Shaoyu Cai

Email: shaoyu.cai@my.cityu.edu.hk   **Person Webpage**: https://shaoyuca.github.io/mypage/

Phone: (852) 5345-3060   **Citizenship**: China

Research interests	Human-Computer Interaction, Cross-modal Learning, Texture Modelling and Rendering, Tactile Signal Processing, Haptic Interface, Virtual Reality

Education

City University of Hong Kong   Hong Kong SAR, China
Doctor of Philosophy   09/2019 – Present
Supervisor: Prof. Kening Zhu

Huazhong Agricultural University   Wuhan, China
Bachelor of Engineering   09/2014 – 06/2018
Thesis: Designing of Automatic Flatness Detection System Based on PLC

Publications

[c6] Weighted Walking: Propeller-based On-leg Force Simulation of Walking in Fluid Materials in VR
Pingchuan Ke, **Shaoyu Cai**, Lantian Xu, Kening Zhu
In SIGGRAPH Asia 2021 Emerging Technologies, December 14-17, 2021. ACM, New York, NY, USA, 2 pages.

[j2] Visual-Tactile Cross-Modal Data Generation using Residue-Fusion GAN with Feature-Matching and Perceptual Losses
Shaoyu Cai, Kening Zhu, Yuki Ban, and Takuji Narumi.
In IEEE Robotics and Automation Letters (RA-L), vol. 6, no. 4, pp. 7525-7532 with IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2021).

[c5] FrictGAN: Frictional Signal Generation from Fabric Texture Images using Generative Adversarial Network
Shaoyu Cai, Yuki Ban, Takuji Narumi, and Kening Zhu.
In ICAT-EGVE 2020: International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments, pp. 11-15. The Eurographics Association, 2020. (Best Paper Audience Choice Award)

[c4] ThermAirGlove: A pneumatic glove for thermal perception and material identification in virtual reality
Shaoyu Cai, Pingchuan Ke, Takuji Narumi, and Kening Zhu.
In 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 248-257. IEEE VR, 2020.

[c3] Demonstration of thermairglove: A pneumatic glove for material perception in virtual reality through thermal and force feedback

Shaoyu Cai, Pingchuan Ke, Shanshan Jiang, Takuji Narumi, and Kening Zhu. *In SIGGRAPH Asia 2019 Emerging Technologies, pp. 11-12. 2019.*

[j1] **A sense of ice and fire: Exploring thermal feedback with multiple thermoelectric-cooling elements on a smart ring**
Kening Zhu, Simon Perrault, Taizhou Chen, **Shaoyu Cai**, and Roshan Lalintha Peiris.
International Journal of Human-Computer Studies 130 (2019): 234-247.

[c2] **Embodied Weather: Promoting Public Understanding of Extreme Weather Through Immersive Multi-Sensory Virtual Reality**
Pingchuan Ke, Kai-Ning Keng, Shanshan Jiang, **Shaoyu Cai**, Zhiyi Rong, and Kening Zhu.
In The 17th International Conference on Virtual-Reality Continuum and its Applications in Industry, pp. 1-2. 2019.

[c1] **HapTwist: creating interactive haptic proxies in virtual reality using low-cost twistable artefacts**
Kening Zhu, Taizhou Chen, **Shaoyu Cai**, Feng Han, and Yi-Shiun Wu.
In SIGGRAPH Asia 2018 Virtual & Augmented Reality, pp. 1-2. 2018.

Research experience	**The University of Tokyo**	Tokyo, Japan
	Graduate School of Information Science and Technology	Visiting Researcher
	Cyber Interface Lab	01/2020 – 03/2020
	Mentors: Prof. Takuji Narumi and Prof. Yuki Ban	
	City University of Hong Kong	Hong Kong SAR, China
	School of Creative Media	Research Assistant
	Multimodal and Embodied Interaction (MEI) Lab	09/2018 – 08/2019
	Mentor: Prof. Kening Zhu	
	National Taipei University	Taipei, China Taiwan
	Department of Electrical Engineering	Exchanging Student
	Artificial Intelligence & Robotics Technology Lab	09/2016 – 01/2017
	Mentor: Prof. Hooman Samani	
Teaching experience	**SM1103A: Introduction to Media Computing**	Teaching Assistant
	School of Creative Media, City University of Hong Kong	Fall 2020 & 2021
	SM2715: Creative Coding	Teaching Assistant
	School of Creative Media, City University of Hong Kong	Spring 2021
Industry experience	**WISfur Thermal Technology**	Wuhan, China
	Intern	Summer 2017

YTO Group Corporation   Luoyang, China
Student Intern   Summer 2016

ICAT-EGVE 2020   12/2020
Online presentation for *FrictGAN* published in ICAT-EGVE 2020

The Night of IEEE VR, China VR 2020 workshop   05/2020
Online presentation for *ThermAirGlove* published in IEEE VR

IEEE Virtual Reality 2020   03/2020
Online oral presentation for the full paper of *ThermAirGlove*

SIGGRAPH Asia 2019, Emerging Technologies   11/2019
Oral presentation and real-time demo for *ThermAirGlove*

Best Paper Audience Choice Award   ICAT-EGVE 2020
Research Tuition Scholarship 2020/21   City University of Hong Kong
Special Thanks for Speakers   China VR 2020
Outstanding Graduate Certificate   HZAU

Programming
Proficient in: Python, TensorFlow, PyTorch, Keras, MATLAB.
Familiar with: C, JavaScript, HTML.

Prototyping
Proficient in: Arduino, Processing, 3D Printing & Laser cutting.
Familiar with: AutoCAD, PCB, Circuit design.

Languages
Mandarin Chinese (Native), English (Fluent), Cantonese (Competent), Japanese
(Basic).

Paper Reviewing
ISS 2021 Journal Papers
CHI 2021 Papers
VRST 2021 Papers
ICMI 2021 Papers
ISMAR 2021 Posters
UbiComp/ISWC 2021 Posters and Demos
CHI 2020 Papers (Special Recognitions)
VRST 2020 Papers
MobileHCI 2020 Papers (Special Recognitions)
SUI 2020 Papers

SIGGRAPH Asia 2019 & 2020 & 2021 Emerging Technologies
CHI 2019 Late-Breaking Work

Committee Member
CHI 2021 Late-Breaking Work
CHI 2020 Late-Breaking Work

Memberships   ACM student member   2019.10-present

References   **Prof. Kening Zhu**   PhD supervisor
Associate Professor at the School of Creative Media & Department of Computer Science, City University of Hong Kong
Email: keninzhu@cityu.edu.hk

Prof. Takuji Narumi   Research mentor
Associate Professor at the Graduate School of Information Science and Technology, The University of Tokyo
Email: narumi@cyber.t.u-tokyo.ac.jp