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Education

- August 2008 **Ph.D.** in Computer Science
Cornell University, Advisor: Daniel P. Huttenlocher
Dissertation: *Part-based Statistical Models for Visual Object Class Recognition*
Graduate minor: Latin American Studies
- August 2007 **M.S.** in Computer Science
Cornell University
- May 2001 **M.S.** in Computer Science and Engineering
The Pennsylvania State University, Advisor: Rangachar Kasturi
Thesis: *Extraction of Unconstrained Caption Text from General-Purpose Video*
- May 2001 **B.S.** (with highest honors) in Computer Engineering
The Pennsylvania State University

Academic and Industrial Appointments

- July 2016 – **Associate Professor of Informatics and Computing** (with tenure)
Indiana University School of Informatics and Computing (Bloomington, IN)
Core faculty, Computer Science, Informatics, Cognitive Science, and Data Science
Adjunct faculty, Department of Statistics
Affiliate, Center for Complex Networks and Systems Research
Affiliate, Digital Science Center
- August 2010 – June 2016 **Assistant Professor of Informatics and Computing**
Indiana University School of Informatics and Computing (Bloomington, IN)
- August 2008 – August 2010 **Postdoctoral Associate**
Cornell University Department of Computer Science (Ithaca, NY)
- July 2001 – August 2003 **Senior Research Scientist**
Eastman Kodak Company, Imaging Science Division (Rochester, NY)

Publications

- **Journal articles:**
 - Tousif Ahmed, Roberto Hoyle, Patrick Shaffer, Kay Connelly, David Crandall, and Apu Kapadia. Addressing safety, security, and privacy for people with visual impairments. *IEEE Internet Computing*, 2017. (impact factor = 2.0).
 - Johan Bollen, David Crandall, Damion Junk, Ying Ding, and Katy Borner. An efficient system to fund science: from proposal review to peer-to-peer distributions. *Scientometrics*, 110(1):521–528, 2017. (impact factor = 2.084).

- Mohammed Korayem, Khalifeh Aljadda, and David Crandall. Sentiment/subjectivity analysis survey for languages other than English. *Social Network Analysis and Mining*, 6(75), 2016.
 - Noam Levin, Salit Kark, and David Crandall. Where have all the people gone? Enhancing global conservation using night lights and social media. *Ecological Applications*, 25(8):2153-2167, December 2015. (impact factor = 4.126).
 - Kun Duan, Dhruv Batra, and David Crandall. Human pose estimation through composite multi-layer models. *Signal Processing*, 110:15–26, May 2015. (impact factor = 2.238).
 - Johan Bollen, David Crandall, Damion Junk, Ying Ding, and Katy Borner. From funding agencies to scientific agency: Collective allocation of science funding as an alternative to peer review. *EMBO Reports*, 15:131–133, 2014. (impact factor = 7.189).
 - David Crandall, Andrew Owens, Noah Snavely, and Daniel Huttenlocher. SfM with MRFs: Discrete-continuous optimization for large-scale structure from motion. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 35(12):2841–2853, December 2013. (impact factor = 4.795).
 - David Crandall and Noah Snavely. Modeling people and places with internet photo collections. *Communications of the ACM (CACM)*, 55(6):52–60, 2012. (impact factor = 2.51) Also appeared in ACM Queue magazine.
 - David Crandall and Noah Snavely. Networks of landmarks, photos, and people. *Leonardo*, 44(3):240–243, 2011.
 - David Crandall, Lars Backstrom, Daniel Cosley, Siddharth Suri, Daniel Huttenlocher, and Jon Kleinberg. Inferring social ties from geographic coincidences. *Proceedings of the National Academy of Sciences (PNAS)*, 107(52):22436–22441, 2010. (impact factor = 9.737).
 - Jiebo Luo and David Crandall. Color object detection using spatial-color joint probability functions. *IEEE Transactions on Image Processing (TIP)*, 15(6):1443–1453, 2006. (impact factor = 3.199).
 - Jiebo Luo, David Crandall, Amit Singhal, Matthew Boutell, and Robert Gray. Psychophysical study of image orientation perception. *Spatial Vision*, 16(5):429–456, 2003. (impact factor = 1.037).
 - David Crandall, Sameer Antani, and Rangachar Kasturi. Extraction of special effects caption text events from digital video. *International Journal of Document Analysis and Recognition (IJ DAR)*, 5(2-3):138–157, 2002. (impact factor = 0.800).
- **Papers in competitive peer-reviewed conference proceedings:**
- Chenyou Fan, Jangwon Lee, Mingze Xu, Krishna Kumar Singh, Yong Jae Lee, David J. Crandall, and Michael S. Ryoo. Identifying first-person camera wearers in third-person videos. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
 - Wen Chen, David Crandall, and Norman Su. Understanding the aesthetic evolution of websites: Towards a notion of design periods. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2017.
 - Bardia Doosti, David J. Crandall, and Norman Makoto Su. A deep study into the history of web design. In *ACM International Web Science Conference (WebSci)*, 2017.
 - Mingze Xu, David J. Crandall, Geoffrey C. Fox, and John D. Paden. Automatic estimation of ice bottom surfaces from radar imagery. In *IEEE International Conference on Image Processing (ICIP)*, 2017.
 - Stefan Lee, Senthil Purushwalkam, Michael Cogswell, Viresh Ranjan, David Crandall, and Dhruv Batra. Stochastic multiple choice learning for training diverse deep ensembles. In *Advances in Neural Information Processing Systems (NIPS)*, 2016. (Poster, 22.7% acceptance rate).

