Guilin Liu

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http://liuguilin1225.github.io

Expertise

- Deep Learning, Computer Vision, Computer Graphics & Geometry, Robotics.

Experience

Aug 2017 – Now **Research Scientist**, *Applied Deep Learning Research, NVIDIA*, Santa Clara, CA.
working on deep learning, computer vision, computer graphics

May 2016 – Aug 2016 **Research Intern**, *Adobe Research*, San Jose, CA.
working on material editing using deep learning

- Mentors: *Duygu Ceylan, Ersin Yumer, Jimei Yang*

May 2015 – Aug 2015 **Research Intern**, *Toyota Technological Institute at Chicago*, Chicago, IL.
working on symmetry&depth estimation, unsupervised learning, deep learning

- Mentor: *Qixing Huang (Assistant Professor at UT Austin)*

Education

2012–2017 **Ph.D. in Computer Science**, *George Mason University*.

- Thesis: *Learn to Synthesize Appearance, Shape and Motion from Synthetic Data*
- Thesis Committee: *Jyh-Ming Lien, Jana Kosecka, Yotam Gingold, Qi Wei*

2008–2012 **B.E.**, *Wuhan University*, Wuhan, China.

- Major: *Spatial Informatics & Digitalized Technology (Software Engineering and Geographic Information System)*
- Minor: *Finance*
- Thesis: *Registration of 3D Point Clouds*

Research Recognition

2018 **Research on Image Inpainting**, *Image Inpainting for Iregular Holes Using Partial Convolution*.

- **GTC Keynote Talk**: showed the live demo during NVIDIA CEO Jensen Huang's keynote talk at GTC Taiwan 2018.
- **Video**: the Youtube demo video of this work has been viewed over 1,000,000 times.
- **Media Coverage**: this project was featured in many presses including Fortune, Forbes, Fast Company, Engadget, SlashGear, Digital Trends, TNW, eTeknix, Game Debate, Alphr, Gizbot, Fossbytes Techradar, Beeborn, Bit-tech, Hexus, HotHardWare, BleepingComputer,hardocp, boingboing, PetaPixel, Sohu, Tencent, Sina etc.

Publication

1. **Guilin Liu,** Kevin J. Shih, Ting-Chun Wang, Fitsum A. Reda, Karan Sapra, Zhiding Yu, Andrew Tao, Bryan Catanzaro, *Partial Convolution based Padding*, arXiv preprint arXiv:1811.11718 (2018)..
2. **Guilin Liu,** Fitsum A. Reda, Kevin J. Shih, Ting-Chun Wang, Andrew Tao, Bryan Catanzaro, *Image Inpainting for Irregular Holes Using Partial Convolutions*, European Conference on Computer Vision (ECCV). Munich, Germany. Sep. 2018. PDF Video Project Code.
3. Fitsum A. Reda, **Guilin Liu**, Kevin J. Shih, Robert Kirby, Jon Barker, David Tarjan, Andrew Tao, Bryan Catanzaro, *Video Frame Prediction Using Spatially-Displaced Convolution*, European Conference on Computer Vision (ECCV). Munich, Germany. Sep. 2018. .
4. Ting-Chun Wang, Ming-Yu Liu, Jun-Yan Zhu, **Guilin Liu**, Andrew Tao, Jan Kautz, Bryan Catanzaro, *Video-to-Video Synthesis*, Advances in Neural Information Processing Systems (NeurIPS). 2018. Project Code.
5. **Guilin Liu,** Duygu Ceylan, Ersin Yumer, Jimei Yang, Jyh-Ming Lien, *Material Editing using a Physically Based Rendering Network*, International Conference on Computer Vision (ICCV). Venice, Italy, Oct. 2017. (Spotlight Presentation), PDF(Paper). Suppl.
6. **Guilin Liu,** Chao Yang, Zimo Li, Duygu Ceylan, Qixing Huang, *Symmetry aware Depth Estimation using Deep Neural Networks*, http://arxiv.org/abs/1604.06079. PDF.
7. **Guilin Liu,** Zhonghua Xi, Jyh-Ming Lien, *Nearly Convex Segmentation of Polyhedra Through Convex Ridge Separation*, Journal of Computer-Aided Design, also appears in proceedings of Symposium of Sollid & Physical Modeling (SPM). 2016. PDF demo.
8. **Guilin Liu,** Yotam Gingold, Jyh-Ming Lien, *Continuous Visibility Feature*, 28th IEEE Conference on Computer Vision and Pattern Recogition (CVPR). Boston, MA: IEEE, June 2015. PDF.
9. **Guilin Liu,** Jyh-Ming Lien, *Fast Medial Axis Approximation via Max-Margin Pushing*, IEEE/RSJ International Conference on Intelligent Robot and System (IROS). Hamburg, Germany, Sept. 2015. PDF.
10. **Guilin Liu,** Zhonghua Xi, Jyh-Ming Lien, *Dual-Space Decomposition of 2D Complex Shapes*, 27th IEEE Conference on Computer Vision and Pattern Recognition (CVPR). Columbus, OH: IEEE, June 2014. PDF.
11. Jyh-Ming Lien, Guilin Liu, Christian Langevin, *GRIDGEN Version 1.0: a computer program for generating unstructured finite-volume grids*, U.S. Geological Survey Open-File Report 2014-1109..

Selected Awards

2014 **Third Prize**, *Machine Learning Summer School Competition, Carnegie Mellon University*.

- Multi-labeling problem in high-dimensional data

2013 **Third Prize**, *iCOME Contest, Human Segmentation & Recognition, Baidu*.

- It was a competition held by Baidu Inc. We are in the third place in Human Segmentation & Recognition track with RMB 10,000 award.

2012 **Dean Fellowship**, *Volgenau School of Engineering, George Mason University*.

- An award for new admitted Ph.D. student (3 recipients in total)

2012 **Outstanding Graduate**, *Wuhan University*.

- An honor given to some undergraduates who received Bachalor's degrees.

2011 **Tencent Scholarship**, *Tencent Inc.*

- Scholarship from Tencent Inc. (1 recipient out of 63)

2010 **Rising Star of GIS**, *College GIS Forum in China*.

- One of ten recipients

2010 **Award of Excellence**, *"Jiangsu Software Cup" National Undergraduate Software Designing Contest* .

- It was a national software desining competition. We ranked 7th out of 400 teams with RMB 3,000 award.

Patent

1. Advanced Image Formation Process as a Network Layer and Its Applications, Filed.
2. Four other patents with NVIDIA, Filed.

Services

PC/Reviewer ICRA, AIM, GD/SPM, RSS, Pacific Graphics, IEEE RA-L, SIGGRAPH, IEEE PAMI, RSS, AAAI, CVPR.

Teaching

Teaching Assistant **Data Structure**, *George Mason University*, 2012 Fall.

Skills

Language C/C++, Java, Matlab, Lua, Python, Shell, R.

Software OpenGL, OpenCV, Caffe, Torch, CUDA, Mitsuba, CGAL, PCL, PyTorch, Tensorflow.