE, 2018.
- [5]. **Mei, C.**, Quarles, J. "A Software Framework for Developing Mathematical Model Driven Virtual Human", *In IEEE Virtual Reality 2016 Workshop on Virtual Humans and Crowds for Immersive Environments*. IEEE, 2016
- [6]. Guo, R., **Mei, C.**, Wu, Y., Puckett, M., Qian, K. "WIP: Promote Inquiry-Based Linear Algebra and CS Conceptual Learning Using Mobile Devices with Collaborative Augmented Reality (CAR) ", *International Conference on Education and Information Technology (ICEIT'16)*. 2016
- [7]. **Mei, C.**, Mason, L., Quarles, J. "How 3D Virtual Humans Built by Adolescents with ASD Affect Their 3D Interactions", *In Proceedings of the 17th international ACM SIGACCESS conference on Computers & accessibility (ASSETS 15)*. ACM, 2015 (**Best Paper Award Nomination; Paper acceptance rate: ~23%**)
- [8]. **Mei, C.**, Mason, L., Quarles, J. "Usability Issues with 3D User Interfaces for Adolescents with High Functioning Autism", *In Proceedings of the 16th international ACM SIGACCESS conference on Computers & accessibility (ASSETS 14)*. ACM, 2014 (**Paper acceptance rate: ~26%**)
- [9]. **Mei, C.**, Mason, L., Quarles, J. “I Built It! – Exploring the effects of Customizable Virtual Humans on Adolescents with ASD”, *In Proceedings of IEEE Virtual Reality 2015 (IEEE VR 2015)*. IEEE 2015
- [10]. Du, J., Shi, Y., **Mei, C.**, Quarles, J. “Communication by Interaction: A Multiplayer Virtual Reality Environment for Building Walkthrough”, *In Proceedings of 2016 Construction Research Congress*
- [11]. **Mei, C.**, Zhang, X., Zhao, W., Periyasamy, K., Headington, M. “A Tool for Teaching Petri Nets”, *Journal of Computing Sciences in Colleges* 26, no. 5, 2011

Non-published Conference presentations

- [1]. **Mei, C.**, Guo, R., Qian, K., "Panel: Augmented Reality for Abstract Concept Learning in STEM", *The 46th Annual Frontiers in Education (IEEE FIE) Conference catalyzing-collaborative-conversations*, 2016
- [2]. Zahed, B., **Mei, C.**, Quarles, J. "Exploring the Effects of Customizable Virtual Teacher with Different Facial Features on Children with ASD", Grace Hopper Celebration of Women in Computing, 2015
- [3]. Lampotang, S., Quarles, J., Cooper, L., Lizdas, D., Gonsalves D., **Mei, C.**, Gravenstein, N. "Loading doses are not based on patient race during simulated propofol sedation." *14th Asian Australasian Congress of Anaesthesiologists*, 2014

Published Apps

- [1]. "VR Walk for Autism" in Google Play Store - Built for Any Baby Can Autism Society, 2015
- [2]. "VR Walk MS: San Antonio" in Google Play Store – Built for National M.S. Society, 2015

PEER REVIEW SERVICES

1. Organization (Journal, Conference, etc.) for which you Judged: IEEE VR 2019, the 26th IEEE Conference on Virtual Reality and 3D User Interfaces

Number of reviews completed: 11 (as an International Program Committee member), 3 (as an invited reviewer)

2. Organization (Journal, Conference, etc.) for which you Judged: IEEE VR 2018, the 25th IEEE Conference on Virtual Reality and 3D User Interfaces

Number of reviews completed: 7 (as an invited reviewer)

3. Organization (Journal, Conference, etc.) for which you Judged: IEEE VR 2017, the 24th IEEE Conference on Virtual Reality and 3D User Interfaces

Number of reviews completed: 3 (as an invited reviewer)

4. Organization (Journal, Conference, etc.) for which you Judged: IEEE VR 2016, the 23th IEEE Conference on Virtual Reality and 3D User Interfaces

Number of reviews completed: 5 (as an invited reviewer)