- Jingya Wang, Mohammed Korayem, Saul Blanco, and David Crandall. Tracking natural events through social media and computer vision. In *ACM International Conference on Multimedia (MM)*, 2016.
- Sven Bambach, Linda Smith, David Crandall, and Chen Yu. Objects in the center: How the infant’s body constrains infant scenes. In *IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL)*, 2016. **Best paper award.** (Oral, 33.7% acceptance rate).
- Tousif Ahmed, Patrick Shaffer, Kay Connelly, David Crandall, and Apu Kapadia. Addressing physical safety, security, and privacy for people with visual impairments. In *USENIX Symposium on Usable Privacy and Security (SOUPS)*, 2016. (Oral, 27.8% acceptance rate).
- Sven Bambach, David Crandall, Linda Smith, and Chen Yu. Active viewing in toddlers facilitates visual object learning: An egocentric vision approach. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2016. (Oral, 34% acceptance rate).
- Mohammed Korayem, Robert Templeman, Dennis Chen, David Crandall, and Apu Kapadia. Enhancing lifelogging privacy by detecting screens. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2016. **Honorable Mention Award.** (CHI Note, 23.4% acceptance rate).
- Sven Bambach, Stefan Lee, David Crandall, and Chen Yu. Lending a hand: Detecting hands and recognizing activities in complex egocentric interactions. In *IEEE International Conference on Computer Vision (ICCV)*, 2015. (Poster, 30.3% acceptance rate).
- Sven Bambach, David Crandall, and Chen Yu. Viewpoint integration for hand-based recognition of social interactions from a first-person view. In *ACM International Conference on Multimodal Interaction (ICMI)*, 2015. (Poster, 41% acceptance rate).
- Stefan Lee, Nicolas Maisonneuve, David Crandall, Alexei Efros, and Josef Sivic. Linking past to present: Discovering style in two centuries of architecture. In *IEEE International Conference on Computational Photography (ICCP)*, 2015. (Oral, 24% acceptance rate).
- Tousif Ahmed, Roberto Hoyle, Kay Connelly, David Crandall, and Apu Kapadia. Privacy concerns and behaviors of people with visual impairments. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2015. (Full paper, 23% acceptance rate).
- Roberto Hoyle, Robert Templeman, Denise Anthony, David Crandall, and Apu Kapadia. Sensitive lifelogs: A privacy analysis of photos from wearable cameras. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2015. (CHI Note).
- Stefan Lee, Haipeng Zhang, and David Crandall. Predicting geo-informative attributes in large-scale image collections using convolutional neural networks. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2015. (Oral and poster, 36.7% acceptance rate).
- Kun Duan, David Crandall, and Dhruv Batra. Multimodal learning in loosely-organized web images. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014. (Poster, 29.9% acceptance rate).
- Robert Templeman, Mohammed Korayem, David Crandall, and Apu Kapadia. PlaceAvoider: Steering first-person cameras away from sensitive spaces. In *Network and Distributed System Security Symposium (NDSS)*, 2014. (Oral, 18.6% acceptance rate).
- Kun Duan, Luca Marchesotti, and David Crandall. Vehicle recognition with constrained multiple instance SVMs. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2014. (Oral and poster, 40% acceptance rate).
- Roberto Hoyle, Robert Templeman, Steven Armes, Denise Anthony, David Crandall, and Apu Kapadia. Privacy behaviors of lifeloggers using wearable cameras. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)*, 2014. (Oral, 20.7% acceptance rate).

