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 feature lines and reconstruct surfaces on point clouds.
· Designed a novel anisotropic tensor-based metric to capture sharp features of a point cloud.
· 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*.
· 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 according to the gradient of the Anisotropic Sperical Gaussians.
· Investigated related works about photon density estimation and wrote several sections of the paper.

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

· Advisor: Prof. Kun Xu.
· We proposed *intermediate paths* and a *path merging graph* to increase path samples exponentially.
· Designed and implemented the key algorithm of iterative path merging via *path merging graph*.
· Proposed and discussed 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

SELECTED COURSE PROJECTS

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

· Investigated most of the related algorithms, including path tracing, photon mapping, lightcuts, 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 high-quality results of simplified triangular meshes.
· Used quadratic error metric to speed up.

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. Our competition platform has been used since 2012.

HONORS AND AWARDS

Major 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.

SKILLS

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