Lingqi Yan

Curriculum Vitae

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Education

2013 - 2018 **University of California, Berkeley**
Ph.D. in Computer Science
Advisor: Prof. Ravi Ramamoorthi
Dissertation: *Physically-based Modeling and Rendering of Complex Visual Appearance*

2009 - 2013 **Tsinghua University, Beijing, China**
B.E. in Computer Science and Technology
Advisors: Prof. Shi-Min Hu and Prof. Kun Xu
Thesis: *A Survey on Real-time Soft Shadow Rendering Techniques*

Employment

Since 2018 **Assistant Professor**
Department of Computer Science
University of California, Santa Barbara

Summer 2017 **Intern at NVIDIA, Redmond**
Topic: Real-time ray tracing and reconstruction

Summer 2016 **Intern at Weta Digtal, Wellington**
Topic: Photorealistic cloth appearance modeling with ply level details

Summer 2015 **Intern at Autodesk, San Francisco**
Topic: Pre-computed real-time glints rendering

Summer 2014 **Technical intern at Walt Disney Animation Studios, Burbank**
Topic: Volumetric hair modeling and rendering for production

Research Interests and Impact

My research is in Computer Graphics, mainly aimed at rendering photo-realistic visual appearance at real world complexity, building theoretical foundations mathematically and physically to reveal the principles of the visual world. My research interests include appearance modeling, real-time ray tracing, sampling and reconstruction theory, volumetric scattering and light transport algorithms.

I have brought original research topics to Computer Graphics, such as detailed rendering from microstructure and real-time sampling and reconstruction for ray tracing. During my Ph.D. study, I have published a record-breaking number of 7 first authored ACM SIGGRAPH/ACM TOG papers. And I won the SIGGRAPH Outstanding Doctoral Dissertation Award in 2019.

Teaching

Fall 2021	CS180: Introduction to Computer Graphics	Instructor
Spring 2021	CS291A: Real-Time High Quality Rendering	Instructor
Winter 2021	CS180/CS280: Introduction to Computer Graphics	Instructor
Fall 2020	CS190I: Introduction to Offline Rendering	Instructor
Spring 2020	CS291A: Real-Time High Quality Rendering	Instructor

Winter 2020	CS180: Introduction to Computer Graphics	Instructor
Spring 2019	CS180: Introduction to Computer Graphics	Instructor
Winter 2019	CS291A: Real-Time High Quality Rendering	Instructor
Fall 2018	GAMES Webinar: Rendering Tutorial	Guest lecturer
Fall 2018	Introduction to Computer Graphics at Peking University	Guest lecturer
2014 - 2018	CSE167x: Computer Graphics on edx	Course staff
Spring 2018	CS184 and CS284A: Computer Graphics	Guest lecturer & TA
Spring 2017	CS184 and CS284A: Computer Graphics	Guest lecturer & TA
Fall 2011	Algorithms & Data Structures at Tsinghua University	Undergraduate TA
Fall 2009	Introduction to Programming at Tsinghua University	Undergraduate TA

Selected Honors and Awards

Awards	ACM SIGGRAPH Outstanding Doctoral Dissertation Award	2019
	C.V. Ramamoorthy Distinguished Research Award	2018
Fellowships	NVIDIA Graduate Fellowship	2017 - 2018
	Extraordinary Performance Scholarship	2011 - 2013
	National Scholarship	2010 - 2011
Production	*War for the Planet of the Apes*: animal fur appearance model	2016
	Nominee of Oscar best visual effects award	
	Autodesk Fusion 360: pre-computed real-time glints rendering	2015
	Zootopia: volumetric hair scattering simulation	2014
Contest	Silver Medal, ACM/ICPC 2010-2011 Programming Contest, Harbin Regional	2010