5. Organization (Journal, Conference, etc.) for which you Judged: ACM SIGCSE 2019, The 50th ACM Technical Symposium on Computer Science Education

Number of reviews completed: 4 (as an invited reviewer)

6. Organization (Journal, Conference, etc.) for which you Judged: ACM SIGCSE 2018, The 49th ACM Technical Symposium on Computer Science Education

Number of reviews completed: 4 (as an invited reviewer)

7. Organization (Journal, Conference, etc.) for which you Judged: ACM SIGCSE 2017, The 48th ACM Technical Symposium on Computer Science Education

Number of reviews completed: 4 (as an invited reviewer)

8. Organization (Journal, Conference, etc.) for which you Judged: ICAIBD 2018, International Conference on Artificial Intelligence and Big Data

Number of reviews completed: 6 (as a technical committee member)

9. Organization (Journal, Conference, etc.) for which you Judged: ISVC 2018, International Symposium on Visual Computing (ISVC)

Number of reviews completed: 1 (as an invited reviewer)

10. Organization (Journal, Conference, etc.) for which you Judged: FLAIRS 2019, The 32th International FLAIRS Conference

Number of reviews completed: 3 (as a program committee member)

11. Organization (Journal, Conference, etc.) for which you Judged: FLAIRS 2016, The 29th International FLAIRS

Conference

Number of reviews completed: 1 (as an invited reviewer)

12. Organization (Journal, Conference, etc.) for which you Judged: TACCESS, ACM Transactions on Accessible Computing

Number of reviews completed: 2 (as an invited reviewer)

13. Organization (Journal, Conference, etc.) for which you Judged: VAAT 2015, 3rd IEEE VR International Workshop on Virtual and Augmented Assistive Technology

Number of reviews completed: 3 (as an invited reviewer)

14. Organization (Journal, Conference, etc.) for which you Judged: VAAT 2014, 2ed IEEE VR International Workshop on Virtual and Augmented Assistive Technology

Number of reviews completed: 2 (as an invited reviewer)

15. Organization (Journal, Conference, etc.) for which you Judged: IEEE 3DUI, 2015 IEEE Symposium on 3D User Interfaces

Number of reviews completed: 5 (as an invited reviewer)

16. Organization (Journal, Conference, etc.) for which you Judged: IEEE AIVR, The First IEEE International Conference on Artificial Intelligence and Virtual Reality

Number of reviews completed: 2 (as an invited reviewer)

OTHER SERVICES

<u>Year</u>	<u>Role</u>	<u>Society/Association</u>
2019 -	Intellectual Property Committee	Kennesaw State University
2019-	Competition Chair	IEEE Virtual Reality and 3DUI Conference
2018 - 2019	Conference Web Chair	IEEE Virtual Reality and 3DUI Conference
2016 – 2018	Committee Member	Dept Faculty Council, Faculty Search Committee, President's Athletics Oversight Council, Kennesaw State University
2016-2017	Student Volunteer Chair	IEEE Virtual Reality Conference 2017
2015	Mentor	2015 SA Youth Coding Jam (Game Development)
2014 - 2015	Fundraiser	MS Walk San Antonio
2014 - 2015	Fundraiser	Autism Walk San Antonio
2014	Student Volunteer	IEEE Virtual Reality Conference

SCHOLARLY PRESENTATIONS AND INVITED TALKS

- Towards Joint Attention Training for Children with ASD-a VR Game Approach and Eye Gaze Exploration", IEEE VR 2018
- "Augmented Reality for Abstract Concept Learning in STEM", Panel Presentation IEEE FIE, Erie, PA, 2016

