Qi Guo

School of Engineering and Applied Sciences, Harvard University
2 Peabody Ter, Rm 2201, Cambridge, MA 02138, USA
qguo@seas.harvard.edu
Website: http://scholar.harvard.edu/qguo

RESEARCH INTERESTS

Computational sensing, computer vision, machine learning, optics.
Current focus: inventing visual sensors using bio-inspiration and novel optics such as metasurfaces.

EDUCATION

Harvard University, Cambridge, MA — Aug 2015-present
Ph.D. in Electrical Engineering
Advisor: Professor Todd Zickler

Harvard University, Cambridge, MA — Aug 2015-May 2018
M.S. in Engineering Sciences

Tsinghua University, Beijing, P.R.China — Aug 2011-Jul 2015
B.E. in Automation
GPA: 93/100, Ranking: 1/134

RESEARCH EXPERIENCES

Research intern at Facebook Reality Labs — Apr 2019-Sep 2019

Research intern at NVIDIA Research — May 2017-Aug 2017

Research intern at Big Data Lab, Baidu Inc. — Nov 2015-Feb 2016

SCHOLARSHIPS & AWARDS

Outstanding reviewer at CVPR 2019.

Best Demo Award at ICCP 2018.

Certificate of Distinction in Teaching, Harvard University, 2016.

Best Student Paper Award at ECCV 2016.

Outstanding Graduate of Tsinghua University, 2015.

Outstanding Graduate of Beijing, 2015.

Tsinghua Supreme Scholarship (highest honor of students at Tsinghua Univ.), 2014.

Fang-Chongzhi Scholarship (highest honor of students at Dept. of Automation, Tsinghua Univ.), 2013.

National Scholarship (top 2% at Dept. of Automation), 2012.

HAGE Scholarship, 2012.

INVITED TALKS

"Metasurfaces for visual sensing". Computer Vision and Patter Recognition (CVPR) Workshop, Jun 2021.

"Small computer vision by combining optics and computation." Purdue University, West Lafayette, IN, Mar 2021.
———— University of Toronto, Ontario, Canada, Apr 2021.
———— University of Florida, Gainsville, FL, Apr 2021.

"Bio-inspired depth sensing using computational optics." Northwestern University, Chicago, IL, Nov 2019.

———— Boston University, Boston, MA, Dec 2019.
———— Brown University, Providence, RI, Dec 2019.
———— Massachusetts Institute of Technology, Cambridge, MA, Feb 2020.
———— Stanford University, Stanford, CA, May 2020.

"Focal track: depth and accommodation with Oscillating lens deformation." Northeastern University, Boston, MA, Dec 2017.

GRANTS & PROPOSALS

Graduate professional development grant, USD 2,500, Harvard University, Apr 2019.

Contributing author on two successful proposals to US National Science Foundation:

- "Depth from Differential Defocus." NSF IIS-1718012, USD 450,000, PI: Todd Zickler, Jul 2017.
- "End-to-end Computational Sensing." NSF IIS-1900847, USD 1,200,000, PIs: Todd Zickler and Federico Capasso, Jul 2019.

PROFESSIONAL SERVICE & AFFILIATION

Reviewer, IJCV, CVPR, ICCV, ECCV	Sep 2018-present
Member, Harvard Vision Journal Club	Apr 2016-present
Student Member, IEEE	Apr 2014-present
President, Tsinghua 7th Sparks Science & Tech Club	Apr 2013-Apr 2015

TEACHING

Computer Vision (ES143), Teaching Fellow	Fall 2020
Computer Vision (CS283), Teaching Fellow	Fall 2017
Artificial Intelligence (CS182), Teaching Fellow	Fall 2016

UNDERGRAD ADVISING

Anubha Srivastava, nominated dean's award for engineering project, Harvard SEAS, 2019

Renbin Liu, MIT EECS, 2018

PUBLICATIONS

Qi Guo, H. Tang, A. Schmitz, W. Zhang, Y. Lou, A. Fix, S. Lovegrove, H. Strasdat. "Raycast Calibration for Augmented Reality HMDs with Off-Axis Reflective Combiners." In *International Conference on Computational Photography (ICCP)*, 2020.

Qi Guo, Z. Shi, Y.-W. Huang, E. Alexander, C.-W. Qiu, F. Capasso, T. Zickler. "Compact Single-shot Metalens Depth Sensor Inspired by Eyes of Jumping Spiders." In *Proc. of the National Academy of Sciences*, 116(46), 22959-22965, 2019.

Qi Guo, I. Frosio, O. Gallo, T. Zickler and J. Kautz. "Tackling 3D ToF Artifacts Through Learning and the FLAT Dataset." In *Proc. European Conference on Computer Vision (ECCV)*, 2018.

X. Ji, G. Zhang, X. Chen, and **Qi Guo**. Multi-perspective Tracking for Intelligent Vehicle. IEEE Transactions on Intelligent Transportation Systems, 19(2), pp.518-529, 2018.

Qi Guo, E. Alexander, and T. Zickler. "Focal Track: Depth and Accommodation with Oscillating Lens Deformation." In *Proc. International Conference on Computer Vision (ICCV)*, 2017. **Best Demo at International Conference on Computational Photography (ICCP), 2018.**

E. Alexander, **Qi Guo**, S.J. Koppal, S.J. Gortler, and T. Zickler. "Focal Flow: Velocity and Depth from Differential Defocus Through Motion." In *International Journal of Computer Vision (IJCV)*, 2017.

E. Alexander, **Qi Guo**, S.J. Koppal, S.J. Gortler, and T. Zickler. "Focal Flow: Measuring Distance and Velocity with Defocus and Differential Motion." In *Proc. European Conference on Computer Vision (ECCV)*, 2016. **Best Student Paper.**

Qi Guo, B.-W. Chen, S. Rho, W. Ji, F. Jiang, X. Ji, S.-Y. Kung. "Efficient Divide-and-Conquer Classification based on Parallel Feature Space Decomposition for Distributed Systems." In *IEEE Systems Journal*, 2015.

REFERENCES

Prof. Todd Zickler, Harvard University
zickler@seas.harvard.edu

Prof. Federico Capasso, Harvard University
dperic@seas.harvard.edu

Prof. Sanjeev Koppal, University of Central Florida
sjkoppal@ece.ufl.edu

Prof. Aswin Sankaranarayanan, Carnegie Mellon University
saswin@andrew.cmu.edu

Dr. Jinwei Gu, SenseBrain AI
gujinwei@sensebrain.site

Dr. Hauke Malte Strasdat, Facebook Reality Labs
strasdat@fb.com