

Jongmin Baek (Ph. D.)

CONTACT INFORMATION [Dropbox, Inc.](#) 408.642.9165 (Cell)
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INTERESTS Computational photography, image filtering, low- and medium-level computer vision, signal processing, computational optics, machine learning, compression.

Informally speaking, I make pixels/bits do interesting things, and do so very efficiently at both algorithmic and architectural levels.

CURRENT EMPLOYMENT **[Dropbox, Inc. \(Current\)](#)**, San Francisco, CA USA **2014–**
Software Engineer in the Machine Learning Group

- Authored the image processing stack at Dropbox, which processes orders of petabytes of data daily and powers the preview pipeline.
- Developed novel computer vision and image processing algorithms, optimized and integrated them into production across backend and mobile platforms (C++, Python, Objective-C, GLSL, Assembly, ...) with emphasis on cross-platform performance.
- Authored several [technical blog posts](#) and patents related to the said algorithms.
- Served as the DRI for the working group on interview questions for the engineering org.
- Currently serve as one of dozen or so senior members of the engineering organization that moderate hiring debriefs.

EDUCATION **[Stanford University](#)**, Stanford, CA USA
Ph.D. in [Computer Science](#) (2008 – 2013) under Prof. [Marc Levoy](#).

- Thesis title: *[WYSIWYG Computational Photography via Viewfinder Editing](#)*

M.S. in [Computer Science](#) (2008 – 2011; GPA 4.3/4.0)
[Massachusetts Institute of Technology](#), Cambridge, MA USA
M.Eng. in [Electrical Engineering and Computer Science](#) (2008) under Prof. [Frédo Durand](#).

- Thesis title: *[Multi-channel Coded-aperture Photography](#)*

B.S. in [Computer Science and Engineering](#) (2004 – 2008; GPA 5.0/5.0)
B.S. in [Theoretical Mathematics](#) (2004 – 2008; GPA 5.0/5.0)

ACCEPTED PUBLICATIONS Baek, J., Pająk, D., Kim, K., Pulli, K. and Levoy, M. [WYSIWYG Computational Photography via Viewfinder Editing](#). *ACM SIGGRAPH Asia*. 2013.
Baek, J., Adams, A. B. and Dolson, J. Lattice-based High-Dimensional Gaussian Filtering and the Permutohedral Lattice. *Journal of Mathematical Imaging and Vision*. 2013.
Baek, J., Jacobs, D. E. and Levoy, M. [Accelerating Spatially Varying Gaussian Filters](#). *ACM SIGGRAPH Asia*. 2010.
Adams, A. B., Talvala, E., Park, S. H., Jacobs, D. E., Ajdin, B., Gelfand, N., Dolson, J., Vaquero, D., Baek, J., Tico, M., Lensch, H. P. A., Matusik, W., Pulli, K., Horowitz, M. and Levoy, M. [The Frankencamera: an Experimental Platform for Computational Photography](#). *ACM SIGGRAPH*. 2010.
Dolson, J., Baek, J., Plagemann, C. and Thrun, S. [Upsampling Range Data in Dynamic Environments](#). *IEEE Computer Vision and Pattern Recognition*. 2010.

Baek, J. [Transfer Efficiency and Depth Invariance in Computational Cameras](#). *IEEE International Conference in Computational Photography*. 2010.

Adams, A. B., Baek, J. and Davis, M. A. [Fast High-Dimensional Filtering using the Permutohedral Lattice](#). *Eurographics*. 2010.

REPORTS

Jacobs, D. E., Baek, J. and Levoy, M. [Focal Stack Compositing for Depth of Field Control](#). Tech. report CSTR-2012-01, Stanford.

Karpenko, A., Jacobs, D. E., Baek, J. and Levoy, M. [Digital Video Stabilization and Rolling Shutter Correction using Gyroscopes](#). Tech. report CSTR 2011-03, Stanford.

INVITED TALKS

WYSIWYG Computational Photography via Viewfinder Editing. *GPU Technology Conference*. Santa Clara, CA USA, 2014.

PAST WORK EXPERIENCE

[NVIDIA Research](#), Santa Clara, CA USA

Summer intern in Mobile Visual Computing (MVC)

Summer 2012, 2013

- Worked with the Mobile Visual Computing group and led the development of algorithms and interfaces for editing on a live viewfinder of a mobile camera. See above sections on education and publications. (C++, GLSL, Assembly, Matlab)

[Department of Computer Science, Stanford University](#), Stanford, CA USA

Teaching Fellow

Winter 2011

- Taught [CS478](#), a graduate course in computational photography; was responsible for lectures, assignments, and development environment; advised students on final projects.

[Google, Inc.](#), Mountain View, CA USA

Summer intern in Site Reliability Engineering (SRE)

Summer 2010

- Analyzed the search indexing pipeline to identify latencies in various stages, processing large datasets with map-reduce pattern. (C++)

[Palo Alto Research Center](#), Palo Alto, CA USA

Summer intern in Intelligent Systems Lab (ISL)

Summer 2007

[Massachusetts Institute of Technology](#), Cambridge, MA USA

Research in Sociable Media Group, the Media Lab

Fall 2006—Spring 2007

Research in Software Design Group, CSAIL

Summer 2006

Research in applied mathematics, Department of Mathematics

Summer 2006

[Fujitsu Technology Solutions](#), Sunnyvale, CA USA

Summer engineering intern

Summer 2005

RECOGNITIONS

- Won or nominated for an award at the company-wide Hack Week for the past four years.
- Recipient of Lucent Technology Fellowship (Stanford Graduate Fellowship), 2010.
- Grand prize, [CS348B Rendering Competition](#) (joint work with David E. Jacobs and Myers A. Davis). Featured in [Physically Based Rendering](#), 2nd ed.
- Finalist, [CS248 Video Game Competition](#).
- National Science Foundation Graduate Research Fellowship: Honorable Mention (2009)
- William Lowell Putnam Mathematical Competition: Honorable Mention (2005)
- USA Mathematical Olympiad: Winner (2004), Honorable Mention (2002, 2003)