

# Long Qian

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## EDUCATION

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**Johns Hopkins University**, Baltimore, US

Aug. 2015 - Jun. 2020 (expected)

- PhD candidate, Computer Science
- Advisors: Prof. Peter Kazanzides and Prof. Nassir Navab
- Laboratory for Computational Sensing and Robotics (LCSR)

**Tsinghua University**, Beijing, China

Aug. 2011 - Jul. 2015

- Bachelor of Engineering, Electronics Engineering

**Chinese University of Hong Kong**, Hong Kong

Jun. 2018 - Sept. 2018

- Visiting scholar, T Stone Robotics Institute

**KTH Royal Institute of Technology**, Stockholm, Sweden

Aug. 2013 - Jan. 2014

- Exchange student, Information and Communication Technology

## RESEARCH INTERESTS

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Augmented reality, medical robotics, head-mounted displays, real-time systems, clinical and translational research, especially the “see-through surgery”

## PUBLICATIONS

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1. **Long Qian**, Xiran Zhang, Anton Deguet, Peter Kazanzides, “Augmented Reality X-Ray Vision for Laparoscopic Surgery using Optical See-Through Head-Mounted Display,” accepted to *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2019*.
2. **Long Qian**, Anton Deguet, Peter Kazanzides, “dVRK-XR: Mixed Reality Extension for da Vinci Research Kit,” *Hamlyn Symposium on Medical Robotics (HSMR)*, pp. 93-94. 2019. [**Best Paper Award, Second Place**]
3. **Long Qian**, Anton Deguet, Zerui Wang, Yun-hui Liu, Peter Kazanzides, “Augmented Reality Assisted Instrument Insertion and Tool Manipulation for the First Assistant in Robotic Surgery,” *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5173-5179. IEEE. 2019.
4. **Long Qian**, Alexander Plopski, Nassir Navab, Peter Kazanzides, “Restoring the Awareness in the Occluded Visual Field for Optical See-Through Head-Mounted Displays,” *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, Volume 24, Issue 11, pp. 2936-2946. IEEE. 2018.
5. **Long Qian**, Anton Deguet, Peter Kazanzides, “ARssist: Augmented Reality on a Head-Mounted Display for the First Assistant in Robotic Surgery,” *Healthcare Technology Letters (HTL)*, Volume 5, Issue 5, pp. 194-200. IET. 2018. [**Outstanding Paper Award**]
6. Gerard Deib, Alex Johnson, Mathias Unberath, Kevin Yu, Sebastian Andress, **Long Qian**, Gregory Osgood, Nassir Navab, Ferdinand Hui, Philippe Gailloud, “Image Guided Percutaneous Spine Procedures using an Optical See-Through Head Mounted Display: Proof of Concept and Rationale,” *Journal of Neurointerventional Surgery (JNIS)*, Volume 10, Issue 12, pp. 1187-1191. British Medical Journal Publishing Group. 2018.
7. Ehsan Azimi, Alexander Winkler, Emerson Tucker, **Long Qian**, Manyu Sharma, Jayfus Doswell, Nassir Navab, Peter Kazanzides, Evaluation of Optical See-Through Head-Mounted Displays in Training for Critical Care and Trauma,” *IEEE Virtual Reality (VR)*, pp. 1-9. IEEE. 2018.
8. Ehsan Azimi, Alexander Winkler, Emerson Tucker, **Long Qian**, Jayfus Doswell, Nassir Navab, Peter Kazanzides, “Can mixed-reality improve the training of medical procedures?,” *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, pp. 4065-4068. IEEE. 2018.

