

Steve Bako

CONTACT INFORMATION

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EDUCATION

University of California, Santa Barbara

2013 - 2021 *Ph.D. Electrical and Computer Engineering*
Thesis: "Deep Learning for Variance Reduction in Monte Carlo Rendering"
2011 - 2013 *M.S. Electrical and Computer Engineering*
2011 - 2013 *M.A. Economics*

University of California, Berkeley

2008 - 2011 *B.S. Electrical Engineering and Computer Science*

RESEARCH INTERESTS

Computer Graphics, Deep Machine Learning, Computational Photography, Computer Vision

PROFESSIONAL EXPERIENCE

2018 - 2020 **Facebook Reality Labs**, *Research Contractor/Intern*
Applied deep learning to appearance prefiltering for level of detail (under review)

2016 / 2017 **Pixar Animation Studios**, *Research Intern*
Utilized deep learning for denoising (SIGGRAPH 2017) and importance sampling (PG 2019) Monte Carlo rendered images

2015 **Adobe Systems Inc.**, *Computer Science Intern*
Developed shadow removal technique for documents (ACCV 2016)

2014 - 2016 **InnoBright Technologies**, *Technical Consultant*
2012 **BMA Computer Training Solutions**, *Technical Instructor*
2010 - 2011 **Northrop Grumman Corporation**, *Electrical Engineering Intern*

PUBLICATIONS & PRESS

J. Zhu, Y. Bai, Z. Xu, **S. Bako**, E. Velázquez-Armendáriz, L. Wang, P. Sen, M. Hašan, L. Yan, "Neural Complex Luminaires: Representation and Rendering", *ACM Transactions on Graphics (SIGGRAPH 2021)*, Vol. 40, No. 4, August 2021.

S. Bako, M. Meyer, T. DeRose, P. Sen, "Offline Deep Importance Sampling for Monte Carlo Path Tracing", *Computer Graphics Forum (PG 2019)*, Vol. 38, No. 7, October 2019.

S. Bako, T. Vogels, B. McWilliams, M. Meyer, J. Novak, A. Harvill, P. Sen, T. DeRose, F. Rousselle, "Kernel-Predicting Convolutional Networks for Denoising Monte Carlo Renderings", *ACM Transactions on Graphics (SIGGRAPH 2017)*, Vol. 36, No. 4, July 2017.

Press: *Animation Magazine*, *UCSB Current*

S. Bako, S. Darabi, E. Shechtman, J. Wang, K. Sunkavalli, P. Sen, "Removing Shadows from Images of Documents", *Asian Conference on Computer Vision (ACCV 2016)*, November 2016.

N. Khademi Kalantari, **S. Bako**, P. Sen, "A Machine Learning Approach for Filtering Monte Carlo Noise", *ACM Transactions on Graphics (SIGGRAPH 2015)*, Vol. 34, No. 4, August 2015.

PATENTS	<p>“De-noising Images Using Machine Learning”, M. Meyer, A. DeRose, S. Bako, June 6 2019, US Patent 10,311,552</p> <p>“Machine Learning to Process Monte Carlo Rendered Images”, P. Sen, N. Khademi Kalantari, S. Bako, January 1 2019, US Patent 10,192,146</p> <p>“Removing Artifacts from Document Images”, S. Bako, A. Darabi, J. Wang, E. Shechtman, K. Sunkavalli, December 26 2017, US Patent 9,852,498</p>	
ACADEMIC EXPERIENCE	<p>2020</p> <p>2017 - 2019</p> <p>2012 - 2017</p>	<p>Instructor, <i>Computer Science Senior Capstone Project</i></p> <p>Teaching Assistant, <i>Computer Science Senior Capstone Project</i></p> <p>Graduate Student Researcher</p>
AWARDS	<p>2018 - 2019</p> <p>2018 - 2019</p>	<p>Outstanding TA Award in Computer Engineering <i>University of California, Santa Barbara</i></p> <p>Graduate Fellowship Finalist <i>NVIDIA Corp.</i></p>
SKILLS	C/C++, CUDA/cuDNN, Python, TensorFlow, Matlab, Java	
REVIEWER	SIGGRAPH (2021, 2020), SIGGRAPH Asia (2020, 2019, 2018, 2017), Eurographics (2020), Pacific Graphics (2018), High-Performance Graphics (2018, 2015), ACM TOG, IEEE PAMI, IEEE TII, IEEE CG&A, CGF, Elsevier Computers & Graphics, Journal of Electronic Imaging	