Michael J. Wilber

Computer Vision Ph.D. Student, Third Year

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Education

2014–2019	**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** (4.0 GPA) Supported by the Kane Family Foundation Scholarship, Braxton Scholarship
2008–2010	High-school concurrent classes at University of Colorado Colorado Springs (4.0 GPA)
2007–2008	High-school concurrent classes at Colorado Technical University (4.0 GPA)

Publications and Patents

2015 To Appear	*Learning Concept Embeddings with Combined Human-Machine Expertise* **Wilber, M.**; Kwak, I. S.; Belongie, B. International Conference on Computer Vision (ICCV 2015)
2015	*On Optimizing Human-Machine Task Assignments* Veit, A.; **Wilber, M.**; Vaish, R.; Belongie, B.; Davis, J.; *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* Hessel, J.; Savva, N.;, **Wilber, M.** Workshop on Vision and Language Integration (VL 2015)
2014	*Cost-Effective HITs for Relative Similarity Comparisons* **Wilber, M.**; Kwak, I. S.; Belongie; S. J. AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2014)
2014	*Exemplar Codes: An Accurate and Efficient Mid-Level Representation for Big Vision Problems* Rudd, E.; **Wilber, M.**; Boult, T. E. Computer Vision and Pattern Recognition BigVision workshop (CVPR 2014)
2014	*Exemplar Codes for Facial Attributes and Tattoo Recognition* **Wilber, M.**; Rudd, E.; Heflin, B.; Lui; Y. M.; Boult, T. E. Winter Conference on Applications of Computer Vision (WACV 2014).
2014	*Good Recognition is Non-Metric* Scheirer, W. J.; **Wilber, M.**; Eckmann; M.; Boult; T. E. Pattern Recognition 47 (8), 2014
★ 2013	**Best paper award:** *Animal Recognition in the Mojave Desert: Vision Tools for Field Biologists* **Wilber, M.**; Scheirer, W.; Leitner, P.; et al. Workshop on Applications of Computer Vision (WACV 2013).
2013	*Issues in Rotational (Non-) Invariance and Image Preprocessing* Jain, L.; **Wilber, M.**; Boult, T. Conference on Computer Vision and Pattern Recognition Biometrics Workshop (CVPR 2013)
2012	*PRIVV: Private Remote Iris Authentication with Vaulted Verification* **Wilber, M.**; Scheirer, W.; Boult, T. E. Conference on Computer Vision and Pattern Recognition Biometrics Workshop (CVPR 2012)
2012	*Secure Remote Matching with Privacy: Scrambled Support Vector Vaulted Verification (S^2V^3)* **Wilber, M.**; Boult, T. E. Workshop on Applications of Computer Vision (WACV 2012)
2012	*System and Method for Privacy Security Enhanced Vaulted Verification* **Wilber, M.**; Boult, T. E. Provisional patent application.
2011	*Face and Eye Detection on Hard Datasets* Parris, J.; **Wilber, M.**; Heflin, B.; et al. International Joint Conference on Biometrics (IJCB 2011)

Professional Experience

2014 | **Summer Intern, Dropbox Photos Team, San Francisco**
- Conducted product-focused computer vision research in a collaborative team environment.
- Introduced our team to more efficient tools and technologies.
- Helped maintain the computer vision evaluation and experimentation pipeline.

2014–Present | **Research Assistant, Cornell University, Cornell Tech NYC**
- 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**
- Conducted computer vision research: face recognition, object recognition, perceptual similarity.
- Helped maintain servers and lab equipment.

2012–2013 | **Software Engineer, Securics, Inc., Colorado Springs, 80918**
- 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.
- Performed research involving animal recognition in the Mojave desert.

2009–2013 | **Assistant Researcher, Vision and Security Technology (VAST) Laboratory at UCCS**
- 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 80917**
- 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 80198**
- 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.

Technical Skills

- **Languages and Libraries:** Fluent in Python, the scientific Python stack (numpy/scipy, Cython, scikit-learn, scikit-image, etc), front-end Javascript, and general purpose POSIX tools. Reasonably familiar with Lua/Torch7, Racket/Scheme, node.js, C (and to a lesser extent, C++), MATLAB, Java, and C#. Also fluent in presentation languages including LATEX, HTML, and CSS. Intermittent contributor to open-source projects including node.js and Racket.
- **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 the Vision and Security Technology Laboratory at the University of Colorado Colorado Springs (UCCS) and Securics, Inc.
- **Cluster Computing and "Big Data":** Skilled at parallelizing large experiments. Created internal projects with BOINC, the *Berkeley Open Infrastructure for Network Computing*. Designed several frameworks for distributed computing in Python and Racket. Can port MATLAB/Python code to C.
- **Computer vision and machine learning:** Familiar with several high-level computer vision problems including object detection/recognition, animal detection/recognition, and face detection/identification. Familiar with several biometric modalities including fingerprints, irises, and faces. Familiar with several common ML/CV tools including libsvm, scikit-learn, Theano, OpenCV, Torch7.