

# Hongwei Li

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I used to do lots of graphics and now get interested in GPU computing, i.e., ILM.

## Education

Aug. 2006 - Aug. 2010

**PhD**, Computer Science and Engineering, Hong Kong University of Sci. and Tech. (HKUST), Hong Kong

- Advisors: Dr. Pedro V. Sander and Dr. Chi-Wing Fu.
- Area of study: Computer Graphics.
- GGA : 9.93 (A-).

Sep.2004 – June 2006

**Master**, Computer Science and Engineering, Zhejiang University, P. R. China

- Advisor: Prof. Sanyuan Zhang and Prof. Xiuzi Ye
- Area of study: Computer-Aided Design.

Sep. 2000 - June 2004

**B.E.**, Computer Science and Engineering, Zhejiang University, P. R. China

- Mixed class, Chu Kochen Honors College.
- Overall GPA 3.69/4.00, Major GPA 3.88/4.00, Top 5%.

## Work Experience

June. 2021– Now

**Technical Expert**, Tencent

- Built a cloud rendering engine and a 10+ people team from ground. This modern rendering engine adopts GPU-driven cluster based pipeline, the virtual shadow map, a node based material system, an authoring workflow based on Blender and few other cutting edge techniques.
- Build a cloud game runtime (DCGR) for cloud Android game. This runtime stays above GPU hardware, and provides a handful of optimizations, e.g., frame interpolation, batching, offloading rendering to mobile and etc.
- Start moving from graphics to ILM slowly by reading papers and playing with opensource ILM projects; know how to build a basic infer engine (Illuma2) from ground up; have some experience of training small models; did an AIGC project for gaming dev, including concept arts generation, model database and search, scene composition and such using DDPM and vector database.

June. 2019– June 2021

**Technical Expert**, Huawei

- The chief architect of Huawei Phoenix Graphics Engine, the author of Huawei software ray tracing core solution, and proposed several rendering techniques which are used in Huawei HMS graphics acceleration solution kit.
- Wrote a middleware called es2vk which transcodes GLES to Vulkan API at runtime and kicked in some multi-threading tricks to make GLES run super fast.

Dec. 2016– June 2019

**CTO**, Modelo, Inc

- I built the Modelo BIM WebGL renderer and BIM file exchange server from ground with solo hand.

Feb. 2015 – Dec. 2016

**Senior GPU Architect**, Graphics Hardware Team, Nvidia Shanghai

- Worked on GPU graphics units frontend design in GPU hardware design team. The work include several features in current generation of Nvidia GPU, i.e., Volta.

Apri. 2013 – Feb. 2015

**Member of Technical Staff**, Graphics Technology Initiatives, Advanced Micro Devices(Shanghai)Co. Ltd

- Research general graphics rendering high performance computing and problems.
- Marketing technical support; back up marketing and sales team in business negotiation and marketing actions

Apri. 2012 – May 2013

**Manager**, Rightware Oy, Shanghai, China

- Project management; oversee customer project work flow from requirement collection to final delivery and quality guarantee.
- Technical pre-sales for Kanzi products; worked closely with VP of sales in customer contact; built relationship with domestic major players, e.g., Lenovo, Gionee, Desay and etc.
- Lead engineer who is the architect and reviewer of all China projects.

Apri. 2011 – March 2012

**Senior Engineer**, AMD Design and Research Center, Shanghai, China

- OpenGL driver development (Windows and Linux); did some optimization in driver like picking; validated the OpenGL functionality for Chrome webgl and fixed a few bugs.
- First runner-up in AMD internal OpenCL contest.
- OpenGL training session lecturer.

Sep. 2010 – April 2011

**Postdoc** (joint project), Department of Electrical & Computer Engineering, NUS, Singapore

**Visiting Scholar**, Internet Graphics Group, Microsoft Research Asia (MSRA), Beijing, China

- A new approach for efficient Bidirectional texture function (BTF) acquisition (A joint project with MSRA).

## Publications

Dongsoo Han and **Hongwei Li**, *Grass rendering and simulation with LOD*. GPU Pro 6, A K Peters, 2015

Zengzhi Fan, **Hongwei Li**, Karl Hillesland and Bin Shen, *Simualte and Render Millions of Grass Blades*, ACM SIGGRAPH Interactive 3D Graphics and Games (I3D), 2015

**Hongwei Li**, Li-Yi Wei, Pedro V. Sander and Chi-Wing Fu. *Anisotropic blue noise sampling*. To appear at ACM Transactions on Graphics (TOG), (ACM SIGGRAPH Asia 2010), Dec 2010

**Hongwei Li**, Diego Nehab, Li-Yi Wei, Pedro V. Sander and Chi-Wing Fu. *Fast Capacity Constrained Voronoi Tessellation*. Poster, ACM The ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D), Feb.2010

Kui-Yip Lo, Chi-Wing Fu and **Hongwei Li**. *3D Polyomino Puzzle*. ACM Transactions on Graphics (TOG), (ACM SIGGRAPH Asia 2009), Vol.28, no. 5, 2009

**Hongwei Li**, Li-Yi Wei, Pedro V. Sander and Chi-Wing Fu. *Anisotropic Poisson disk sampling*. HKUST Report, HKUST-CS-09-02, April 2009

**Hongwei Li**, Chi-Wing Fu and Andrew J. Hanson. *Visualizing Multiwavelength Astrophysical Data*. In IEEE Transactions on Visualization and Computer Graphics (TVCG), (Proceedings of IEEE Visualization 2008), vol.14, No.6, pp. 1555-1562, Nov 2008

**Hongwei Li**, Kui-Yip Lo, Chi-Wing Fu, and Mang-Kang Lenung. *Dual Poisson-Disk Tiling: An Ecient Method for Distributing Features on Arbitrary Surfaces*. In IEEE Transactions on Visualization and Computer Graphics (TVCG), Vol 14, No.5, pp. 982-998, 2008

**Hongwei Li**, Chi-Wing Fu, Yinggang Li, and Andrew J. Hanson. *Visualizing Large-Scale Uncertainty in Astrophysical Data*, In IEEE Transactions on Visualization and Computer Graphics (TVCG), (Proceedings of IEEE Visualization 2007), Vol.13, No.6, pp.1640-1647, Nov, 2007

Kui-Yip Lo, **Hongwei Li**, Chi-Wing Fu, and Tien-Tsin Wong. *Interactive Reaction-Diusion on Surface Tiles*. In Pacific Graphics 2007, oral paper, Maui, Hawaii, pp. 65-74, Nov. 2007.

## Services

2009,2011, 2012, 2013

### Reviewer

- GMOD 2013.
- IEEE Pacific Graphics 2012.
- ACM SIGGRAPH 2012.
- IEEE Visualization 2009.
- ACM SIGGRAPH 2011.

## Awards

- Zhejiang University, Second-class Scholarship, Oct 2003
- Zhejiang University, "Three Goods" Student, Oct 2003
- Zhejiang University, Third-class Scholarship, Dec 2002
- Zhejiang University, Scholarship for Freshman, Dec 2000

## Portfolio (Project demo)

Watch online [http://v.youku.com/v\\_show/id\\_XMjQwNzg0NDUy.html](http://v.youku.com/v_show/id_XMjQwNzg0NDUy.html) (old)