LIFAN WU

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EDUCATION

Tsinghua University, Beijing, China *Aug. 2011 - Jul. 2015 (Expected)*
B.Eng. in Computer Science & Technology
Institute for Interdisciplinary Information Sciences
Special Pilot Computer Science Class (Yao Class)
Overall GPA: 90/100

RESEARCH EXPERIENCES

Interactive Surface Reconstruction on Point Cloud Jul. 2014 - present
Visiting Undergraduate Researcher *Washington University in St. Louis*

- Advisor: Prof. Tao Ju.
- Built an interative tool to help users draw sketches and reconstruct surfaces on point clouds.
- Designed a novel anisotropic tensor-based metric to capture sharp features of a point cloud model.
- Proposed an optimization algorithm to regularize the curve network drawn by users.
- Extended our algorithm for interactive point cloud segmentation.

Anisotropic Density Estimation For Photon Mapping Mar. 2014 - Jun. 2014
Research Assistant *Graphics and Geometry Computing Group, Tsinghua University*

- Advisor: Prof. Kun Xu.
- A technical paper has been accepted to Computational Visual Media 2015 as a poster.
- We proposed an anisotropic filtering kernel for density estimation, which considers the anisotropic BRDFs on the eye path.
- Discussed and proofread the derivation of the anisotropic kernel, based on gradient of Anisotropic Sperical Gaussians.
- Investigated related works about photon density estimation, and wrote several sections of our paper.

Intermediate Path Tracing and Merging Sept. 2013 - present
Research Assistant *Graphics and Geometry Computing Group, Tsinghua University*

- Advisor: Prof. Kun Xu.
- Introduced *intermediate paths* and *path merging graph* to increase path samples exponentially.
- Designed and implemented the key algorithm of iterative path merging via *path merging graph*.
- Proposed the Multiple Importance Sampling (MIS) technique to combine an exponential number of path samples by introducing partial weights of subpaths.

PUBLICATION

Anisotropic Density Estimation for Photon Mapping
Fujun Luan, **Lifan Wu**, and Kun Xu
IEEE Journal of Computational Visual Media (to appear), 2015
To be presented at Computational Visual Media 2015 as a poster

COURSE PROJECTS

Global Illumination and Physically Based Light Transport Mar. 2013 - Aug. 2013
Students Research Training

- Investigated most of the global illumination algorithms, including path tracing, photon mapping, light-cuts, VCM and their variations.
- Built a renderer from scratch and integrated several global illumination algorithms.

Content-Aware Image Resizing Dec. 2012
Course: General Computer Science

- Reproduced an adaptive image resizing algorithm, based on SIGGRAPH 2007 paper *Seam Carving for Content-Aware Image Resizing*.
- Extended seam carving algorithm to remove objects via user interactions.

Mesh Simplification Jun. 2012
Course: Fundamentals of Computer Graphics

- Implemented a mesh simplification algorithm that can produce simplified triangular meshes with high quality.
- Used quadratic error metric for accuracy and efficiency.

SOCIAL SERVICES

Vice President Jun. 2013 - Jun. 2014
Student Association of Science and Technology *Department of CS&T, Tsinghua University*

- Organized 18th Sogou Cup Artificial Intelligence Competition, which is the biggest AI competition in Tsinghua University.
- Participated in the development of the competition platform since 2012. Our competition platform is still in use.

HONORS AND AWARDS

Professional Excellence Scholarship, Tsinghua University 2014

Tsinghua-Baidu Scholarship, Tsinghua University 2013

Fellowship of Tsinghua Xuetang Talents Program, Tsinghua University 2012 - present
Among top 300 / 3000 Tsinghua students each year.

Silver Medal, Chinese National Olympiad in Informatics Aug. 2010

Gold Medal, Asia-Pacific Informatics Olympiad May 2010
Ranked 2nd place out of 350 contestants.

SKILLS

Programming Languages	C/C++, Matlab, Java, Ruby, Python
Systems	OS X, Windows, Linux
Softwares & Applications	OpenGL, OpenCV, LaTeX, CMake, WxWidgets, Qt