Qi Sun

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EDUCATION

Doctor of Philosophy	08/2013 - 05/2018

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

EMPLOYMENT

Tenure-Track Assistant Professor	01/2021 -
Research Assistant Professor	04/2020 - 01/2021
Tandon School of Engineering, New York University	

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

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

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

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

Research Intern	11/2012 - 02/2013
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

Major Journal/Conference Papers:

8 **Deep Multi Depth Panoramas for View Synthesis**
K. Lin, Z. Xu, B., P. Srinivasan, Y. Hold-Geoffroy, S. DiVerdi, **Q. Sun**, K. Sunkavalli, R. Ramamoorthi
European Conference on Computer Vision (ECCV) 2020

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 **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

6 **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

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

4 **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

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

2 **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

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-Centered Immersive Graphics

New York University, Brooklyn, NY	2020
Boston University, Boston, MA	2020
University of North Carolina, Chapel Hill, NC	2020
University of Texas, Dallas, TX	2020
University of Illinois, Chicago, IL	2020
Dartmouth College, Hanover, NH	2020

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 SIGGRAPH Asia XR and VR Theater	2020
Grace Hopper Celebration (GHC)	2020
ACM ETRA Short Papers	2020-2021
ACM CHI Late-Breaking Works	2020-2021
ACM SIGGRAPH Asia Technical Briefs and Posters	2019
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D)	2019-2021

Reviewer

ACM SIGGRAPH, Nature Scientific Reports, ACM CHI, IEEE Visualization, IEEE Transactions on Visualization and Computer Graphics, Computer Graphics Forum (CGF), ACM Transaction on Graphics (TOG), ACM User Interface Software and Technology (UIST), ACM VRST, 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, IEEE Transactions on Emerging Topics in Computing

Other

National Science Foundation (NSF) panelist	2020
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

Controlling an augmented reality display with transparency control using multiple sets of video buffers
Tenell Glen Rhodes Jr, Gavin Stuart Peter Miller, Li-yi Wei, **Qi Sun**
US10847117, granted 2020-11-24

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