- Haipeng Zhang, Zhixian Yan, Jun Yang, Emmanuel Munguia Tapia, and David Crandall. mFingerprint: privacy-preserving user modeling with multimodal mobile device footprints. In *International Conference on Social Computing, Behavior-Cultural Modeling, & Prediction (SBP)*, 2014. (Oral, 24% acceptance rate).
- Sven Bambach, John Franchak, David Crandall, and Chen Yu. Detecting hands in children’s egocentric views to understand embodied attention during social interaction. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2014. (Oral, 41.0% acceptance rate).
- Stefan Lee, Jerome Mitchell, David Crandall, and Geoffrey C. Fox. Estimating bedrock and surface layer boundaries and confidence intervals in ice sheet radar imagery using MCMC. In *IEEE International Conference on Image Processing (ICIP)*, 2014. (Oral, 44% acceptance rate).
- Sven Bambach, David Crandall, and Chen Yu. Understanding embodied visual attention in child-parent interaction. In *IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL)*, 2013. (Oral, 33% acceptance rate).
- Robert Templeman, Zahidur Rahman, David Crandall, and Apu Kapadia. PlaceRaider: Virtual theft in physical spaces with smartphones. In *Network and Distributed System Security Symposium (NDSS)*, 2013. (Oral, 18% acceptance rate).
- Mohammed Korayem and David Crandall. De-anonymizing users across heterogeneous social computing platforms. In *AAAI International Conference on Weblogs and Social Media (ICWSM)*, 2013. (Poster).
- David Crandall, Geoffrey Fox, and John Paden. Layer-finding in radar echograms using probabilistic graphical models. In *IAPR International Conference on Pattern Recognition (ICPR)*, 2012. (Oral, 15% acceptance rate).
- Kun Duan, Dhruv Batra, and David Crandall. A Multi-layer Composite Model for Human Pose Estimation. In *British Machine Vision Conference (BMVC)*, 2012. (Poster, 32% acceptance rate).
- Kun Duan, Devi Parikh, David Crandall, and Kristen Grauman. Discovering localized attributes for fine-grained recognition. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012. (Poster, 26% acceptance rate).
- Haipeng Zhang, Mohammed Korayem, David Crandall, and Gretchen LeBuhn. Mining photo-sharing websites to study ecological phenomena. In *International World Wide Web Conference (WWW)*, 2012. (Oral, 12% acceptance rate).
- Haipeng Zhang, Mohammed Korayem, Erkang You, and David Crandall. Beyond co-occurrence: Discovering and visualizing tag relationships from geo-spatial and temporal similarities. In *ACM International Conference on Web Search and Data Mining (WSDM)*, 2012. (Oral, 8.3% acceptance rate).
- David Crandall, Andrew Owens, Noah Snavely, and Daniel Huttenlocher. Discrete-continuous optimization for large-scale structure from motion. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011. **Best paper runner-up**. (Oral, 3.5% acceptance rate).
- David Crandall, Lars Backstrom, Daniel Huttenlocher, and Jon Kleinberg. Mapping the world’s photos. In *International World Wide Web Conference (WWW)*, 2009. **Best paper honorable mention**. (Oral, 13% acceptance rate).
- Yunpeng Li, David Crandall, and Daniel Huttenlocher. Landmark classification in large-scale image collections. In *IEEE International Conference on Computer Vision (ICCV)*, 2009. (Poster, 23.2% acceptance rate).
- David Crandall, Daniel Cosley, Daniel Huttenlocher, Jon Kleinberg, and Sid Suri. Feedback effects between similarity and social influence in online communities. In *ACM International Conference on Knowledge Discovery and Data Mining (KDD)*, 2008. (Oral, 18.6% acceptance rate).

