Jongmin Baek (Ph. D.)
Staff Machine Learning Engineer

jbaek@cs.stanford.edu
https://cs.stanford.edu/people/jbaek

OBJECTIVE

Technical leadership in areas of applied machine learning.

Informally speaking, I make bits do interesting things, and do so very efficiently at algorithmic, architectural and systemic levels. In recent years I have been quarterbacking high-level ML projects, leading teams through multi-quarter and multi-year cross-functional efforts.

CURRENT EMPLOYMENT

Dropbox, Inc. (Current), San Francisco, CA

Staff Machine Learning Engineer	**2019–**
Senior Engineering Manager	**2019–2020**
Senior Machine Learning Engineer	**2015–**
Machine Learning Engineer	**2014–**

Selected Project Areas

- **Retrieval Systems (2022–)**: led the overhaul of the ranking algorithms, architectures and systems for Dropbox search, which indexes trillion files, as the tech lead; worked on integration of LLMs into the search stack.

- **Recommendation Systems (2019–2022)**: led the development and productionization of several zero-to-one content and activity suggestion features in Dropbox products, as the tech lead and the engineering manager.

- **Representation Learning (2018–2022)**: oversaw the development of various learned representations for use in high-level ML projects at Dropbox.

- **OCR (2017-2018)**: built and optimized several parts of Dropbox's in-house OCR pipeline.

- **Document Scanner (2015–2016)**: owned most algorithms in Dropbox's mobile document scanner and the strategy for cross-platform integration of the computer vision code.

- **Image Procesing (2014–2015)**: authored the early image processing stack at Dropbox that processes petabytes of data daily, that optimized compute via SIMD instructions that reduced the cluster size by 50%+ and resulted in $6M+ annual saving.

Other Contributions

- Served as a ML engineer-at-large in the company, contributing to the organizational and technical strategy for integrating ML into products, and driving internal tooling for ML.

- Authored many technical blog posts, patents and open-source projects for Dropbox.

- Mentored and provided guidance to tech leads of several other ML teams at Dropbox.

- Served on hiring committees as a moderator, having moderated ~200 hiring debriefs and having conducted 400+ interviews, both technical and non-technical (coding, behavioral, ML, etc.)

EDUCATION

Stanford University, Stanford, CA

Ph.D. in Computer Science (2008 – 2013) under Prof. Marc Levoy.
- Thesis: *WYSIWYG Computational Photography via Viewfinder Editing*

M.S. in Computer Science (2008 – 2011; GPA 4.3/4.0)

Massachusetts Institute of Technology, Cambridge, MA

M.Eng. in Electrical Engineering and Computer Science (2008) under Prof. Frédo Durand.

B.S. x 2 in Computer Science and Engineering (2004 – 2008; GPA 5.0/5.0)

B.S. in Mathematics (Theoretical Track) (2004 – 2008; GPA 5.0/5.0)

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.

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.

PAST WORK EXPERIENCE

NVIDIA Research, Santa Clara, CA

Intern, Mobile Visual Computing (MVC) Group   **Summer 2012, 2013**

Stanford University, Stanford, CA

Teaching Fellow, Department of Computer Science   **Winter 2011**

Google, Inc., Mountain View, CA

Intern, Site Reliabilty Engineering   **Summer 2010**

RECOGNITIONS

- Multiple awards at company-wide Hack Week events (2014–Present)
- Lucent Technology Fellowship / Stanford Graduate Fellowship (2010)
- Honored as a top-5 student in the graduating class within the department at MIT (2008)
- William Lowell Putnam Mathematical Competition: Honorable Mention (2005)
- USA Mathematical Olympiad: Winner (2004), Honorable Mention (2002, 2003)