

Tzu-Mao Li

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Research Areas

- Light Transport Simulation • Computational Photography
- Programming Systems • Automatic Differentiation

Education

Massachusetts Institute of Technology	Cambridge, Massachusetts, United States
Ph.D. student: <i>Computer Science</i>	<i>Sep 2014 - June 2019</i>
Advisor: Frédo Durand	
Thesis: Differentiable Visual Computing	
National Taiwan University	Taipei, Taiwan
Master of Science: <i>Computer Science and Information Engineering</i>	<i>Sep 2011 - June 2013</i>
Advisor: Yung-Yu Chuang	
Thesis: SURE-Based Optimization for Adaptive Sampling and Reconstruction	
Bachelor of Science: <i>Computer Science and Information Engineering</i>	<i>Sep 2007 - June 2011</i>

Publications

Learning to Optimize Halide with Tree Search and Random Programs

Andrew Adams, Karima Ma, Luke Anderson, Riyadh Baghdadi, **Tzu-Mao Li**, Michaël Gharbi, Benoit Steiner, Steven Johnson, Kayvon Fatahalian, Frédo Durand, Jonathan Ragan-Kelley
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2019)

Sample-based Monte Carlo Denoising using a Kernel-Splatting Network

Michaël Gharbi, **Tzu-Mao Li**, Jaakko Lehtinen, Frédo Durand
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2019)

Inverse Path Tracing for Joint Material and Lighting Estimation

Dejan Azinović, **Tzu-Mao Li**, Anton Kaplanyan, Matthias Nießner
Conference on Computer Vision and Pattern Recognition 2019 (oral presentation)

Differentiable Monte Carlo Ray Tracing through Edge Sampling

Tzu-Mao Li, Miika Aittala, Frédo Durand, Jaakko Lehtinen
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2018)

Differentiable Programming for Image Processing and Deep Learning in Halide

Tzu-Mao Li, Michaël Gharbi, Andrew Adams, Frédo Durand, Jonathan Ragan-Kelley
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018)

Aether: An Embedded Domain Specific Sampling Language for Monte Carlo Rendering

Luke Anderson, **Tzu-Mao Li**, Jaakko Lehtinen, Frédo Durand
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2017)

Anisotropic Gaussian Mutations for Metropolis Light Transport through Hessian-Hamiltonian Dynamics

Tzu-Mao Li, Jaakko Lehtinen, Ravi Ramamoorthi, Wenzel Jakob, Frédo Durand
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2015)

Dual-Matrix Sampling for Scalable Translucent Material Rendering

Yu-Ting Wu, **Tzu-Mao Li**, Yu-Hsun Lin, Yung-Yu Chuang
IEEE Transactions on Visualization and Computer Graphics, 2015

SURE-Based Optimization for Adaptive Sampling and Reconstruction

Tzu-Mao Li, Yu-Ting Wu, Yung-Yu Chuang
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012)

Experience

- Research Internship** at **Facebook Reality Labs**, Seattle, United States *Jun 2018 - Aug 2018*
Worked on an application of differentiable rendering.
- Teaching Assistant** at **Massachusetts Institution of Technology**, Cambridge, United States *Fall 2017*
Course: Digital and Computational Photography (6.815)
- Research Internship** at **NVIDIA Research**, Seattle, United States *Jun 2017 - Aug 2017*
Worked on a differentiable renderer.
- Rendering Internship** at **Weta Digital**, Wellington, New Zealand *Jun 2016 - Aug 2016*
Worked on the Manuka renderer.
- Alternative Military Service** at **National Palace Museum**, Taipei, Taiwan *Aug 2013 - Jul 2014*
- Teaching Assistant** at **National Taiwan University**, Taipei, Taiwan *Spring 2012*
Course: Compiler Design
- Internship** at **Digimax**, Taipei, Taiwan *Jul 2011 - Sep 2011*
Developed an environment light editing system and implemented a physically-based hair shader.

Professional Services

Reviewer: SIGGRAPH, SIGGRAPH Asia, TOG, Eurographics, EGSR, Pacific Graphics

Languages

Chinese (native speaker), English, Japanese

References

Frédo Durand

Professor, Massachusetts Institute of Technology
fredo@mit.edu

Jaakko Lehtinen

Associate Professor, Aalto University, Principled Scientist, NVIDIA Research
jaakko.lehtinen@aalto.fi

Jonathan Ragan-Kelley

Assistant Professor, University of California, Berkeley
jrk@berkeley.edu

Ravi Ramamoorthi

Professor, University of California, San Diego
ravir@cs.ucsd.edu

Yung-Yu Chuang

Professor, National Taiwan University
cyy@csie.ntu.edu.tw