

ZHENYI HE

Cell: (718)200-4944. Email: zhenyi.he@nyu.edu. Web: zhenyihe.wordpress.com

RESEARCH INTERESTS

Technical Human-Computer Interaction (HCI), Virtual Reality (VR), Augmented Reality (AR), social interactions, gestures, co-located/remote collaboration, haptic feedback, and mid-air sketch.

EDUCATION

Ph.D. in Future Reality Lab, New York University, Adviser: Prof. [Ken Perlin](#) 9/2015 - Present

M.S. and B.S. in Digital Art Lab, Shanghai Jiao Tong University Adviser: Prof. [Xubo Yang](#) 9/2008 - 3/2015

Thesis (MS): Interaction Design and Application Study with Mixed Reality Eye Glasses

Thesis (BS): Design and Implementation of Controlling 3D Virtual Objects with Bare-hands Based on Kinect

INDUSTRY EXPERIENCES

Facebook Reality Lab. People AI Face Team, Menlo Park, CA, USA 6/2019 — 8/2019
Research Intern, Mentor: [Elif Albuz](#)

Oculus Research in Pittsburgh (now FRL). Social VR Team, Pittsburgh, PA, USA 6/2018 — 12/2018
Research Intern, Mentor: [Michal Perdoch](#)

RESEARCH EXPERIENCES (FIRST AUTHOR)

Who is Looking at Whom? Visualizing Eye Contacts for Remote Small Groups Adviser: Prof. [Ken Perlin](#)

- Lead a collaborative project between Google researcher and our lab.
- Deploy LookAtChat, a web-based video conferencing system, which empowers remote users to identify eye contact and spatial relationships in small-group conversations.
- Leverage real-time eye-tracking technology available with ordinary webcams, LookAtChat tracks each user's gaze direction, identifies who is looking at whom, and provides corresponding spatial cues.

TapGazer: Touch Typing with Finger Tapping and Gaze-directed Word Selection Adviser: Prof. [Ken Perlin](#) and Prof. [Christof Lutteroth](#)

- Present a text entry system in which users type by tapping their fingers in place without needing to look at their hands on any available surface, based on the anticipation of lightweight eye-glass enabling eye-tracking.
- Reach 58.17 word per minute.

CollaboVR: A Reconfigurable Framework for Creative Collaboration in VR Adviser: Prof. [Ken Perlin](#)

- Demonstrate CollaboVR, a reconfigurable framework for both co-located and geographically dispersed multi-user communication in VR.
- Unleash users' creativity by sharing freehand drawings, converting 2D sketches into 3D models, and generating procedural animations in real-time.
- Invited by I3D 2020 poster session. Prior work is presented at [CHI'EA 2019](#).

Avatar Representation in VR Video Conferencing Adviser: [Elif Albuz \(Facebook Reality Lab\)](#)

- Lead an intern project in FaceTracking team.
- Implement a 2D video image representation and a 3D avatar representation for comparison. To solve the uncanny feeling of 2D video image in VR, no-change, cropped, segmented, frame, and portal style are designed.

Handwriting in VR Adviser: [Michal Perdoch \(Facebook Reality Lab\)](#)

- Propose a handwriting approach with haptic feedback in VR for surface writing. Users can either hold a regular pen or conduct a pinch gesture to perform writing tasks.
- An algorithm that detects gestures based on the input of head mounted cameras with convolutional pose machines (CPM) framework.
- Reach an accuracy of 98.3% on keypoint detection.

Scanning in AR

Adviser: Prof. [Ken Perlin](#) and Prof. [Daniele Panizzo](#)

- Design a MR approach to help real-time scan tabletop-scale objects.
- Integrate the newly scanned point cloud into mesh. Objects to be scanned are tracked for user to manipulate the scanning result correspondingly.

PhyShare: Sharing Physical Interaction in Virtual Reality

Adviser: Prof. [Ken Perlin](#)

- Propose a new approach for interaction in VR using robots as proxies for haptic feedback. It allows VR users to share and manipulate tangible physical objects with remote collaborators.

VRite: A Text-Input Method for Virtual Reality Systems

Adviser: Prof. [Ken Perlin](#)

- Design a glyph-based aerial virtual keyboard that can be used anywhere for text-input in VR.

PUBLICATIONS

Kris Layng, Michael Gold, Benjamin Ahlbrand, **Zhenyi He**, and Ken Perlin. 2020. The Outpost. In *ACM SIGGRAPH 2020 Immersive Pavilion (SIGGRAPH '20)*. Association for Computing Machinery, New York, NY, USA, Article 10, 1–2.

Zhenyi He, Ruofei Du, and Ken Perlin. 2020. CollaboVR: A Reconfigurable Framework for Creative Collaboration in Virtual Reality. In *IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*.

Zhenyi He, Karl Rosenberg, and Ken Perlin. 2019. Exploring configuration of mixed reality spaces for communication. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–6.

Ken Perlin, **Zhenyi He**, and Karl Rosenberg. 2018. Chalktalk: A Visualization and Communication Language As a Tool in the Domain of Computer Science Education. *arXiv preprint arXiv:1809.07166(2018)*.

Ken Perlin, **Zhenyi He**, and Fengyuan Zhu. 2018b. Chalktalk vr/ar. *International SERIES on Information Systems and Management in Creative eMedia (CreMedia)2017/2 (2018)*, 30–31.

Zhenyi He, Fengyuan Zhu, Ken Perlin, and Xiaojuan Ma. 2018. Manifest the Invisible: Design for Situational Awareness of Physical Environments in Virtual Reality. *arXiv preprint arXiv:1809.05837(2018)*.

Zhenyi He, Fengyuan Zhu, and Ken Perlin. 2017. Physhare: Sharing physical interaction in virtual reality. In *Adjunct Publication of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST)*. 17–19.

Zhenyi He and Xubo Yang. 2014. Object creation based on free virtual grid with ARGlass. In *SIGGRAPH Asia 2014 Posters (SA '14)*. Association for Computing Machinery, New York, NY, USA, Article 41, 1.

Zhenyi He and Xubo Yang. 2014. Hand-based interaction for object manipulation with augmented reality glasses. In *Proceedings of the 13th ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry. (VRCAI 227–230)*.

TECHNICAL STRENGTHS AND ACADEMIC SERVICE

Software & Platform Language	Unity, Unreal, Node.js, OpenGL, Matlab, Android, Arduino, Ogre
Program Committee:	CHI Late Breaking Work(2020)
Reviewer:	CHI (2019 — 2021), Eurohaptics (2020), ISS (2020), TEI (2020), UIST (2019, 2020), SIGGRAPH ASIA (2019), IEEE VR (2019), VRST (2018, 2020), ICMI (2020)

SELECTED FELLOWSHIP AND HONORS

The 2017 Snap Inc. Research Fellowship (<i>top 12</i>).	2017
Merit Students in Shanghai Jiao Tong University (SJTU) (<i>top 3 in dept</i>).	2014 and 2010
Outstanding League Leader in Shanghai Jiao Tong University (SJTU)	2013
Shanghai Outstanding Undergraduate Student (<i>top 6 in dept</i>).	2012
Advanced Individual in Shanghai Jiao Tong University (SJTU)	2010
Third Grade of CASC Airplane Scholarship (<i>top 10 in dept</i>).	2013