肖玮烨

教育

2018 – now
东南大学　博士在读
工业设计

2017 – 2018
东南大学　硕士
设计学

2013 – 2017
东南大学　本科
机械工程及其自动化

联系方式

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+86 176 0253 4113

Email
esukastudio@outlook.com

Portfolio
www.esukastudio.com

关于我

我是一个热爱跨领域技术研发的科研工作者，致力于结合机器学习、计算机图形学与人因工程学来解决设计中的热点问题。

过去五年中,我的工作聚焦在XR中的人机交互领域，先后完成多项与国内知名企业的合作项目。基于人因工程的研究，我所在的团队创造各种新颖的控制与显示技术，来增强XR体验的沉浸感和视觉连贯性。

目前，我正在将重心转向神经渲染/反向渲染/条件GAN方向，借助深度学习强大的场景理解能力更好的优化XR的渲染效果。

专业技能

- 一年以上深度学习开发经验,熟练掌握Pytorch与Tensorflow2.0+框架，熟悉典型的GAN(StyleGAN等)、神经渲染(NeRF等)模型，论文阅读与复现能力优秀.
- 三年图形图像开发经验，图形学和图像算法经验丰富，对hlsl、cg和unity的材质系统熟悉. 丰富的渲染管线、着色器与独立游戏Gameplay开发经验.
- 熟悉Python、C#、C++等语言，熟练使用Unity等引擎，有丰富的XR和多通道交互开发经验(熟悉Hololens、Azure、SteamVR等主流XR设备的SDK). 代码风格严谨良好.
- 具备专业的设计与美术能力，熟练使用PS、AI、Sketch等图形设计软件，熟练掌握Blender、SD、SP等三维软件. 具备独立完成游戏DCC工作流的能力.

项目经历

基于贝叶斯感知的混合现实光照视觉连贯性研究(在研, 负责)

本人博士课题，通过对人类感知经验的测量(心理学、行为学、生理反应)，为机器视觉和图形渲染提供优化方法。将GAN的潜在空间嵌入与辅助学习方法相结合，在混合现实中的光照估计任务方面已取得初步进展。目前在着手制作带有语义分割信息的合成数据集，用来训练所搭建的有监督神经网络.

数据中心混合现实智慧运维应用研究(在研, 负责)

项目来源于中国移动–东南大学联合研发课题，以中国移动无锡数据中心为试点，研发基于Hololens2混合现实设备的智慧运维平台，本人负责项目的整体统筹与部分研发工作，包括交互界面的设计开发、Webrtc实时音视频通讯、专家远程指导、自然手势交互与语音交互等功能的实现.

基于意图识别的人机交互融合策略及工效研究(在研, 参与)

项目来源于中央军委科技委，旨在通过分析人机交互过程中的工效学问题，提供显示与控制的优化策略. 基于机器对人体交互意图的识别，实现人机系统在交互层面上的融合. 本人负责项目中人机视觉融合策略相关研究，以人的感知先验为引导，使机器视觉的工作模式与人类更贴近，从而实现一定程度上的人机融合.

载人登月虚拟现实仿真培训系统研发(已结项, 负责)

项目来源于中国航天员科研训练中心，该系统利用装载了仿真飞行摇杆和穿戴式手势识别传感器的虚拟现实设备，模拟了载人登月任务的完整流程，系统包含可用于交互的指令舱操控面板，模拟增强现实的虚拟界面，模拟遥操作的探月车等交互模块. 本人负责项目的整体统筹、系统设计以及60%开发工作.

雷达显控虚拟现实交互系统研发(已结项, 负责)
空天目标虚拟现实显示交互系统研发(已结项, 负责)

项目来源于中电十四所，该领域共合作两个项目. 所研发系统通过TCP协议与雷达业务端进行通讯，对侦测到的空天雷达数据在虚拟现实中进行可视化. 系统支持自然手势交互(Leap Motion)、VR眼控交互(Pupil Labs)以及体感交互(Azure Kinect). 本人负责项目的整体统筹、系统设计以及60%开发工作.

云鹰显控台原型设计演示(已结项, 负责)

项目来源于中船724所，对第三代舰艇指控显控台进行工业设计(概念原型与结构设计)，并利用Unity对演示视频进行实时渲染与后期处理. 本人负责项目的整体统筹以及60%设计工作.

获奖/出版物

“十三五”国家重点出版物
《人机界面系统设计中的人因工程》第七章编撰
ISBN: 978-7-118－12406－4.

“十二五”江苏省重点教材
《工业设计基础(第三版)》第九章编撰
ISBN: 978-7-5641-8108-6.

2019中国人因工程学学会(特邀研讨会)
载人登月虚拟现实仿真

2017/2016 红点设计大奖
概念设计入围

2014 江苏省3D打印大赛(二等奖)

2013 江苏省创新体验大赛(二等奖)

实践履历

东南大学
工业设计系
2019 – now | 技术负责人
2017 – now | 助教(计算机辅助工业设计)
2017 – now | 助教(设计认知及计算)

Unity Technology
2018 – now | 校园大使

南京林业大学
艺术设计学院
2021 – now | 外聘助教(虚拟展示设计)

更多内容请看作品集(个人主页)及英文CV, 期待您的回复!
www.esukastudio.com

Weiye Xiao

design . technology . ergonomics

PROFILE

I am a researcher who loves cross-disciplinary technology research and development.

