Hongwei Li

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

Education and Academia

Sep. 2010 – April 2011
Postdoc (joint project), Department of Electrical & Computer Engineering, NUS, Singapore & Internet Graphics Group, Microsoft Research Asia (MSRA), Beijing, China
Aug. 2006 - Aug. 2010
PhD, Computer Science and Engineering, Hong Kong University of Sci. and Tech. (HKUST), Hong Kong
Sep.2004 – June 2006
Master, Computer Science and Engineering, Zhejiang University, P. R. China
Sep. 2000 - June 2004
B.E., Computer Science and Engineering, Zhejiang University, P. R. China

Work Experience

June. 2021– Now
Technical Expert, TEG, Tencent, Shanghai
- Build a cloud rendering engine and a 10+ people team. We did GPU-driven cluster based pipeline, virtual shadow map, node based material system, an authoring workflow based on Blender and etc.
- Build a runtime for cloud Android game. It stays above GPU hardware, and provides a handful of optimizations, e.g., frame interpolation, batching, offloading rendering to mobile and etc.
- Start moving to LLM; know how to build a minimal infer engine (llama2); trained small models; did an AIGC project for gaming dev, using DDPM to create concept arts, milvus to search model database.

June. 2019– June 2021
Technical Expert, Central Software Institue, Huawei, Shanghai
- The chief architect of Huawei Phoenix Graphics Engine, the author of Huawei software ray tracing core, and led the development of several rendering techniques in Huawei HMS kit.
- Wrote a middleware called es2vk which transcodes GLES to Vulkan API at runtime and kicked in some multi-threading tricks to make it run super fast.

Dec. 2016– June 2019
CTO, Modelo, Inc, Shanghai
- 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
- GPU graphics units frontend design in GPU about performance. The maintainer of VPC module. The work include several features in current generation of Nvidia GPU, i.e., Volta.

Apri. 2011 – Feb. 2015
Member of Technical Staff, Graphics Technology Initiatives, Advanced Micro Devices(Shanghai)Co. Ltd
- Research real-time graphics rendering, e.g., grass, hair and upsampling

Senior Engineer, Software Team, Advanced Micro Devices(Shanghai)Co. Ltd
- OpenGL and WebGL driver optimization and bug fixing, like picking and fast copy path.

Publications & Patents

Hongwei Li, *一种三维模型的快速渲染及CAD信息查询的系统和方法*, CN107918665B 发明专利, 2021

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. A*nisotropic 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, Maul, Hawaii, pp. 65-74, Nov. 2007.