Eric Kim

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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, Matlab, Java, C, C++, Javascript, HTML, CSS, PHP, Scheme, x86_64, MIPS.
Specializations: Computer vision, face recognition, machine learning, medical imaging, nonlinear optimization, reconstruction.
Libraries: OpenCV, vlfeat, numpy, scipy, OpenGL
Productivity: Unix toolset, version control (svn, git, mercurial), gdb, Wireshark, LaTeX.

Experience

Software Engineer — January 2017 – Present
Pinterest, Inc. — *Discovery (Visual Search)*
Applied computer vision and machine learning domain expertise to enhance visual search user experience.

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). This project became my MS thesis.

Research Programmer — January 2016 – Present
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. Enhanced accuracy of the model by extending the appearance model and the search algorithm to work well on 3D data.
Applied 3D mesh algorithms to quantitatively determine facial surgery effects on facial structure. After achieving mesh correspondence by applying a nonrigid iterative closest point registration algorithm, I ran statistical tests on pre/post operation facial structure data to determine statistically significant regions of change.

Research Assistant — May 2011 – August 2013
University of California, Berkeley — *Department of Computer Science*
Spearheaded the development of an open-source election auditing software: OpenCount. Utilized computer vision for automatic ballot tallying: image registration, digit recognition, and barcode decoding. Successfully performed several pilot audit programs 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, spanning: Python, Scheme, Java, C, C++, and x86_64. Duties included holding sections, developing course materials, grading, and supervising office hours.

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 then solve with a general-purpose constraint satisfaction solver. Hosted on GitHub, the project features a wiki and illustrated tutorials on usage. (Python)
- Handwriting recognition. To recognize a handwritten character, an adaptive deformable spline model is fit to the character via an iterative deformation algorithm that integrates both apperance and shape information. (Matlab)
- Efficient barcode decoder for the Interleaved 2-of-5 format. (Python, OpenCV)
- Wrote a tutorial on kernel methods as used in machine learning: "*Everything You Wanted to Know about the Kernel Trick (But Were Too Afraid to Ask)*". This article is the second Google search result for "kernel trick", as of 2016.
- Python 2.5 compiler targeting the x86 ISA, with the addition of strong typing support. (C++, Python)

Academic Papers

"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.