EMPLOYMENT

Southeast University
Department of Industrial Design

2019 – now | Technical Director
2017 – now | Teaching Assistant

Unity Technology

2018 – now | Student Ambassador

Nanjing Forestry University

2021 – now | Teaching consultant

AWARDS / EXHIBITION

2019 Manned Moon Landing VR Simulation (Invited Workshop), Chinese Ergonomics Society

2017 Red Dot Award: Design Concept Finalist

2016 Red Dot Award: Design Concept Finalist

2014 Second Prize of 3D Printing Competition, Jiangsu Province

2013 Second Prize of the Innovation Experience Competition, Jiangsu Province

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EDUCATION

2018 – now | Southeast University
Industrial Design, PhD Candidate

2017 – 2018 | Southeast University
Design , MA.Eng 2018

2013 – 2017 | Southeast University
Mechanical Engineering and Automation, B.E. 2017

RESEARCH / PROJECTS

Research on the Application of mixed reality in data Center | 2020 – 2021
China Mobile Research Institute is served,
Responsible for project management and technical research

VR Display Interactive System for Air and Space Targets | 2019 – 2020
The 14th Research Institute of China Electronics Technology Group Corporation is served,
Responsible for project management and technical research

Radar Display and Control VR Interactive System | 2017 – 2018
The 14th Research Institute of China Electronics Technology Group Corporation is served,
Responsible for project management and technical research

Manned Lunar Landing Simulation Training System | 2018 – 2019
The China Astronaut Research and training Center is served,
Responsible for project management and technical research

Learn More : www.esukastudio.com

Publicatioins

National Important Publication of the 13th Five-year Plan | 2017 – 2021
Human factor engineering in the design of HCI system (Chapter 7)
ISBN: 978-7-118-12406-4.

Importent Textbook of Jiangsu Province of the 12th Five-year Plan | 2018 – 2020
The Foundation of Industrial Design (3rd Edition, Chapter 9)
ISBN: 978-7-5641-8108-6.

BDIOT2020 Conference Paper | 2019 – 2020
Research on Visual Programming System with Gesture Interaction in VR
DOi:10.1145/3421537.3421554

Authorized Invention Patent | 2017 – 2018
Air Detection Device and Ground Ejection System
CN201811623440.7

Authorized Invention Patent | 2017 – 2018
A low-altitude search location method
ZL 2018 1 1621941.1

REFEREES

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Master Supervisor
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Weiye Xiao

design . technology . ergonomics

AVATAR

Mixed Reality
Gesture Interaction
Realtime Rendering
Reverse Rendering
Conditional GAN
Human Perception

AIMS

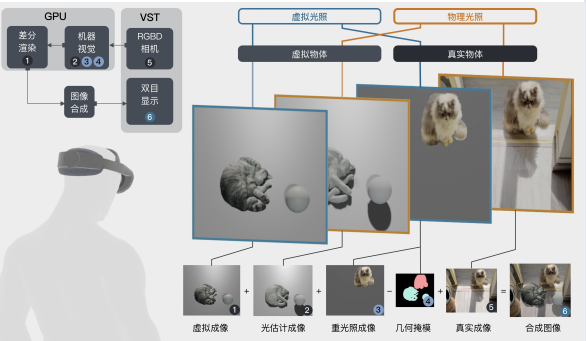
I create a novel way of human-computer interaction based on human factors. I comprehensively use computer vision and computer graphics skills to enhance the immersion and visual coherence in XR.

I am committed to building a bridge between computer graphics and human factors by studying the laws of human perception and cognition.

SKILLS

- 3 years experience in graphics and image development; Good knowledge of graphics and image algorithms; Skilled in cg/hlsl and Unity material system.
- Skilled in deep learning development : Pytorch/Tensorflow2.0+; familiar with popular deep learning network; Excellent paper reading and reproduction ability.
- Interdisciplinary research background.
- Proficient in PS/AI/Sketch and other graphic design tools; Good knowledge of Blender/SD/SP and other 3D creation software; Have the ability to complete the game DCC workflow independently.
- Skilled in Cross-platform development: Unity(c#), Python3.0+, C++; Good knowledge of XR and multi-channel interactive development.
- Proficiency in English; CET4/6.

REPRESENTATIVE WORK



Research on Visual Coherence of Mixed Reality Illumination based on Bayesian Perception

The issue of visual coherence in mixed reality is concerned in my doctoral project. While the information of physical world and virtual object needs to be contained by mixed reality at the same time, scene understanding ability needs to be possessed by HMD. For example, by giving AI the ability to understand illumination, lighting information in a physical scene can be captured and used to render virtual objects.

Bayersian perception is focused in my work. By studying human perceptual experience, optimization methods are provided for CV and CG rendering. By combining Stylegan's Latent Space Embedding with an assisted learning approach, my project made initial progress in the visual coherence task of blending realistic lighting. The work will be carried on in the future.

Manned Lunar Landing Simulation Training System based on Multi-channel Interaction in Virtual Reality

The China Astronaut Research and training Center is served by this project. The project was completed by a team led by me. A scene covering the whole process of manned landing on the moon was built by us within 3 months. The virtual scene includes the complete interior view of the lunar module, part of the lunar surface land, lunar rovers and other special equipment.

The portable gesture sensor is embedded in HMD, and the logic flight joystick was used to map the interactive hardware in the spacecraft. Users can interact with the scene through natural gestures, avatars, simulation joysticks, virtual touch interfaces and virtual controls, and complete multiple lunar exploration tasks in the virtual scene.

Virtual Reality Visual Programming Toolkit based on Natural Gesture Interaction

In order to improve the efficiency of development and testing in virtual environment, a VR visual programming toolekit based on gesture interaction is proposed. Considering that VR developers need to remove HMD frequently during debugging, we propose that it is necessary to unify the development and debugging of VR software in a virtual environment.

While the precision of keyboard input is low in VR, the text language is not convenient enough. Therefore, a graphical language is proposed. By modularizing the commonly used functions, the program block diagram can be quickly edited by developers using gestures. Based on this system, a visual programming toolkit in Unity environment is developed. At present, the toolkit supports editing simple UI components and Shader in VR.