

# Qi Sun

✉ qisun0@gmail.com

🌐 <http://www.qisun.me>

☎ +1 (631) 496 6898

## EDUCATION

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<b>Doctor of Philosophy</b> Computer Science, Stony Brook University, <i>Stony Brook, NY</i> Advisor: Distinguished Professor Arie Kaufman Dissertation: Computational Methods for Immersive Perception	2013/08 - 2018/05
<b>Bachelor of Science</b> Mathematics, Taishan Honors College, Shandong University, China Computer Science, Shandong University, China	2013/08 2010/10 - 2013/08 2009/09 - 2010/10

## EMPLOYMENT

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<b>Research Scientist</b> <b>Adobe Research</b> , <i>San Jose, CA</i>	2018/06 - Now
<b>Research Intern</b> <b>Adobe Research</b> , Procedural Imaging Group, <i>San Jose, CA</i> With by Paul Asente, Cynthia Lu and Li-Yi Wei	2017/07 - 2017/09
<b>Research Intern</b> <b>NVIDIA Research</b> , New Experiences Group, <i>Redmond, WA</i> With Anjul Patney, Morgan McGuire, Omer Shapira, Aaron Lefohn and David Luebke	2017/04 - 2017/07
<b>Research Intern</b> <b>NVIDIA Research</b> , New Experiences Group, <i>Santa Clara, CA</i> With Fu-Chung Huang, Joohwan Kim and David Luebke	2016/06 - 2016/08
<b>Research Intern</b> <b>Microsoft Research Asia</b> , Hardware Computing Group, <i>Beijing, China</i>	2012/11 - 2013/02

## RESEARCH INTERESTS

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

## PUBLICATIONS

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### Papers:

- 12 Eccentricity Effects on Blur and Depth Perception**  
**Qi Sun**, Fu-Chung Huang, Li-Yi Wei, David Luebke, Arie Kaufman, Joohwan Kim  
Optics Express 2020
- 11 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

- 10 **Reducing Simulator Sickness with Perceptual Camera Control**  
Ping Hu, **Qi Sun**, Piotr Didyk, Li-Yi Wei, Arie Kaufman  
SIGGRAPH Asia 2019
- 9 **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)
- 8 **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
- 7 **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  
SIGGRAPH 2018
- 6 **Perceptually-Guided Foveation for Light Field Displays**  
**Qi Sun**, Fu-Chung Huang, Joohwan Kim, Li-Yi Wei, David Luebke, Arie Kaufman  
SIGGRAPH Asia 2017
- 5 **Mapping Virtual and Physical Reality**  
**Qi Sun**, Li-Yi Wei, Arie Kaufman  
SIGGRAPH 2016
- 4 **Benefits of 3D Immersion for Virtual Colonoscopy**  
Koosha Mirhosseini, **Qi Sun**, Krishna Gurijala, Bireswar Laha, Arie Kaufman  
IEEE Visualization Workshop on 3DVis 2014
- 3 **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
- 2 **Modeling 3D Faces from Samplings via Compressive Sensing**  
**Qi Sun**, Yanlong Tang, and Ping Hu  
International Conference on Digital Image Processing, 2013
- 1 **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

#### **Books:**

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

#### **Posters:**

- 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

## SELECTED PRESS/MEDIA

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### **Adobe Glasswing Transparent Display.**

The Verge, CNET, Axios, Next Reality, Printed Electronics World, TechHQ etc.

### **Towards Virtual Reality Infinite Walking.**

BBC News (interview), SIGGRAPH blog, IEEE, Adobe News, NVIDIA Blog, Two Minute Papers, Stony Brook News, Road to VR, Hackaday, VR Focus, VR World, Inverse, ScienceDaily, eurekaAlert, 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

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### **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
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### **Graduate Mentor**

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

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### **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
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### **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

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### 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, 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, IEEE Consumer Electronics Magazine

### Other

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

## AWARDS

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Stony Brook Computer Science Special Chair Fellowship	2013 - 2014
Outstanding Bachelor Thesis Award of Shandong Province, China	2013

## GRANTED PATENTS

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### 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 Subjectively Mapped Virtual and Physical Reality Image Data

Arie Kaufman, Qi Sun and Li-Yi Wei

US10403043B2, granted 2019-09-03