Media/Press Coverage

RealTime Conference: Panel Discussion	2021
Are We Ready To Create The Metaverse?	
Press Releases: Apple News, Plazma, Digital Trends, Engadget and Gizmodo	2018
AI is Making More Realistic CG Animal Fur	
Two Minute Papers	2017
#183: Photorealistic Fur With Multi-Scale Rendering	
#193: Light Transport on Specular Microstructure	
SIGGRAPH Asia 2017 Cover/Title page	2017
A BSSRDF Model for Efficient Rendering of Fur with Global Illumination	
SIGGRAPH 2017 Technical Papers Preview Trailer	2017
An Efficient and Practical Near and Far Field Fur Reflectance Model	
Press Releases: UCSD, PhysOrg, Digital Trends, Eureka Alert and Tech Crunch	2016
Position-Normal Distributions for Efficient Rendering of Specular Microstructure	
Press Releases: 4Gamer (Japanese), Tencent (Chinese)	2015
Physically-Accurate Fur Reflectance: Modeling, Measurement and Rendering	
SIGGRAPH 2014 Technical Papers Preview Trailer	2014
Rendering Glints on High-Resolution Normal-Mapped Specular Surfaces	
Discrete Stochastic Microfacet Models	

Professional Services

Committee	SIGGRAPH Asia Technical Papers Committee	2021
	Computer-Aided Design and Computer Graphics (CAD/Graphics) IPC	2021

Pacific Graphics Program Committee 2021
Computational Visual Media (CVM) Program Committee 2021
Pacific Graphics Program Committee 2020
Computational Visual Media (CVM) Program Committee 2020
SIGGRAPH Asia Technical Briefs and Posters Committee 2019
Eurographics (EG) Short Papers International Program Committee (IPC) 2019
Eurographics Symposium on Rendering (EGSR) IPC 2019
Computer-Aided Design and Computer Graphics (CAD/Graphics) IPC 2019

Peer Reviews ACM SIGGRAPH, ACM SIGGRAPH Asia, ACM Transactions on Graphics (ToG), Eurographics Symposium on Rendering (EGSR), IEEE Transactions on Visualization and Computer Graphics (TVCG), Computer Graphics Forum (CGF), Pacific Graphics (PG), Computational Visual Media (CVM), Journal of Computer Science and Technology (JCST)

Departmental Services

Graduate Admissions Committee 2021 - 2022
Undergraduate Student Affairs Committee 2021 - 2022
Graduate Admissions Committee 2020 - 2021
Undergraduate Student Affairs Committee 2020 - 2021
Graduate Admissions Committee 2019 - 2020
Undergraduate Student Affairs Committee 2019 - 2020
Graduate Admissions Committee 2018 - 2019
Undergraduate Student Affairs Committee 2018 - 2019

Selected Talks

Invited Talks

Dynamic, Scalable and Fast Synthesis of Complex Visual Appearance 2021
Computational Visual Media (Keynote Speaker)

Dynamic, Scalable and Fast Synthesis of Complex Visual Appearance 2020
Facebook, Peking University

Towards Ultimate Realism in Rendering 2019
SIGGRAPH 2019, Los Angeles

Next Generation Rendering: Photorealism and Speed 2018
Tsinghua University, Peking University, University of Science and Technology of China, Zhejiang University, Microsoft Research Asia, Beihang University, Nanjing University of Science and Technology, Nanjing University

Real-Time Ray Tracing: Challenges and Opportunities 2018
UCSD Center for Visual Computing

Physically-based Modeling and Rendering of Complex Visual Appearance 2018
Adobe, San Jose

Distance-aware Filtering For Physically-based Monte Carlo Rendering Reconstruction 2017
NVIDIA, Redmond

Industrial Approaches for Real-time Ray Tracing 2017
UCSD Center for Visual Computing

Physically-Accurate Fur Reflectance: Modeling, Measurement and Rendering 2016
UCSD Center for Visual Computing

Real-time Soft Shadows: Principles and Challenges 2013
Distinguished Undergraduate Thesis Seminar, Tsinghua University

