Eric Kim

• Orange, CA •
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Interests

I am a machine-learning engineer with expertise in: computer vision, visual search, graph neural networks, ML serving systems.

Education

University of California, Los Angeles — Computer Science, M.S. (2013 – 2016)
Advisors: Professor Demetri Terzopoulos, Dr. M. Alex O. Vasilescu (Tensor Vision Technologies)
Thesis: "A Part-Based, Multiresolution, TensorFaces Approach to Image-Based Facial Verification"

University of California, Berkeley — Computer Science, B.A. (2007 – 2011)

Key Skills

Languages: Python, C++, Scala, Java, Matlab, x86_64
Libraries: pytorch, Caffe, Caffe2, Tensorflow, numpy, scipy, OpenCV, Spark

Experience

Software Engineer — January 2017 – Present
Pinterest, Inc. — *Advanced Technologies Group*
Backend machine learning engineer with strong generalist skills. Projects include:
Object detection lead. Served as the primary owner of the company's object detection tech stack. Trained new detection models that led to increases in offline and online engagement metrics. (Caffe2, pytorch, C++)
DNN serving system optimizations. Improved detection inference throughput by implementing a batch vectorization technique that reduced DNN feature extraction workflow costs by 3-4x. (C++, Nvidia GPUs)
Graph neural network infrastructure. Designed and prototyped model training infrastructure to scale up training to richer graphs with billions of nodes and edges. (pytorch, C++, Spark)
"Lens your Look". Implemented and launched a product feature "Lens your Look" that unifies text search with visual search to recommend fashion outfits (python, blog post).
C++ guild. Leads a C++ "guild", a volunteer group that maintains the health of the company's C++ build system. Duties include: improving build pipeline health, fixing build issues, migrations. (C++, jenkins, thrift)
Mentorship. I have mentored three computer vision PhD interns, and jointly published research papers on our team's work.

Volunteer Technical Alumni Mentor — March 2019 – August 2021
Hackbright Academy
Held weekly office hours, performed mock technical interviews, and provided technical mentorship.

Graduate Researcher, Intern — September 2014 – June 2016
University of California, Los Angeles — *Department of Computer Science*
Tensor Vision Technologies
Analyzed faces in a multiresolution, part-based multilinear framework, and improved face verification results by 13% on the "Labeled Faces in the Wild" dataset relative to previous multilinear work (79% overall).

Research Programmer — January 2016 – December 2016
University of California, Los Angeles — *School of Dentistry*
Developed a statistical model of shape and appearance to perform bone contour segmentation of 3D medical imaging data. Quantitatively determined statistically significant facial surgery effects on facial structure. This work led to a publication.

Research Assistant — May 2011 – August 2013
University of California, Berkeley — *Department of Computer Science*
Led the development of an open-source election auditing software: OpenCount. Utilized computer vision for automatic ballot tallying: image registration, digit recognition, barcode decoding. Successfully performed pilot audits in California counties.

Teaching Assistant — May 2010 – June 2016
University of California, Berkeley — *Department of Computer Science*
University of California, Los Angeles
Taught undergraduate computer science courses: Python, Scheme, Java, C/C++, x86_64. Additional teaching details here.

Additional Projects

- *FourVoices*: An automatic music generator. Using principles of music theory, I transformed the music generation problem into a set of constraints and variables, which I solve with a general-purpose constraint satisfaction solver. Hosted on GitHub, the project features a wiki and tutorials on usage. (Python)
- Handwriting recognition: Implemented an adaptive deformable spline model to recognize handwritten characters using appearance and shape information. (Matlab)

- Wrote a popular tutorial on kernel methods as used in machine learning: "*Everything You Wanted to Know about the Kernel Trick (But Were Too Afraid to Ask)*".

Academic Papers

"Toward Transformer-Based Object Detection," Josh Beal, Eric Kim, Eric Tzeng, Dong Huk Park, Andrew Zhai, Dmitry Kislyuk. *arXiv 2020*.

"Bootstrapping Complete The Look at Pinterest," Eileen Li, Eric Kim, Andrew Zhai, Josh Beal, Kunlong Gu. *KDD 2020*.

"Shop The Look: Building a Large Scale Visual Shopping System at Pinterest," Raymond Shiau, Hao-Yu Wu, Eric Kim, Yue Li Du, Anqi Guo, Zhiyuan Zhang, Eileen Li, Kunlong Gu, Charles Rosenberg, Andrew Zhai. *KDD 2020*.

"Complete the Look: Scene-based Complementary Product Recommendation," Wang-Cheng Kang, Eric Kim, Jure Leskovec, Charles Rosenberg, Julian McAuley. *CVPR 2019*.

"Three-dimensional soft tissue analysis of the face following micro-implant-supported maxillary skeletal expansion," Sara Abedini, Islam Elkenawy, Eric Kim, Won Moon. *Progress in Orthodontics*, 2018. *(Accepted, publication pending)*

"Improved Support for Machine-Assisted Ballot-Level Audits," Eric Kim, Nicholas Carlini, Andrew Chang, George Yiu, Kai Wang, David Wagner. *EVT/WOTE 2013*, August 2013.

"Operator-Assisted Tabulation of Optical Scan Ballots," Kai Wang, Eric Kim, Nicholas Carlini, Ivan Motyashov, Daniel Nguyen, David Wagner. *EVT/WOTE 2012*, August 2012.

"An Analysis of Write-in Marks on Optical Scan Ballots," Theron Ji, Eric Kim, Raji Srikantan, Alan Tsai, Arel Cordero, and David Wagner. *EVT/WOTE 2011*, August 2011.