

Kimberly J. Wilber

Software Engineer, Google AI

She / Her

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Technical Skills

- **Research interests:** Computer vision, crowdsourcing, and machine learning. Specific areas include biometrics, object recognition, perceptual embeddings, and artistic style recognition.
- **Languages and Libraries:** Fluent in Python, the scientific Python stack (numpy/scipy, Cython, scikit-learn, scikit-image), Javascript, and general purpose POSIX tools. Familiar with ML/CV tools (Torch7, Pytorch, OpenCV). Contributor to open-source projects including node.js and Racket. Some experience with C and Java.
- **Linux Server Administration:** Ten years of Debian, Ubuntu, and Arch Linux experience on server, desktop, and cloud services (EC2, DigitalOcean). Managed over 20 Debian servers at startups and university research labs.

Education

2014–2018	Ph.D. in Computer Science, Cornell Tech Supported by the National Science Foundation Graduate Research Fellowship (NSF GRFP)
2013–2014	Graduate studies at University of California, San Diego Transferred to Cornell to follow my advisor, Dr. Serge Belongie
2009–2013	Bachelor of Innovation in Computer Science, University of Colorado Colorado Springs
2008–2010	High-school concurrent classes at University of Colorado Colorado Springs
2007–2008	High-school concurrent classes at Colorado Technical University

Professional Experience

2018–Present	Software Engineer, Google AI, New York, NY <ul style="list-style-type: none"> • Developing large-scale machine learning and computer vision applications in collaboration with multiple teams.
2017	Summer Intern, Google Photos Team, Mountain View, CA <ul style="list-style-type: none"> • Implemented and tested prototyping tools for new user interactions
2016	Summer Intern, Adobe Research, San Jose, CA <ul style="list-style-type: none"> • Built systems to analyze millions of images and terabytes of data
2014	Summer Intern, Dropbox Photos Team, San Francisco, CA <ul style="list-style-type: none"> • Conducted product-focused computer vision research. • Introduced our team to more efficient tools and technologies. • Maintained a computer vision evaluation and experimentation pipeline.
2014–2018	Research Assistant, Cornell University, Cornell Tech NYC <ul style="list-style-type: none"> • Conducting research related to many areas of computer vision, including perceptual similarity, large-scale crowdsourcing, and object recognition. • Helping establish and maintain the new vision group's presence at Cornell. • Serving as TA for classes including four semesters of "CS5785 Modern Analytics."
2013	Research Assistant, University of California, San Diego, CA <ul style="list-style-type: none"> • Conducted computer vision research: face recognition, object recognition, perceptual similarity. • Helped maintain servers and lab equipment.
2012–2013	Software Engineer, Securics, Inc., Colorado Springs, CO <ul style="list-style-type: none"> • Helped implement "MugHunt," an attribute face search engine. MugHunt was one of the most popular demos in its session at CVPR 2012. • Conducted face recognition experiments to evaluate academic and commercial algorithms.

- 2009–2013 **Assistant Researcher, Vision and Security Technology (VAST) Laboratory at UCCS, CO**
- Maintained laboratory equipment and over 20 Debian servers.
 - Performed research on face detection and biometrics, including biometric template protection.
 - Designed and implemented a cluster computing framework for large-scale fingerprint matching.
 - Helped organize the *Face and Eye Detection on Hard Datasets* Competition, IJCB 2011.
- 2011 **Summer Researcher, NSF REU Program, University of Colorado Colorado Springs, CO**
- Designed and implemented a privacy-enhanced biometric authentication protocol, “Vaulted Verification.” This work resulted in a provisional patent application, two first-author conference papers, and scored fourth place in the *2012 National Security Innovation Competition* sponsored by the National Homeland Defense Foundation.
- 2009–2010 **NSF RAHSS High School Intern, Securics, Inc., Colorado Springs, CO**
- Helped implement “Verified Presence,” a time-tracker kiosk system that allows employers to verify employees’ physical attendance with fingerprints.
 - Helped test and debug “EPayNotary,” a payment verification service that integrates with PayPal. EPayNotary protects customers by verifying the identity of merchant recipients.

