

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 interactive 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.

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 Spherical 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.

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: Advanced Computer Graphics

- Implemented a surface 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, L^AT_EX, Java, Ruby, Python

Systems

OS X, Windows, Linux

Softwares & Applications

OpenGL, OpenCV, CMake, WxWidgets, Qt