- “A Software Framework for Developing Mathematical Model Driven Virtual Human”, ", Paper Presentation at the IEEE Virtual Reality 2016 Workshop on Virtual Humans and Crowds for Immersive Environments, Greenville, NC, 2016
- “Improving Virtual Reality ASD Intervention Games with 3DUI and 3D Virtual Humans”, Invited Talk at University of North Carolina at Wilmington, Wilmington, NC, 2016
- "How 3D Virtual Humans Built by Adolescents with ASD Affect Their 3D Interactions", *at the 17th international ACM SIGACCESS conference on Computers & accessibility (ASSETS 15)*, Lisbon, Portugal, 2015
- “Improving Virtual Reality ASD Intervention Games with 3DUI and 3D Virtual Humans”, Invited Talk at Iona College, New Rochelle, NY, 2015
- "Integrate VR Training with Eye Tracking", Invited Talk at UTSA Advanced Visualization Laboratory (VizLab), 2015
- "Virtual Reality Training for 3D hand-eye coordination", Invited Talk at TEAM Autism Clinic, San Antonio, TX, 2015
- "I Built It! – Exploring the effects of Customizable Virtual Humans on Adolescents with ASD", *at IEEE Virtual Reality 2015*, Arles, France.
- "Virtual Reality Walk for San Antonio", Invited Demo to U.S. House Congressman at M.S Society event, 2014
- "Usability Issues with 3D User Interfaces for Adolescents with High Functioning Autism", *at the 16th international ACM SIGACCESS conference on Computers & accessibility (ASSETS 14)*, Rochester, NY, 2014
- "I Built It! – Exploring the effects of Customizable Virtual Humans on Adolescents with ASD", *at UTSA COS conference 2014*, San Antonio, TX, 2014
- "Virtual Reality Training for 3D hand-eye coordination", Invited Talk at Autism Treatment Center, San Antonio, TX, 2013
- "A Tool for Teaching Petri Nets", *in 2011 Consortium for Computing Sciences in Colleges (CCSC 2011)*, Warrensburg, MI, 2011

TREACHING AND RESEARCH EXPERIENCE

Teaching and Advising

Kennesaw State University

- Offered Software Engineering, Game Development and Computer Science related courses (Fall 2016 – Present)
- Design innovative Virtual Reality course

The University of Texas at San Antonio

- CS 2213 Advanced Programming (Fall 2011, Spring 2012)
- CS 4953 Advanced Software Engineering (Summer 2012)
- CS 3443 Application Programming (Spring 2016)
- Advising undergraduate and graduate students in game development projects (2014 - present)

Mentor at San Antonio Youth Coding Jam

- Game Programming (2015)

Research

Kennesaw State University 2016 – present

- As an Assistant Professor, lead students to research on Human Computer Interaction - Virtual/Augmented Reality, Special Education, CS Education, Educational Gaming and Software Engineering

The University of Texas at San Antonio 2012 - 2016

- Research on educational Virtual Reality games that could help the intervention therapy of kids with autism; Virtual Reality medical simulation for medical students training.
- Use Unity3D (C# and Javascript), Unreal Engine, OpenGL (C++), Oculus Rift (VR glass), Tobii Eye Tracker, Google Card Board, Razer Hydra to design and build several Virtual Reality environments and games.
- Use 3D Max to create and optimize simple 3D models
- Use JAVA for processing of study data, SPSS for data analysis
- Conducted 3 usability tests with around 100 users, 70% of which are kids with autism.
- Advised 4 students (1 Ph.D. student, 2 master students and 2 undergraduate students) in their research projects.
- Lead a group of 4 students developing a networked multiplayer game for National MS Society.

PROJECTS

Adaptive Virtual Environments for a Prolonged Exposure Therapy of Attention Deficits on Autism Spectrum (2017 -)

- Innovative Virtual Reality therapy to conduct joint-attention training for kids with ASD

Affective Gaming System using Virtual Environment for Depression Detection (2019 -)

- Depression diagnosis system using advanced computer graphic and gaming

Mono-Stereoscopic Camera in a Virtual Reality Environment (2018-)

- An innovative rendering algorithm to reduce the motion sickness of virtual reality glasses

Collaborative Augmented Reality (CAR) for STEM Education (2016)

- Collaborative Augmented Reality application for educational purposes, especially in abstract STEM concepts

An Augmented Reality Teaching Tool for Art History (2016)

- A new approach to teach Art History based on interactive storytelling

Mathematical Virtual Human (MVP) Framework (2016)

- A software framework to develop dynamic virtual humans driven by mathematical model, which helps to include the medical professionals into the development circle

Imagination Drums (2015 – 2016)

- A Virtual Reality (VR) game that performs evaluation and training of joint attention for children with autism through a virtual drum class. A virtual teacher provides dynamic responses to user's eye gazing.
- Main skills applied: Unity 3D Game Engine, C#, JAVA, Tobii EyeTracker and RazerHydra SDK.