9. **Long Qian**, Alexander Barthel, Alex Johnson, Greg Osgood, Peter Kazanzides, Nassir Navab, Bernhard Fuerst, "Comparison of Optical See-Through Head-Mounted Displays for Surgical Interventions with Object-Anchored 2D-Display," *International Journal of Computer Assisted Radiology and Surgery (IJCARS)*, Volume 12, Issue 6, pp. 901-910. Springer. 2017.
10. **Long Qian**, Ehsan Azimi, Nassir Navab, Peter Kazanzides, "Alignment of the Virtual Scene to the Tracking Space of a Mixed Reality Head-Mounted Display," *arXiv* 1703.05834. 2017.
11. **Long Qian**, Mathias Unberath, Kevin Yu, Bernhard Fuerst, Alex Johnson, Nassir Navab, Greg Osgood, "Towards Virtual Monitors for Image Guided Interventions Real-Time Streaming to Optical See-Through Head-Mounted Displays," *arXiv*, 1710.00808. 2017.
12. Ehsan Azimi, **Long Qian**, Peter Kazanzides, Nassir Navab, "Robust Optical See-Through Head-Mounted Display Calibration: Taking Anisotropic Nature of User Interaction Errors into Account," *IEEE Virtual Reality (VR)*, pp. 219-220. IEEE. 2017. **[Best Poster Award, Honorable Mention]**
13. Jianren Wang, **Long Qian**, Ehsan Azimi, Peter Kazanzides, "Prioritization and Static Error Compensation for Multi-Camera Collaborative Tracking in Augmented Reality," *IEEE Virtual Reality (VR)*, pp. 335-336. IEEE. 2017.
14. **Long Qian**, Alexander Winkler, Bernhard Fuerst, Peter Kazanzides, Nassir Navab, "Modeling Physical Structure as Additional Constraints for Stereoscopic Optical See-Through Head-Mounted Display Calibration," *IEEE International Symposium on Mixed and Augmented Reality (ISMAR-Adjunct)*, pp. 154-155. IEEE. 2016.
15. **Long Qian**, Alexander Winkler, Bernhard Fuerst, Peter Kazanzides, Nassir Navab, "Reduction of Interaction Space in Single Point Active Alignment Method for Optical See-Through Head-Mounted Display Calibration," *IEEE International Symposium on Mixed and Augmented Reality (ISMAR-Adjunct)*, pp. 156-157. IEEE. 2016.
16. **Long Qian**, Zihan Chen, Peter Kazanzides, "An Ethernet to FireWire Bridge for Real-Time Control of the da Vinci Research Kit (dVRK)," *IEEE Conference on Emerging Technologies & Factory Automation (ETFA)*, pp. 1-7. IEEE. 2015.

## PRESENTATIONS AND DEMONSTRATIONS

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- "dVRK-XR: Mixed Reality Extension for da Vinci Research Kit," Demo and presentation at *2019 Hamlyn Symposium on Medical Robotics, London* Jun. 2019
- "ARssist: Augmented Reality for the First Assistant in da Vinci Surgery," Demo at *2019 ICRA, Montreal, Canada* May 2019
- "Augmented Reality on a Head-Mounted Display in Robotic Surgery," Presentation at *FANUC America Corporation, Rochester Hills* May 2019
- "ARssistX: X-Ray Vision for Laparoscopic Surgery," Presentation at *LCSR Seminar, Baltimore* Apr. 2019
- "ARssist: Augmented Reality on a Head-Mounted Display for the First Assistant in Robotic Surgery," Demo at *2019 LCSR Industry Day, Baltimore* Mar. 2019
- "ARssist: Augmented Reality on a Head-Mounted Display for the First Assistant in Robotic Surgery," Demo and presentation at *2019 Intuitive Surgical Research Symposium, Sunnyvale* Jan. 2019
- "Towards See-Through Surgery with Head-Mounted Display," Presentation at *GBO, Baltimore* Dec. 2018
- "Restoring the Awareness in the Occluded Visual Field for Optical See-Through Head-Mounted Displays," Presentation at *2018 ISMAR, Munich and LCSR Seminar, Baltimore* Oct. 2018
- "ARssist: Augmented Reality on a Head-Mounted Display for the First Assistant in Robotic Surgery," Presentation at *2018 AECAI Workshop, Granada, Spain* Sept. 2018
- "How to write a smart contract?" Presentation at *2018 ImVis Workshop, Lake Faak, Austria* May 2018
- "Augmented Reality with Head-Mounted Displays (HMD) in the Operating Room," Presentation at *T Stone Robotics Institute, Chinese University of Hong Kong* May 2018
- "A Virtual da Vinci Research Kit (dVRK) on Head-Mounted Displays," Demo at *2018 LCSR Industry Day, Baltimore* Mar. 2018
- "Augmented Reality and the Applications for Medical Procedures," Presentation at *Department of Control Science and Engineering, Tongji University, Shanghai* Sept. 2016

