Zongzhen (Jack) Yang

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Innovative and passionate Mixed Reality (XR) developer with 6+ years' experience in building highly 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 glasses

University of Wisconsin Computer Graphics Lab — September 2019 - May 2020

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

- Built a virtual reality system where users can remote control robots with hand and arm gestures by passing ROS data between Unity and robot through network socket with little latency, resulting in a real-time mimicry control system
- 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*

- Developed 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, Spring 2022)

Z.Yang, B. Rubio-Perez, M. A. Kats, "Breaking Binocular Redundancy Through Virtual Reality", (Forthcoming, Fall 2021)

Others

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 VR and AR content management and training simulation system with hand tracking interaction
- Prototype and deploy key features, including multiplayer networking, hand gesture recognition, model processing, and user onboarding 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 collectively 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 and implement a virtual reality interview simulation where the user is interviewed by a conversational humanoid agent capable of making emotion-driven facial expressions and body gestures using Natural Language Processing techniques
- Used and tested by 5 business school students to practice for upcoming job interviews and received highly positive feedbacks

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 low 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 1,000+ downloads and 350+ active users

LEADERSHIP EXPERIENCE

UpNote

February 2017 - January 2020

Founder *Madison, WI*

- UpNote is a B2C platform that allows 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

Georgia Tech | Human-Computer Interaction Professional Certificate
University of California San Diego | VR Development Professional Certificate
University of London | Specialization in Virtual Reality
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