Demo Video URL: <https://www.youtube.com/watch?v=g3Dxxf-aYG0>

VR Walk for Autism & VR Walk M.S. (2014 - present, published in Google Play Store, funded by National M.S. Society)

- Worked as team leader in the development team. Built online mobile VR games after the real M.S Walk/Autism Walk events to help charity organizations to raise funds. These projects got the attentions from the events participants, national and local organizations, federal congressman and other celebrities.
- Main skills applied: Unity 3D Game Engine, C#, JAVA, Android APIs, Oculus Rift API, Photon Network.
- Demo Video URL: <https://www.youtube.com/watch?v=YqSEnftPBHI>

Customizable Virtual Human (CVH) & Imagination Soccer (2014)

- A Virtual Reality (VR) game that helps training the hand-eye coordination for children with autism. Users could easily customize a virtual human and then interact with it through Microsoft Kinect.
- Main skills applied: Microsoft Kinect SDK, JAVA, JavaScript, C#, Unity 3D Game Engine, 3DS Max
- Demo Video URL: <https://www.youtube.com/watch?v=zwqi9rJ3zOM>

Virtual Reality Cooking Simulation (2013-2014)

- An immersive virtual environment within which user could practice cooking skills. The system worked with Oculus Rift (3D immersive glass) and Razer Hydra (a six degrees of freedom tracker).
- Main skills applied: Oculus Rift and Razer Hydra SDK, C#, JAVA, Unity 3D Game Engine.
- Demo Video URL: <https://www.youtube.com/watch?v=kxR0pqBbU78>

3D User Interface (3DUI) Atomic Tasks Evaluation Tool (2013 -2014)

- A tool that evaluates the accuracy and time efficiency of user doing translation and rotation tasks in 3DUI.
- Main skills applied: C#, JAVA, Unity 3D Game Engine and Razer Hydra and OptiTrack SDK.
- Demo Video URL: <https://www.youtube.com/watch?v=L06TDjZWYdY>

A Mixed Reality Sedation Simulator for Learning to Manage Variability (2012–2013)

- An immersive VR training simulation that educates students on how to manage patient variability during conscious sedation.
- Main skills applied: C++, C#, OpenGL, Unity 3D Game Engine and Microsoft Kinect SDK
- Demo Video URL: <https://www.youtube.com/watch?v=JnkflnfNw6A>

Java RMI Social Network Tool (2011)

- A desktop social network tool, “lighted weighted Facebook” for classmates.
- Main skills applied: Java RMI, MySQL, Eclipse

Software System Modeling Tool with Petri Net (2010-2011)

- A graphical editor with which the user can model, save, restore and execute a Petri net.
- Main skills applied: JAVA, XML, Netbeans

A Web Based Testing System (2009)

- Undergraduate thesis project. Developed an online testing system.
- Main skills applied: JSP, MySQL, Eclipse, Tomcat

SKILLS

Research Skills – Virtual Reality, Games, Computer Graphics, Software Engineering, Human-Computer Interaction (HCI), Technical Paper writing, User study, Data Analysis and grant writing

Programming Languages – C# (5+ years), JAVA (8+ years), C ++, Python, JavaScript, HTML, CSS

IDEs and Tools – OpenGL, Unity 3D Game Engine, Unreal Game Engine, Ogre Game Engine, 3Ds MAX, XNA, Eclipse, NetBeans, Visual Studio, SPSS, MotionBuilder, Corel VideoStudio, Bitbucket, GitHub, Tomcat, MySQL

APIs and SDKs – Unity 3D Scripting API, Microsoft Hololens SDK, Android SDK, Java API, OpenGL, Microsoft Kinect SDK, Oculus Rift SDK, Razer Hydra SDK, Tobii EyeTracker SDK, OptiTrack SDK, Vicon SDK

Operating Systems – Android, IOS, Mac OS, Windows