

Fengming He

• Phone: 765-426-5116 • Email: he418@purdue.edu • Web: fengminghe.com

EDUCATION

Purdue University, School of Electrical and Computer Engineering
Ph.D. Candidate in C Design Lab, GPA: 3.9 / 4.0

West Lafayette, IN
Aug. 2017 - present

Wuhan University, School of Electrical and Computer Engineering
B.S. in Electrical and Computer Engineering, GPA: 3.8 / 4.0.

Wuhan, China
Sep. 2013 – July. 2017

SKILLS

Programming and Visual Computing: C, C#, Java, Python, Matlab, OpenCV, and Unity

User Experience Analysis: Informative Elicitation Study, Qualitative and Quantitative Evaluation, Statistical Analysis

RESEARCH AND EXPERIMENTAL DESIGN EXPERIENCE

Ubi Edge: Authoring Edge-Based Opportunistic Tangible User Interfaces in Augmented Reality

LEAD AUTHOR

Accepted by CHI 2023

- Allow end-users to utilize geometric edges on physical objects as input for opportunistic TUIs
- An integrated algorithm for reconstructing, detecting, and tracking 3D edges on everyday objects as well as interactions between fingers and the 3D edges
- An immersive AR authoring interface that supports end-users to segment edges through in-situ interactions while referring to the physical object

ARnnotate: An Augmented Reality Interface for Collecting Custom Dataset of 3D Hand-Object Interaction Pose Estimation [C.1]

CO-LEAD AUTHOR

Published at UIST 2022

- Assist end-users to create customized 3D hand-object pose datasets for out-of-lab usage
- An AR-based annotation workflow that creates labels first and records images label later to avoid the hand-object occlusion problem
- An AR interface with front-end visual assistance and back-end computational processes that supports end-users in creating high-quality datasets

ScalAR: Authoring Semantic Adaptive Augmented Reality Experiences in Virtual Reality [C.4]

CO-AUTHOR

Published at CHI 2022

- Helped designers create AR applications that can be generalized to multiple different environments
- A VR authoring studio with dynamic visualization for authoring semantically adaptive AR contents
- Constructed an algorithm that fits an AR designer's demonstration as a semantic adaption model used for AR experience deployment

GestureAR: An Authoring System for Creating Freehand Interactive Augmented Reality Applications [C.3]

CO-AUTHOR

Published at UIST 2022

- Empowered AR users to design in-situ freehand interactions with AR contents
- An AR interface for generating virtual assets and demonstrating hand gestures through visual programming
- A freehand interaction model that spatially and temporally maps hand inputs to corresponding behaviors of virtual contents based on a real-time hand detection algorithm

LightPaintAR: An Authoring System for Creating Freehand Interactive Augmented Reality Applications [E.1]

CO-AUTHOR

Published at CHI LBW 2021

- Helped photographers to create light painting pictures using AR traces as reference
- Built an AR sketch board on Hololens2 that is compatible with all digital cameras

CAPturAR: Authoring Context-aware Applications in Augmented Reality [C.1]

CO-AUTHOR

Published at UIST 2020

- Allow users to interact with IoTs using daily routines without giving explicit orders
- Activity detection through body pose tracking and object recognition using head-mounted cameras
- An authoring interface of binding daily activities with IoT functions through spatial programming in AR

ProcessAR: An augmented reality-based tool to create in-situ procedural 2D/3D Instructions [C.2]

CO-AUTHOR

Published at DIS 2021

- An AR authoring platform for delivering 3D and 2D Spatio-temporal instructions
- Empowered experts to become content creators without technical AR authoring knowledge
- Combined computer vision and gaze detection to allow tool detection in real-time

PUBLICATIONS

[C.5] Xun Qian*, Fengming He*, Xiyun Hu, Tianyi Wang, and Karthik Ramani. 2022. ARnnotate: An Augmented Reality Interface for Collecting Custom Dataset of 3D Hand-Object Interaction Pose Estimation. In Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (**UIST 2022**). DOI: <https://doi.org/10.1145/3526113.3545663>

[C.4] Xun Qian, Fengming He, Xiyun Hu, Tianyi Wang, Ananya Ipsita, and Karthik Ramani. 2022. ScalAR: Authoring Semantically Adaptive Augmented Reality Experiences in Virtual Reality. In CHI Conference on Human Factors in Computing Systems (**CHI 2022**), pp. 1-18. 2022. DOI: <https://doi.org/10.1145/3491102.3517665>

[C.3] Wang, Tianyi, Xun Qian, Fengming He, Xiyun Hu, Yuanzhi Cao, and Karthik Ramani. "GesturAR: An Authoring System for Creating Freehand Interactive Augmented Reality Applications." In The 34th Annual ACM Symposium on User Interface Software and Technology (**UIST 2021, Honorable mention**), pp. 552-567. 2021. DOI: <https://doi.org/10.1145/3472749.3474769>

[C.2] Chidambaram, Subramanian, Hank Huang, **Fengming He**, Xun Qian, Ana M. Villanueva, Thomas S. Redick, Wolfgang Stuerzlinger, and Karthik Ramani. "ProcessAR: An Augmented Reality-Based Tool to Create In-Situ Procedural 2D/3D AR Instructions." In Proceedings of the Designing Interactive Systems Conference (**DIS 2021**). 2021. DOI: <https://doi.org/10.1145/3461778.3462126>

[C.1] Wang, Tianyi, Xun Qian, **Fengming He**, Xiyun Hu, Ke Huo, Yuanzhi Cao, and Karthik Ramani. "CAPturAR: An Augmented Reality Tool for Authoring Human-Involved Context-Aware Applications." In Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (**UIST 2020**), pp. 328-341. 2020. DOI: <https://doi.org/10.1145/3379337.3415815>

[E.1] Wang, Tianyi, Xun Qian, **Fengming He**, and Karthik Ramani. "LightPaintAR: Assist Light Painting Photography with Augmented Reality." In Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (**CHI 2021 LBW**), pp. 1-6. 2021. DOI: <https://doi.org/10.1145/3411763.3451672>

ACADEMIC SERVICE

Reviewer for CHI2023, CHI2022, DIS 2022, CHI2021, Late-Breaking Work of CHI2021

HONORS & AWARDS

Honorable Mention Award at User Interface Software and Technology (UIST) 2021