Qi Sun

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EDUCATION

Doctor of Philosophy 2013/08 - 2018/05
Computer Science, Stony Brook University, *Stony Brook, NY*
Advisor: Distinguished Professor Arie Kaufman
Dissertation: Computational Methods for Immersive Perception
IEEE VR 2019 Best Dissertation Award

Bachelor of Science 2013/08
Mathematics, Taishan Honors College, Shandong University, China 2010/10 - 2013/08
Computer Science, Shandong University, China 2009/09 - 2010/10

EMPLOYMENT

Research Scientist 2018/06 - Now
Adobe Research, *San Jose, CA*

Research Intern 2017/07 - 2017/09
Adobe Research, Procedural Imaging Group, *San Jose, CA*
With by Paul Asente, Cynthia Lu and Li-Yi Wei

Research Intern 2017/04 - 2017/07
NVIDIA Research, New Experiences Group, *Redmond, WA*
With Anjul Patney, Morgan McGuire, Omer Shapira, Aaron Lefohn and David Luebke

Research Intern 2016/06 - 2016/08
NVIDIA Research, New Experiences Group, *Santa Clara, CA*
With Fu-Chung Huang, Joohwan Kim and David Luebke

Research Intern 2012/11 - 2013/02
Microsoft Research Asia, Hardware Computing Group, *Beijing, China*

RESEARCH INTERESTS

My research bridges computer graphics, human-computer interaction, VR/AR, and human visual optics. Beyond academic publications, my research has also been demonstrated to hundreds of users, attracted major media (e.g., BBC) reports, won an IEEE VR best dissertation award, and transferred to commercial systems reaching 40,000+ customers.

PUBLICATIONS

Top-Tier Journal/Conference Full Papers:

7 **Eccentricity Effects on Blur and Depth Perception**
Qi Sun, Fu-Chung Huang, Li-Yi Wei, David Luebke, Arie Kaufman, Joohwan Kim
Optics Express Vol. 28 No. 5, 2020

6 **DiffTaichi: Differentiable Programming for Physical Simulation**
Yuanming Hu, Luke Anderson, Tzu-Mao Li, **Qi Sun**, Nathan Carr, Jonathan Ragan-Kelley, Frédo Durand
International Conference on Learning Representations (ICLR) 2020

5 **Learning to Reconstruct 3D Manhattan Wireframes from a Single Image**
Yichao Zhou, Haozhi Qi, Simon Zhai, **Qi Sun**, Zhili Chen, Li-Yi Wei, Yi Ma
ICCV 2019 (Oral Presentation, 4.3% acceptance rate)

4 **Reducing Simulator Sickness with Perceptual Camera Control**
Ping Hu, **Qi Sun**, Piotr Didyk, Li-Yi Wei, Arie Kaufman
ACM Transactions on Graphics (SIGGRAPH Asia 2019)

3 **Towards Virtual Reality Infinite Walking: Dynamic Saccadic Redirection**
Qi Sun, Anjul Patney, Li-Yi Wei, Omer Shapira, Jingwan Lu, Paul Asente, Suwen Zhu, Morgan McGuire, David Luebke, Arie Kaufman
ACM Transactions on Graphics (SIGGRAPH 2018) [BBC interview]

2 **Perceptually-Guided Foveation for Light Field Displays**
Qi Sun, Fu-Chung Huang, Joohwan Kim, Li-Yi Wei, David Luebke, Arie Kaufman
ACM Transactions on Graphics (SIGGRAPH Asia 2017)

1 **Mapping Virtual and Physical Reality**
Qi Sun, Li-Yi Wei, Arie Kaufman
ACM Transactions on Graphics (SIGGRAPH 2016)

Other Papers & Posters

7 **A Transparent Display with Per-Pixel Color and Opacity Control**
TJ Rhodes, Gavin Miller, **Qi Sun**, Daichi Ito, Li-Yi Wei
SIGGRAPH 2019 Emerging Technologies

6 **Benefits of 3D Immersion for Virtual Colonoscopy**
Koosha Mirhosseini, **Qi Sun**, Krishna Gurijala, Bireswar Laha, Arie Kaufman
IEEE Visualization Workshop on 3DVis 2014

5 **Data-Driven Human Motion Synthesis Based on Angular Momentum Analysis**
Ping Hu, **Qi Sun**, Xiangxu Meng, and Jingliang Peng
IEEE International Symposium on Circuits and Systems, ISCAS 2013

4 **Modeling 3D Faces from Samplings via Compressive Sensing**
Qi Sun, Yanlong Tang, and Ping Hu
International Conference on Digital Image Processing, 2013

3 **Kinect-Based Automatic 3D High-Resolution Face Modeling**
Qi Sun, Yanlong Tang, Ping Hu, and Jingliang Peng
International Conference on Image Analysis and Signal Processing 2012

2 **Has Half the Time Passed? Investigating Time Perception at Long Scales**
Sandra Malpica, Belen Masia, Laura Herman, Gordon Wetzstein, David Eagleman, Diego Gutierrez, Zoya Bylinskii, **Qi Sun**
Vision Science Society 2020

1 **Buyers Satisfaction in A Virtual Fitting Room Scenario Based on Realism of Avatar**
Qi Sun, Seyedkoosha Mirhosseini, Ievgeniia Gutenko, Ji Hwan Park, Charilaos Papadopoulos, Bireswar Laha, Arie Kaufman
IEEE Symposium on 3D User Interfaces, 3DUI 2015

Books:

1 **Real VR: Digital Immersive Reality**
Springer Lecture Notes in Computer Science 2020 (Dagstuhl Book Chapter)

SELECTED PRESS/MEDIA

Adobe Glasswing Transparent Display.
The Verge, CNET, Axios, Next Reality, Printed Electronics World, TechHQ etc.

