DAWEI YANG

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Tsinghua University
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EDUCATION

B.Eng., Computer Science & Technology, Tsinghua University Expected 07/2015
GPA: **91**/100 Rank: 9/105

AWARDS / SCHOLARSHIPS

26th Regional Chinese Physics Olympiad First Prize	2010
National Encouragement Scholarship	2012
29th Parts of the National College Students Physics Competition	2012
ST Engineering China Scholarship	2012
Tung OOCL Scholarship	2013
ST Engineering China Scholarship	2013
Tung OOCL Scholarship	2014

RESEARCH EXPERIENCES

SRT(Student Research Training) Projects 09/2012-01/2013

Supervised by Prof. Kun Xu

Computer vision and computer graphics

- Implemented algorithms in *Single Image Haze Removal Using Dark Channel Prior and Guided Image Filtering*.
- Implemented algorithms in *Poisson Matting and Symmetry Detection using Gradient Information*.
- Implemented algorithms in *Fast Reflectional Symmetry Detection Using Orientation Histograms*.
- Implemented algorithms in *Precomputed radiance transfer for real-time rendering in dynamic, low-frequency lighting environments*

Computer Graphics Research Projects 02/2013-Now

Supervised by Prof. Kun Xu & Prof. Shi-Min Hu

A precomputed dynamic real-time global illumination rendering algorithm

- Inspired by *Global Illumination with Radiance Regression Functions*.
- Objects are dynamic and there can be relative motion among them. We use binary trees of neural networks to simulate the radiance transfer from one object to a certain small surface to compute 1-bounce indirect light.
- I wrote the sampling program on GPU and part of the rendering framework, and migrated it to OpenGL-CUDA rendering framework. I learned some ideas of what to precompute and methods to compress the high-dimensional functions.

Bidirectional Texture Function Compression

- We used neural networks and CBM autoencoder to compress the 6D bidirectional texture function.

Upsampling Regression Filter

- We extracted the core of *Joint Bilateral Upsampling* with neural networks in order to adapt more general cases.
- I did the experment on a number of images and found severe ring effects across the boundary of objects.

Ultra Large Point Cloud Rendering

- We are working on a rendering algorithm to implement 3D roaming in scenes of a large set of point cloud. And the data sets are TB-level.
- We use base meshes with level-of-detail height map texture to represent the large scene.
- I proposed an algorithm of computing the level of each triangular face of mesh and finished the design of tree-structured texture attaching and the framework of two-pass rendering.

OTHER EXPERIENCES

TENCENT INTERNSHIP 07/2014-08/2014

Android OCR tool dedicated to recognition of programming codes

- I supervised a 4-member team and design the whole framework.
- I decided to use Tesseract open source library and improved the quality of binarization using Sauvola algorithm.
- I proposed an algorithm using naive bayesian classifier to distinguish lines of code and lines of english text.
- We have applied for three national patents.

TEACHING ASSISTANT 08/2014-12/2014

Software Engineering by Prof. Xiaoying Bai

- Helped improving the online judge for student assignments. (http://railgun.secoder.net)
- One of the teacher assistants that govern student course projects.

PROFESSIONAL SKILLS

- **Programming Languages:** C/C++, Java, Python, MATLAB, VHDL, Assembly.
- **Tools:** MPI, OpenMP, OpenCV, OpenGL, CUDA.