- “Accuracy Improvement for Optical See-Through HMD Calibration by Reducing User Interaction Error,” Presentation at *LCSR Seminar, Baltimore* Apr. 2016
- “Calibration of Optical See-Through Head-Mounted Display,” Demo and presentation at *2016 LCSR Industry Day, Baltimore* Mar. 2016
- “An Ethernet to FireWire Bridge for Real-time Control of the da Vinci Research Kit (dVRK),” Presentation at *LCSR Seminar, Baltimore* Sept. 2014

## PROFESSIONAL SERVICE

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- Reviewer for *IEEE Conference on Virtual Reality and 3D User Interfaces (VR)*
- Reviewer for *IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*
- Reviewer for *IEEE International Conference on Robotics and Automation (ICRA)*
- Reviewer for *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
- Reviewer for *ACM Virtual Reality Software and Technology (VRST)*
- Reviewer for *ACM CHI Conference on Human Factors in Computing Systems (CHI)*
- Reviewer for *International Journal of Computer Assisted Radiology and Surgery (IJCARS)*
- Reviewer for *IET Healthcare Technology Letters (HTL)*
- Reviewer for *IET Image Processing*
- Reviewer for *ASME Manufacturing Science and Engineering Conference (MSEC)*
- Reviewer for *Chinese Optics Letters*

## TEACHING EXPERIENCE

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**Augmented Reality**, EN.601.454/654 by Prof. Nassir Navab

- Guest Lecturer on “Head-Mounted Display” Spring 2019, 2018
- Project Supervisor Spring 2019, 2018, 2017

**Computer-Integrated Surgery II**, EN.601.456/656 by Prof. Russel Taylor

- Project Supervisor Spring 2019, 2018

**Robot Devices, Kinematics, Dynamics, and Control**, ME.530.646 by Prof. Noah Cowan

- Teaching Assistant Fall 2016

**Intro Programming for Scientists & Engineers**, EN.600.112 by Prof. Joanne Selinski

- Teaching Assistant Fall 2015

## INDUSTRIAL EXPERIENCE

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**Google Inc. Daydream VR**, Software Development Engineer Intern, *California* Jul. 2017 - Sept. 2017

**Intuitive Surgical Inc.**, Applied Research Engineer Intern, *California* Apr. 2017 - Jun. 2017

**Accenture Inc.**, Data Analyst and Consultant Intern, *Beijing* Oct. 2014 - Mar. 2015

## AWARDS AND HONORS

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**Intuitive Clinical Research Grant**, Johns Hopkins University Jul. 2019

**Best Paper Award, Second Place**, Hamlyn Symposium on Medical Robotics Jun. 2019

**Outstanding Paper Award**, AE-CAI Workshop Sept. 2018

**Intuitive Technology Research Grant**, Johns Hopkins University Jan. 2018

**Best Poster Award, Honorable Mention**, IEEE Virtual Reality Mar. 2017

**Second Place**, NASA Space Apps Challenge at Washington D.C. Apr. 2016

**Outstanding Graduate**, Tsinghua University (Top 10%) Sept. 2015

**Second Place**, Mathematical Contest in Modeling, Tsinghua University May 2014

**Meritorious Winner**, Mathematical Contest in Modeling, COMAP Apr. 2014

**Overseas Research Training Program**, Tsinghua University Jul. 2014

<b>Outstanding Visiting Undergraduate</b> , China Scholarship Council	<i>Aug. 2013</i>
<b>Kuok Scholarship</b> , Tsinghua University	<i>Oct. 2014</i>
<b>SOAR Scholarship</b> , Tsinghua University	<i>Oct. 2013</i>
<b>EMC Scholarship</b> , Tsinghua University	<i>Oct. 2012</i>
<b>Freshmen Scholarship</b> , Tsinghua University (“Gaokao” Top 10 in Shanghai)	<i>Oct. 2012</i>

## SKILLS

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**Language:** Chinese (Native), English (Fluent), Spanish (Limited, DELE A2)

**Programming Language:** C/C++, Python, C#, Java, Javascript, Matlab, Latex, Verilog, Solidity, Shell etc.

**Software:** Unity, Unreal Engine, Visual Studio, Linux, ROS, Microsoft Office, Solidworks etc.

**Sports:** Tennis, Swimming, Soccer etc.