Towards Virtual Reality Infinite Walking.
BBC News (personal interview), SIGGRAPH blog, IEEE, Adobe News, NVIDIA Blog, Two Minute Papers, Stony Brook News, Road to VR, Hackaday, VR Focus, VR World, Inverse, ScienceDaily, eurekAlert, newsAtlas, Sohu.com (Chinese), RedShark News, VR Soldier, Stylus, InAVate, 4gamer (Japanese) Virtual Reality Magazine (German), Microsiervos (Spanish) etc.

Mapping Virtual and Physical Reality.
SIGGRAPH Technical Papers Preview, Business Wire, Seamless Virtual Reality News (Japanese), leiphone.com/sina.cn etc. (Chinese), Tencent gameinstitute, Game II DOOSAN Gallery New York.

Perceptually-Guided Foveation for Light Field Displays.
Road to VR, Seamless Virtual Reality News (Japanese).

TEACHING/ADVISING

Guest Lecturer
CSE 564: Visualization, Stony Brook University 2018 Spring
Frontiers of Computing Studies, Peking University 2019 Summer
GAMES-CN Webinar 2017

Teaching Assistant
CSE 214: Computer Science II, Stony Brook University 2013 Fall

Graduate Mentor
CSE 593: Independent Study in Computer Science, Stony Brook University 2013 Fall, 2014 Spring

Advisees
Yuanming Hu, PhD student at MIT
Sandra Malpica, PhD student at University of Zaragoza
Yichao Zhou, PhD student at UC Berkeley
Dushyant Goyal, Master at SBU. Now machine learning research engineer at Element Inc.

INVITED TALKS

Human Learning: Understanding and Computing the Eyes and Brain in VR
Schloss Dagstuhl, Wadern, Germany 2019
Max-Planck-Institut für Informatik, Saarbrücken, Germany 2019
Microsoft Research Asia, Beijing, China 2019

Industrial Innovations in the Age of VR/AR
Wayfair Inc., Boston, MA 2019

Towards Virtual Reality Infinite Walking, Talk & Live Demo
Adobe Tech Summit, San Francisco, CA 2019
GPU Technology Conference (GTC), San Jose, CA 2018

Computational Methods for Immersive Perception
Harvard University, Cambridge, MA 2018
University of Florida, Gainesville, FL 2018
Adobe Research, San Jose, CA 2017

SERVICE

Conference Program Committee
ACM ETRA Short Papers 2020
ACM CHI Late-Breaking Works 2020
ACM SIGGRAPH Asia Technical Briefs and Posters 2019
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D) 2019-2020

Reviewer
ACM SIGGRAPH, Nature Scientific Reports, ACM CHI, IEEE Visualization, Computer Graphics Forum (CGF), ACM Transaction on Graphics (TOG), ACM User Interface Software and Technology (UIST), ACM i3D, IEEE 3D User Interfaces (3DUI), IEEE VR [both Conference and Journal tracks], IEEE ISMAR, ACM Symposium on Applied Perception (SAP), ACM ETRA, IEEE Access, Wiley Computer Animation and Virtual Worlds, IEEE Consumer Electronics Magazine

Other
Adobe Research PhD fellowship committee 2018 - 2019
Adobe Research Women-in-Technology Scholarship committee 2019

AWARDS

IEEE VR 2019 Best Dissertation Award 2020
Stony Brook Computer Science Special Chair Fellowship 2013 - 2014
Outstanding Bachelor Thesis Award of Shandong Province, China 2013

GRANTED PATENTS

Saccadic redirection for virtual reality locomotion
Qi Sun, Anjul Patney, Omer Shapira, Morgan McGuire, Aaron Lefohn, David Luebke
US10573061B2, granted 2020-02-25

Path planning for virtual reality locomotion
Qi Sun, Anjul Patney, Omer Shapira, Morgan McGuire, Aaron Lefohn, David Luebke
US10573071B2, granted 2020-02-25

Adjusting an Angular Sampling Rate during Rendering Utilizing Gaze Information
Qi Sun, Fu-Chung Huang, Joohwan Kim and David Luebke
US10395624B2, granted 2019-08-27

System and Method for Generating a Progressive Representation Associated with Surjectively Mapped Virtual and Physical Reality Image Data
Arie Kaufman, **Qi Sun** and Li-Yi Wei
US10403043B2, granted 2019-09-03