Intern talks	Pre-computed Real-time Rendering of Imperfect Surfaces, Autodesk	2015
	Physically-based Rendering of Glints, Walt Disney Animation Studios	2014

Publications

SIGGRAPH/ToG

Physical Light-Matter Interaction in Hermite-Gauss Space
Shlomi Steinberg, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH Asia 2021]

ExtraNet: Real-time Extrapolated Rendering for Low-latency Temporal Supersampling
Jie Guo, Xihao Fu, Liqiang Lin, Hengjun Ma, Yanwen Guo, Shiqiu Liu, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH Asia 2021]

Fast and Accurate Spherical Harmonics Products
Hanggao Xin, Zhiqian Zhou, Di An, **Ling-Qi Yan**, Kun Xu, Shi-Min Hu, Shing-Tung Yau
ACM Transactions on Graphics [SIGGRAPH Asia 2021]

Ensemble Denoising for Monte Carlo Renderings
Shaokun Zheng, Fengshi Zheng, Kun Xu, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH Asia 2021]

Rendering of Subjective Speckle Formed by Rough Statistical Surfaces
Shlomi Steinberg, **Ling-Qi Yan**
ACM Transactions on Graphics [2021]

A Generic Framework for Physical Light Transport
Shlomi Steinberg, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH 2021]

Neural Complex Luminaires: Representation and Rendering
Junqiu Zhu, Yaoyi Bai, Zilin Xu, Steve Bako, Edgar Velázquez-Armendáriz, Lu Wang, Pradeep Sen, Miloš Hašan, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH 2021]

Volumetric Appearance Stylization With Stylizing Kernel Prediction Network
Jie Guo, Mengtian Li, Zijing Zong, Yuntao Liu, Jingwu He, Yanwen Guo, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH 2021]

Highlight-Aware Two-Stream Network for Single-Image SVBRDF Acquisition
Jie Guo, Shuichang Lai, Chengzhi Tao, Yuelong Cai, Lei Wang, Yanwen Guo, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH 2021]

Vectorization for Fast, Analytic, and Differentiable Visibility
Yang Zhou, Lifan Wu, Ravi Ramamoorthi, **Ling-Qi Yan**
ACM Transactions on Graphics [2021]

Path Cuts: Efficient Rendering of Pure Specular Light Transport
Beibei Wang, Miloš Hašan, **Ling-Qi Yan**
ACM Transactions on Graphics [SIGGRAPH Asia 2020]

Example-Based Microstructure Rendering with Constant Storage
Beibei Wang, Miloš Hašan, Nicolas Holzschuch, **Ling-Qi Yan**
ACM Transactions on Graphics [2019, Presented at SIGGRAPH 2020]

Learning Generative Models for Rendering Specular Microgeometry
Alexandr Kuznetsov, Miloš Hašan, Zexiang Xu, **Ling-Qi Yan**, Bruce Walter, Nima Khademi Kalantari, Steve Marschner, Ravi Ramamoorthi
ACM Transactions on Graphics [SIGGRAPH Asia 2019]

GradNet: Unsupervised Deep Screened Poisson Reconstruction for Gradient-Domain Rendering

Jie Guo, Mengtian Li, Quewei Li, Yuting Qiang, Bingyang Hu, Yanwen Guo, **Ling-Qi Yan**

ACM Transactions on Graphics [SIGGRAPH Asia 2019]

Fractional Gaussian Fields for Modeling and Rendering of Spatially-Correlated Media

Jie Guo, Yanjun Chen, Bingyang Hu, **Ling-Qi Yan**, Yanwen Guo, Yuntao Liu

ACM Transactions on Graphics [SIGGRAPH 2019]

Accurate Appearance Preserving Prefiltering for Rendering Displacement-Mapped Surfaces

Lifan Wu, Shuang Zhao, **Ling-Qi Yan**, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH 2019]