Publications

- Note that some work before 2018 is published under a previous name.*
- 2022 *On Label Granularity and Object Localization*
Elijah Cole; **Kimberly Wilber**; Grant Van Horn; Xuan S. Yang; Marco Fornoni; Pietro Perona; Serge Belongie; Andrew G. Howard; Oisín Mac Aodha *European Conference on Computer Vision (ECCV 2022)*
- 2022 *Exploring Fine-Grained Audiovisual Categorization with the SSW60 Dataset*
Grant Van Horn; Rui Qian; **Kimberly Wilber**; Hartwig Adam; Oisín Mac Aodha; Serge Belongie *European Conference on Computer Vision (ECCV 2022)*
- 2022 *When Does Contrastive Visual Representation Learning Work?*
Elijah Cole; Xuan Yang; **Kimberly Wilber**; Oisín Mac Aodha; Serge Belongie *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2022)*
- 2021 *Benchmarking Representation Learning for Natural World Image Collections*
Grant Van Horn; Elijah Cole; Sara Beery; **Kimberly Wilber**; Serge Belongie; Oisín Mac Aodha *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2021)*
- 2021 *On the Reproducibility of Neural Network Predictions*
Srinadh Bhojanapalli; **Kimberly Wilber**; Andreas Veit; Ankit Rawat; Seungyeon Kim; Aditya Menon; Sanjiv Kumar *ArXiv*
- 2021 *Bridging the Gap Between Object Detection and User Intent via Query-Modulation*
Marco Fornoni; Chaochao Yan; Liangchen Luo; **Kimberly Wilber**; Alex Stark; Yin Cui; Boqing Gong; Andrew Howard *ArXiv*
- 2020 *Improving Calibration in Deep Metric Learning With Cross-Example Softmax*
Andreas Veit; **Kimberly Wilber** *ArXiv*
- 2019 *Understanding Image Quality and Trust in Peer-to-Peer Marketplaces*
Xiao Ma; Lina Mezghani; **Kimberly Wilber**; Hui Hong; Robinson Piramuthu; Mor Naaman; Serge Belongie *Winter Conference on Applications of Computer Vision (WACV 2019)*
- 2018 *Learning perceptual similarity from crowds and machines*
M. Wilber *PhD Thesis, Cornell University, Ithaca, NY. Advised by Serge Belongie.*
- 2018 *Learning from Multi-domain Artistic Images for Arbitrary Style Transfer*
Zheng Xu; **M. Wilber**; Chen Fang; Aaron Hertzmann; Hailin Jin *ACM/Eurographics Expressive Symposium*
- 2017 *BAM! The Behance Artistic Media Dataset for Recognition Beyond Photography*

- M. Wilber; Chen Fang; Hailin Jin; Aaron Hertzmann; John Collomosse; Serge Belongie *International Conference on Computer Vision (ICCV 2017)*
- 2017 *Sketching with Style: Visual Search with Sketches and Aesthetic Context*
John Collomosse; Tu Bui; M. Wilber; Chen Fang; Hailin Jin *International Conference on Computer Vision (ICCV 2017)*
- 2017 *Crowd Research: Open and Scalable University Laboratories*
Rajan Vaish; Snehal Kumar (Neil) S. Gaikwad; Geza Kovacs; Andreas Veit; Ranjay Krishna; Imanol Arrieta Ibarra; Camelia Simoiu; M. Wilber; Serge Belongie; Sharad Goel; James Davis; Michael S. Bernstein *User Interface Software and Technology Symposium (UIST 2017)*
- 2016 *Residual Networks Behave Like Ensembles of Relatively Shallow Networks*
Andreas Veit; M. Wilber; Serge Belongie *Neural information processing systems (NIPS 2016)*
- 2016 *Training and investigating Residual Nets*
Sam Gross; M. Wilber *Tech report (Torch blog)*
- 2016 *Can we still avoid automatic face detection?*
M. Wilber; Vitaly Shmatikov; Serge Belongie *Winter Conference on Applications of Computer Vision (WACV 2016)*
- 2015 *Learning Concept Embeddings with Combined Human-Machine Expertise*
M. Wilber; Iljung Sam Kwak; Serge Belongie *International Conference on Computer Vision (ICCV 2015)*
- 2015 *On Optimizing Human-Machine Task Assignments*
Andreas Veit; M. Wilber; Rajan Vaish; Serge Belongie; James Davis; et. al. *AAAI Conference on Human Computation and Crowdsourcing Work-in-Progress session (HCOMP 2015 WIP)*
- 2015 *Image Representations and New Domains in Neural Image Captioning*
Jack Hessel; Nicolas Savva; M. Wilber *Workshop on Vision and Language Integration (VL 2015)*
- 2014 *Cost-Effective HITs for Relative Similarity Comparisons*
M. Wilber; Iljung Sam Kwak; Serge Belongie *AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2014)*
- 2014 *Exemplar Codes: An Accurate and Efficient Mid-Level Representation for Big Vision Problems*
Ethan Rudd; M. Wilber; Terry Boult *Computer Vision and Pattern Recognition BigVision workshop (CVPR 2014)*
- 2014 *Exemplar Codes for Facial Attributes and Tattoo Recognition*
M. Wilber; Ethan Rudd; Brian Heflin; Yui-Man Lui; Terry Boult *Winter Conference on Applications of Computer Vision (WACV 2014)*
- 2014 *Good Recognition is Non-Metric*
Walter J. Scheirer; M. Wilber; Michael Eckmann; Terry Boult *E. Pattern Recognition 47 (8), 2014*
- ★ 2013 **Best paper award:** *Animal Recognition in the Mojave Desert: Vision Tools for Field Biologists*
M. Wilber; Walter J. Scheirer; Phil Leitner; et. al. *Workshop on Applications of Computer Vision (WACV 2013)*
- 2013 *Issues in Rotational (Non-) Invariance and Image Preprocessing*
Lalit Jain; M. Wilber; Terry Boult *Conference on Computer Vision and Pattern Recognition Biometrics Workshop (CVPRW 2013)*
- 2012 *PRIVV: Private Remote Iris Authentication with Vaulted Verification*
M. Wilber; Walter J. Scheirer; Terry Boult *Conference on Computer Vision and Pattern Recognition Biometrics Workshop (CVPR 2012)*
- 2012 *Secure Remote Matching with Privacy: Scrambled Support Vector Vaulted Verification (S2V3)*
M. Wilber; Terry Boult *Workshop on Applications of Computer Vision (WACV 2012)*
- 2011 *Face and Eye Detection on Hard Datasets*
Jon Parris; M. Wilber; Brian Heflin; et. al. *International Joint Conference on Biometrics (IJCB 2011)*