Zongzhen (Jack) Yang

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Innovative and passionate Mixed Reality (XR) developer with 6+ years of experience in building immersive and interactive virtual experiences, with a strong background in Human-Computer Interaction design and Social Computing.

EDUCATION

University of Wisconsin-Madison | B.A. in Computer Science & B.A in Communication Arts — August 2016 – June 2020
Carnegie Mellon University | National High School Game Academy — May 2015 – August 2015
Seton Hall Preparatory School | National Honor Society member — August 2013 – May 2016

RESEARCH EXPERIENCE

Kats Laboratory of Applied Physics
October 2017 – Present

Researcher (Matlab | Unity | Hyperspectral Imaging | Oculus) — *Madison, WI*

- Devise chromatic adjustment algorithms with computer vision techniques on hyperspectral images to simulate color blindness
- Develop artificial intelligence algorithm to replicate human behavior during color vision deficiency tests such as Farnsworth-Munsell 100 Hue Test and D-15 Test to examine the accuracy of chromatic adjustment with 90% confidence
- Program virtual reality simulations to visualize research findings through color-calibrated Oculus Head Mounted Display (HMD), resulting in practical design implications for potential human vision enhancement optical lenses

University of Wisconsin Computer Graphics Lab
September 2019 – May 2020

Researcher (Unity | ROS (Robot Operating System) | HTC Vive) — *Madison, WI*

- Built a virtual reality teleoperation system where users can remotely control robots with hand and arm gestures by passing ROS data between Unity and robot through network socket with little latency
- Created a motion playback system with an intuitive user interface to dynamically replicate virtual robot arm movement by interpolating robotic data from experiments in Unity that was used to analyze 15+ lab experiments

University of Wisconsin HCI Group People and Robots Lab
April 2017 – November 2017

Researcher (C | Python | Raspberry Pi) — *Madison, WI*

- Constructed a recommender system for children reading companion robots that resulted in a successful trial with 8 families
- Partnered with mechanical engineering students to add speech recognition to robots using NLP techniques

PUBLICATIONS

Accepted

J. Salman, M. Gangishetty, B. Rubio-Perez, D. Feng, Z. Yu, Z. Yang, C. Wang, A. Shahsafi, D. Congreve, M. A. Kats, "Passive frequency conversion of ultraviolet images into the visible using perovskite nanocrystals," *Journal of Optics,* Vol. 23, No. 5, 054001 (2021)

Under Review

Z.Yang*, B. Rubio-Perez*, J. Salman, M.Frising, M. A. Kats, "Monte Carlo Simulations of the Farnsworth-Munsell 100 Hue Color Vision Test for Anomalous Trichromatic and Dichromatic Observers," (Forthcoming, Winter 2021)

Z.Yang, B. Rubio-Perez, M. A. Kats, "Breaking Binocular Redundancy Through Virtual Reality," (Forthcoming, Spring 2022)

Other

Featured in: Cameron, Mike, "Effective Leaders: Four Attributes That Underpin The Core Characteristics of Effective Leadership," *SpiritCast Network* (2021)

PROFESSIONAL EXPERIENCE

Holos Inc.
February 2019 – Present

AR/VR Developer (Unity | Ultraleap | Blender) — *https://holos.io/*

- Build interactive networked AR/VR content management and training simulation system with hand tracking interaction
- Prototype and deploy key features, including multiplayer networking, hand gesture recognition, 3D model processing, and virtual object manipulation interface, resulting in winning a $750,000 research contract with the U.S. Air Force
- Formulate and implement new design decisions and product directions based on user testing observations

Microsoft Mixed Reality March 2021 – Present

Open-Source Developer (Unity | Ultraleap | Git) *github.com/MixedRealityToolkit-Unity*

- Add and maintain Ultraleap (Leap Motion) hand tracking support and demonstration projects for Microsoft's Unity Mixed Reality Toolkit (MRTK) project by contributing 4,000+ lines of code
- Collaborate with other developers on bug fixing and managing repository documentations

TEACHING & ADVISING

CS559 Computer Graphics Fall 2019 & Spring 2020

Teaching Assistant (THREE.js | GLSL Shader | Git) *Madison, WI*

- Provided tutoring and support to 350+ students on course content and assignments for 2 semesters
- Assisted head faculty members with designing classroom materials and graded 550+ student projects

PROJECTS

Virtualso January 2020 – Present

Founder & Developer (Unity | NLP) *Madison, WI*

- Develop a virtual reality interview simulation where users are interviewed by a conversational humanoid agent capable of making emotion-driven facial expressions and body gestures using Natural Language Processing techniques
- Implement a realistic virtual reality speech trainer where users upload their own slides and present to a room of artificial intelligent audiences capable of reacting through body gestures and eye contact
- Received highly positive feedbacks from business school students who used the simulation to practice for job interviews and presentations

PolySpace VR September 2020 – August 2021

Founder & Developer *github.com/Poly-Space-VR*

- PolySpace VR is an open-source virtual reality social platform that promotes small virtual gatherings and minimal latency performance across devices, where players are encouraged to create and submit their own spaces to be featured
- Published and received positive reviews on the Oculus Store, with 1K+ downloads and 350+ active users

LEADERSHIP EXPERIENCE

UpNote February 2017 - January 2020

Founder *Madison, WI*

- UpNote is a B2C platform that enables venues and individuals to democratize music playlists and capture data on music preferences by allowing users to nominate songs through integration with their music streaming service of choice.
- Led a team of 3 developers to create a minimal viable product and recruited 4 local bars to participate in alpha testing

CERTIFICATES

University of California San Diego | Interaction Design Specialization (In Progress)
University of California San Diego | VR Development Professional Certificate
Georgia Tech | Human-Computer Interaction Professional Certificate
University of London | Virtual Reality Specialization
Udacity | Computer Vision Nanodegree

TECHNICAL SKILLS

C# | C++ | MATLAB | JavaScript | Unity | Unreal | Leap Motion | OpenVR | OpenGL | MRTK | ARKit | ARCore | Blender | Git

References Available Upon Request