

Xuan Luo

Curriculum Vitae

Paul G. Allen School of Computer Science and Engineering
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Education

- 2015–now **Ph.D., Computer Science and Engineering**, University of Washington, Seattle, WA, US.
◦ Advisors: **Steven M. Seitz**, **Jason Lawrence** and **Ricardo Martin-Brualla**.
- 2011–2015 **B.S., Computer Science and Technology**, Shanghai Jiao Tong University (SJTU), China.
Program **ACM Honored Class** (a pilot computer science class in China), Zhiyuan College
- 9.2014–2.2015 **Visiting Scholar**, National University of Singapore, Singapore.

Research Interests

Augmented/Virtual Reality, 3D Vision, Computational Photography, Image Synthesis

Honors and Awards

- 2020 EECS Rising Star
- 2020 *Time-Travel Rephotography* covered in QubitAI, Guokr
- 2020 *Consistent Video Depth* covered in Two-Minute Papers, QubitAI, Synced
- 2018 Pepper's Cone highlighted in "Demo Hour" of *ACM Interactions Magazine* [link](#)
- 2018 Pepper's Cone covered by Hacker News, iProgrammer, Hack a Day
- 2015 Distinguished Graduate Scholarship, SJTU Top 1%
- 2015 Shanghai Outstanding Graduate, Shanghai Top 1%
- 2013 National Scholarship, China Highest scholarship in China, top 1%
- 2012 Kai Yuan Scholarship, SJTU Top 2%
- 2012 the 2012 University Physics Competition, Silver Medal, USA Top 15%

Publications

Xuan Luo, Cecilia Zhang, Paul Yoo, Ricardo Ricardo Martin-Brualla, Jason Lawrence, Steven M. Seitz. "*Time-Travel Rephotography*". arXiv:2012.12261, 2020.

Xuan Luo, Jia-Bin Huang, Richard Szeliski, Kevin Matzen, Johannes Kopf. "*Consistent Video Depth Estimation*". SIGGRAPH, 2020.

Xuan Luo, Yanmeng Kong, Jason Lawrence, Ricardo Martin-Brualla, Steven M. Seitz. "*KeystoneDepth: History in 3D*". 3DV, 2020.

Xuan Luo, Yanmeng Kong, Jason Lawrence, Ricardo Martin-Brualla, Steven M. Seitz. "*Slow Glass: Visualizing History in 3D*". Fourth Workshop on Computer Vision for AR/VR, 2020.

Xuan Luo, Jason Lawrence, Steven M. Seitz. "*Pepper's Cone: An Inexpensive Do-It-Yourself 3D Display*". UIST, 2017.

Min Lin, Shuo Li, **Xuan Luo**. "*Purine: A Graph-based Deep Learning Framework*". International Conference on Learning Representations (ICLR), 2015.

Xuejiao Bai, **Xuan Luo**, Shuo Li. "*Adaptive Stereo Matching via Loop-erased Random Walk*". IEEE International Conference on Image Processing (ICIP), 2014.

Work Experience

- 2019 summer **Research Intern**, *Facebook*, Seattle, WA, USA.
Worked with Johannes Kopf, Kevin Matzen and Richard Szeliski.
- 2017 summer **Research Intern**, *Disney Research*, Zurich, Switzerland.
Worked on face performance capture with Thabo Beeler, Derek Bradley and Matthias Niessner and Paulo Gotardo.
- 2016 summer **Software Engineering Intern**, *Google Daydream*, Seattle, WA, USA.
Worked with Jason Lawrence on utilizing spatial-temporal consistency to denoise 3D models.

Research Experience

Computational Photography

- Advisor Ricardo Martin-Brualla, Jason Lawrence, Steven M. Seitz, University of Washington & Google
- 3.2019-12.2020 **Time-Travel Rephotography**, *arXiv:2012.12261*, time-travel-rephotography.github.io.
What did Abraham Lincoln look like? Our new project simulates traveling back in time with a modern camera to rephotograph famous subjects.

Video Depth

- Advisor Jia-Bin Huang, Richard Szeliski, Kevin Matzen, Johannes Kopf, Facebook & Virginia Tech
- 6.2019-3.2020 **Consistent Video Depth Estimation**, SIGGRAPH 2020, roxanneluo.github.io/Consistent-Video-Depth-Estimation/.
Our geometrically consistent depth enables cool video effects to a whole new level.

Novel View Synthesis and Dataset

- Advisor Jason Lawrence, Ricardo Martin-Brualla, Steven M. Seitz, University of Washington & Google
- 2.2017-3.2019 **KeystoneDepth: History in 3D**, 3DV 2020, keystonedepth.cs.washington.edu.
Wouldn't it be cool to be in the same room as Abraham Lincoln, visit Thomas Edison in his laboratory, or step onto the streets of New York a hundred years ago? We explore this thought experiment, by tracing ideas from science fiction through newly available data sources that may facilitates this goal.

Computational Display

- Advisor Jason Lawrence, Steven M. Seitz, University of Washington, US
- 10.2015-4.2017 **Pepper's Cone**, UIST 2017, roxanneluo.github.io/PeppersCone.html.
Fold a piece of plastic sheet into a cone. Together with your tablet, you can build the Pepper's Cone to observe the "hologram" of your 3D scene in a fun and compelling way.

Stereo Matching

- Advisor Hongtao Lu, Center for Brain-like Computing and Machine Intelligence, SJTU, China
- 8.2013-1.2014 **Adaptive Stereo Matching via Loop-erased Random Walk**, *ICIP 2014*, <http://bcmi.sjtu.edu.cn/~luoxuan/papers/icip2014.pdf>.
Generating spanning tree by Loop-erased Radom Walk helps to create adaptive support window and achieve better results especially over curved & slanted surfaces.
- 2.2014-8.2014 **Fast Non-local Stereo Matching based on Hierarchical Disparity Prediction**.
code: <https://github.com/roxanneluo/Hierarchical-Disparity-Prediction>
A new framework that improves almost all tree-based algorithms in both speed and accuracy.

Deep Learning System

- Advisor Shuicheng Yan, Learning and Vision Research Group, National University of Singapore
- 8.2014-10.2014 **Purine**, ICLR 2015, <https://github.com/purine/purine2>.
A flexible graph-based parallel deep learning framework allowing any kind of parallelism, both data and model parallelism, arbitrary network structure (e.g., recurrent neural network), and can utilize unlimited number of CPUs and GPUs.

Invited Talks

- 12.2020 GAMES: Graphics And Mixed Environment Seminar (GAMES)
5.2020 AAA Alumni Association Cloud Conference

Teaching

- 11.2020 Computer Vision, CSE576, UW *Guest Lecture*
9.2018-12.2018 VR Capstone, CSE481V, UW *Teaching Assistant*
1.2019-3.2019 Selected Topics in Computational Fabrication, CSE599J1, UW *Teaching Assistant*

Skills

Languages C++, Python, Matlab, Java, HTML, \LaTeX , MySQL, C#, PHP, Verilog, OpenGL, TinyOS
Tools Unity, Photoshop

Specialty

Fine Arts Good at painting. My portfolio available at <https://photos.app.goo.gl/QtGANBN2gAcajLza9>