

# Kimberly J. Wilber

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<http://kjwilber.org>

Research engineer with an academic computer vision background.

She / Her

## Technical Skills

**Computer vision and machine learning.** I use applied research to empower users and the societies we live in. Fluent in scientific Python tools (TensorFlow, PyTorch, scikit-learn, matplotlib, numpy/scipy). Uses OpenCV, dlib, OpenGL, and Apache Flume in C environments.

**Strong general proficiency with POSIX and CLI tools** on Linux and Mac OS. Writes side projects in Torch7/Lua, NodeJS, and nim. **Sysadmin.** Over 20 years of experience administering Debian and Ubuntu server clusters across various hosting environments (AWS EC2, GCP, and on-prem) using tools like Ansible and Docker.

**Full-stack.** Frequently works with projects spanning low-level UNIX/C to high level Python to frontend (HTML/Javascript, Coffeescript, Livescript, in Vue) in both SQL database and MapReduce environments. **Open-source.** Contributor to projects including Racket and node.js – ask me about the `clearTimeout` nodejs bug I found and fixed in 2010!

## Professional Experience

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|--------------|--|
| 2013–Present | <p><b>Volunteer publication assistant, Computer Vision Foundation</b></p> <ul style="list-style-type: none"> <li>• I help the CV Foundation process papers for the <a href="#">CVF Open Access Archive</a>, a complete repository of CVPR, ICCV, and WACV papers.</li> <li>• To help prepare conference proceedings, I built a pipeline that processes over 2,700 camera-ready papers provided by authors for each conference.</li> <li>• Every machine learning researcher who reads open-access CVPR papers in the last 11 years has touched PDF files generated by the infrastructure I maintain.</li> <li>• My pipeline adds page numbers, an attribution banner, and proper PDF metadata, with automatic checks for common quality problems (figures overlapping margins, etc).</li> </ul>  |
| 2018–2024    | <p><b>Software Engineer, Google AI, New York, NY</b></p> <ul style="list-style-type: none"> <li>• Implemented real-time, on-device monocular depth estimation models for <a href="#">Project Guideline</a>, a tool that helps visually impaired runners exercise independently. My models improved Google's outdoor depth estimation capabilities.</li> <li>• Helped create <a href="#">SANPO</a>, a 3D panoptic video dataset for the computer vision community. My role was to create large-scale data processing infrastructure and to shepherd the collection of 3D depth data.</li> <li>• Created and refactored internal debug tools for <i>RankEmbed</i>, one of Google Web Search's first forays into NLP embeddings for web search. My tools helped engineers demo the fledgling product to executives to build support.</li> <li>• Built a reputation as a strong visual communicator – others relied on me to produce publication-ready figures and graphics for papers and presentations authored during my tenure.</li> </ul> |
| 2014–2018    | <p><b>Research Assistant, Cornell University, Cornell Tech NYC</b></p> <ul style="list-style-type: none"> <li>• Conducted computer vision research on perceptual similarity, crowdsourcing, and object recognition.</li> <li>• Helped establish and maintain the new vision group's presence at Cornell.</li> <li>• Served as TA for classes including four semesters of "CS5785 Modern Analytics."</li> </ul>   |
| 2017         | <p><b>Summer Intern, Google Photos Team, Mountain View, CA</b></p> <ul style="list-style-type: none"> <li>• Implemented and tested tools to make it easier for ML engineers to prototype UI interactions.</li> <li>• These tools helped other engineers decide what features to include in <a href="#">Google Photos Sharing Suggestions</a>.</li> </ul>   |
| 2016         | <p><b>Summer Intern, Adobe Research, San Jose, CA</b></p> <ul style="list-style-type: none"> <li>• Curated <a href="#">BAM</a>, one of the first large-scale collections of professional commercial artwork, intended for ML object classification and emotion understanding.</li> <li>• Built a data loader system in Python and Redis to quickly analyze millions of images for ML training and inference workloads, speeding up training by 5x.</li> </ul>  |
| 2014         | <p><b>Summer Intern, Dropbox Photos Team, San Francisco, CA</b></p> <ul style="list-style-type: none"> <li>• Conducted product-focused computer vision research.</li> <li>• Introduced our team to more efficient tools and technologies.</li> <li>• Maintained a computer vision evaluation and experimentation pipeline.</li> </ul>  |
| 2013         | <p><b>Research Assistant, University of California, San Diego, CA</b></p>  |

2012–2013	Software Engineer, Securics, Inc., Colorado Springs, CO
2009–2013	Assistant Researcher, Vision and Security Technology (VAST) Laboratory at UCCS, CO
2011	Summer Researcher, NSF REU Program, University of Colorado Colorado Springs, CO
2009–2010	NSF RAHSS High School Intern, Securics, Inc., Colorado Springs, CO

## Education

2014–2018	<b>Ph.D. in Computer Science, Cornell Tech</b> 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	<b>Bachelor of Innovation in Computer Science, University of Colorado Colorado Springs</b> Supported by the Kane Family Foundation Scholarship

## 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 Nuengsigkapijan; 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 Boulton. *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 Boulton. *Conference on Computer Vision and Pattern Recognition Biometrics Workshop (CVPR 2012)*