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Kimberly J. Wilber

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Research engineer with an academic computer vision background. She / Her

Technical Skills

- **Research interests: Applied computer vision and machine learning to empower users and the societies we live in.** Specific areas include assistive technology, ecology, general-purpose object recognition, perceptual embeddings, artistic style understanding, and privacy-preserving biometrics.
- **Languages and Libraries:** I try to strike a balance between high level scripting and low-level performance languages: Fluent with Python, the scientific Python stack (Torch, TensorFlow, numpy/scipy, Cython, scikit-learn, excellent with matplotlib), with strong POSIX/CLI proficiency. Favorite languages are livescript and nim-lang. Familiar with old and new ML/CV tools – I cut my teeth on OpenCV/LibSVM shortly before deep learning became common. Familiar with C and its ABI. Some experience with C++ and Java, and can work my way around various front-end HTML/Javascript stacks. Eager to learn JAX, rust, nix, F#/OCaml, Haskell, the .NET stack, etc. Contributor to open-source projects including Racket and node.js – ask me about the old `clearTimeout` nodejs bug I found and fixed in 2010!
- **Linux Server Administration:** Twenty years of Debian, Ubuntu, and Arch Linux experience on server, desktop, and cloud services (EC2, DigitalOcean, GCP). Managed over 30 Debian servers at startups and university research labs. Eager to learn kube/nix, though most of my sysadmin experience is with "pre-orchestration" tools like ansible/salt/docker.

Professional Experience

2018–2024 **Software Engineer, Google AI, New York, NY**
- Developed large-scale machine learning and computer vision applications in collaboration with multiple teams.
- Built a reputation as a strong visual communicator – others relied on mecl to produce publication-ready figures and graphics for papers and presentations authored during my tenure.

2017 **Summer Intern, Google Photos Team, Mountain View, CA**
- Implemented and tested prototyping tools for new user interactions.

2016 **Summer Intern, Adobe Research, San Jose, CA**
- Built systems to analyze millions of images and terabytes of data.

2014 **Summer Intern, Dropbox Photos Team, San Francisco, CA**
- 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**
- Conducted computer vision research on perceptual similarity, crowdsourcing, and object recognition.
- Helped establish and maintain the new vision group's presence at Cornell.
- Served as TA for classes including four semesters of "CS5785 Modern Analytics."

2013 **Research Assistant, University of California, San Diego, CA**
- 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**
- 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 users to log in with a revocable, privacy-preserving fingerprint.
- Helped test and debug "EPayNotary," a payment verification service that integrates with PayPal. EPayNotary protects customers by verifying the identity of merchant recipients.

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**
Supported by the Kane Family Foundation Scholarship

2008–2010 High-school concurrent classes at University of Colorado Colorado Springs

2007–2008 High-school concurrent classes at Colorado Technical University

Selected Publications

Note that some work before 2018 is published under a previous name. See here for the unabridged list.

2024 *PolyMaX: General Dense Prediction with Mask Transformer*
Xuan Yang; Liangzhe Yuan; **Kimberly Wilber**; Astuti Sharma; Xiuye Gu; Siyuan Qiao; Stephanie Debats; Huisheng Wang; Hartwig Adam; Mikhail Sirotenko; Liang-Chieh Chen. *Winter Conference on Applications of Computer Vision (WACV 2024)*

2023 *SANPO: A Scene Understanding, Accessibility, Navigation, Pathfinding, Obstacle Avoidance Dataset*
Sagar M. Waghmare; **Kimberly Wilber**; Dave Hawkey; Xuan Yang; Matthew Wilson; Stephanie Debats; Cattalyya Nuengsigkapian; Astuti Sharma; Lars Pandikow; Huisheng Wang; Hartwig Adam; Mikhail Sirotenko. *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)*

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)*

2016 *Residual Networks Behave Like Ensembles of Relatively Shallow Networks*
Andreas Veit; **M. Wilber**; Serge Belongie. *Neural information processing systems (NIPS 2016)*

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)*

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 *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)*

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)*