Rendering Specular Microgeometry with Wave Optics

Ling-Qi Yan, Miloš Hašan, Bruce Walter, Steve Marschner, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH 2018]

A BSSRDF Model for Efficient Rendering of Fur with Global Illumination

Ling-Qi Yan, Weilun Sun, Henrik Wann Jensen, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH Asia 2017]

An Efficient and Practical Near and Far Field Fur Reflectance Model

Ling-Qi Yan, Henrik Wann Jensen, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH 2017]

Antialiasing Complex Global Illumination Effects in Path-space

Laurent Belcour, **Ling-Qi Yan**, Ravi Ramamoorthi, Derek Nowrouzezahrai

ACM Transactions on Graphics [2016, Presented at SIGGRAPH 2017]

Position-Normal Distributions for Efficient Rendering of Specular Microstructure

Ling-Qi Yan, Miloš Hašan, Steve Marschner, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH 2016]

Physically-Accurate Fur Reflectance: Modeling, Measurement and Rendering

Ling-Qi Yan, Chi-Wei Tseng, Henrik Wann Jensen, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH Asia 2015]

Fast 4D Sheared Filtering for Interactive Rendering of Distribution Effects

Ling-Qi Yan, Soham Uday Mehta, Ravi Ramamoorthi, Fredo Durand

ACM Transactions on Graphics [2015, Presented at SIGGRAPH 2016]

Rendering Glints on High-Resolution Normal-Mapped Specular Surfaces

Ling-Qi Yan, Miloš Hašan, Wenzel Jakob, Jason Lawrence, Steve Marschner, Ravi Ramamoorthi

ACM Transactions on Graphics [SIGGRAPH 2014]

Discrete Stochastic Microfacet Models

Wenzel Jakob, Miloš Hašan, **Ling-Qi Yan**, Jason Lawrence, Ravi Ramamoorthi, Steve Marschner

ACM Transactions on Graphics [SIGGRAPH 2014]

EGSR/CGF **Temporally Reliable Motion Vectors for Real-time Ray Tracing**

Zheng Zeng, Shiqiu (Edward) Liu, Jinglei Yang, Lu Wang, **Ling-Qi Yan**

Computer Graphics Forum [Eurographics 2021]

Path-based Monte Carlo Denoising Using a Three-Scale Neural Network

Weiheng Lin, Beibei Wang, Jian Yang, Lu Wang, **Ling-Qi Yan**

Computer Graphics Forum [2020]

A Bayesian Inference Framework for Procedural Material Parameter Estimation

Yu Guo, Miloš Hašan, **Ling-Qi Yan**, Shuang Zhao

Computer Graphics Forum [Pacific Graphics 2020]

Adaptive BRDF-Oriented Multiple Importance Sampling of Many Lights

Yifan Liu, Kun Xu, **Ling-Qi Yan**

Computer Graphics Forum 38(4) [EGSR 2019]

Multiple Axis-Aligned Filters for Rendering of Combined Distribution Effects

Lifan Wu, **Ling-Qi Yan**, Alexandr Kuznetsov, Ravi Ramamoorthi

Computer Graphics Forum 36(4) [EGSR 2017]

Accurate Translucent Material Rendering under Spherical Gaussian Lights

Ling-Qi Yan, Yahan Zhou, Kun Xu, Rui Wang

Computer Graphics Forum 31(7) [Pacific Graphics 2012]

Others **Realistic Rendering in "Details"**

Ling-Qi Yan

IEEE Computer Graphics and Applications [2021]

Foveated Photon Mapping

Xuehuai Shi, Lili Wang, Xiaoheng Wei, **Ling-Qi Yan**

IEEE Transactions on Visualization and Computer Graphics [2021]

Foveated Instant Radiosity

Lili Wang, Runze Li, Xuehuai Shi, **Ling-Qi Yan**, Zhichao Li

IEEE International Symposium on Mixed and Augmented Reality (ISMAR) [2020]