- David Crandall and Daniel Huttenlocher. Composite models of objects and scenes for category recognition. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2007. (Poster, 23.4% acceptance rate).
 - David Crandall and Daniel Huttenlocher. Weakly supervised learning of part-based spatial models for visual object recognition. In *European Conference on Computer Vision (ECCV)*, 2006. (Oral, 4.4% acceptance rate).
 - David Crandall, Pedro Felzenszwalb, and Daniel Huttenlocher. Spatial priors for part-based recognition using statistical models. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2005. (Oral, 3.7% acceptance rate).
 - David Crandall and Jiebo Luo. Robust color object detection using spatial-color joint probability functions. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2004. (Poster, 23.6% acceptance rate).
 - David Crandall and Rangachar Kasturi. Robust detection of stylized text events in digital video. In *IAPR International Conference on Document Analysis and Recognition (ICDAR)*, 2001.
 - Sameer Antani, David Crandall, and Rangachar Kasturi. Robust extraction of text in video. In *IAPR International Conference on Pattern Recognition (ICPR)*, 2000.
 - Ullas Gargi, David Crandall, Sameer Antani, Tarak Gandhi, Ryan Keener, and Rangachar Kasturi. A system for automatic text detection in video. In *IAPR International Conference on Document Analysis and Recognition (ICDAR)*, 1999.
- **Papers in peer-reviewed workshops and less competitive conferences:**
 - Eman Hassan, Rakibul Hasan, Patrick Shaffer, David Crandall, and Apu Kapadia. Cartooning for enhanced privacy in lifelogging and streaming video. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Computer Vision Challenges and Opportunities for Privacy and Security (CVPR CV-COPS)*, 2017.
 - Jangwon Lee, Jingya Wang, David Crandall, Selma Sabanovic, and Geoffrey Fox. Real-time, cloud-based object detection for Unmanned Aerial Vehicles. In *IEEE Robotic Computing*, 2017. (Oral).
 - Satoshi Tsutsui, Guilin Meng, Xiaohui Yao, David Crandall, and Ying Ding. Analyzing figures of brain images from Alzheimer’s disease papers. In *iConference*, 2017.
 - Mohanad Al-Ibadi, Jordan Sprick, Sravya Athinarapu, Theresa Stumpf, John Paden, Carl Leuschen, Fernando Rodriguez, Mingze Xu, David Crandall, Geoffrey Fox, David Burgess, Martin Sharp, Luke Copland, and Wesley Van Wychen. DEM extraction of the basal topography of the canadian archipelago ice caps via 2d automated layer-tracking. In *IEEE International Geoscience and Remote Sensing Symposium*, 2017. (Oral).
 - Chenyou Fan and David Crandall. Deepdiary: Automatically captioning lifelogging image streams. In *European Conference on Computer Vision International Workshop on Egocentric Perception, Interaction, and Computing (EPIC)*, 2016.
 - Kathy Tang and David Crandall. Applying deep learning to improve maritime situational awareness. In *ACM International Conference on Knowledge Discovery and Data Mining Workshop on Large-scale Deep Learning for Data Mining*, 2016.
 - Tousif Ahmed, Roberto Hoyle, Patrick Shaffer, Kay Connelly, David Crandall, and Apu Kapadia. Considering privacy implications of assistive devices for people with visual impairments. In *CHI Workshop on Interactive Systems in Healthcare (WISH)*, 2016.
 - Supun Kamburugamuve, Hengjing He, Geoffrey Fox, and David Crandall. Cloud-based parallel implementation of SLAM for mobile robots. In *International Supercomputing Conference (ISC) Cloud & Big Data Conference*, 2015.

- Roberto Hoyle, Apu Kapadia, and David Crandall. Challenges in running wearable camera-related user studies. In *ACM Conference on Computer-Supported Cooperative Work and Social Computing Workshop on The Future of Networked Privacy: Challenges and Opportunities*, 2015.
 - Robert Templeman, Roberto Hoyle, David Crandall, and Apu Kapadia. Reactive security: Responding to visual stimuli from wearable cameras. In *UbiComp Workshop on Usable Privacy and Security for Wearable and Domestic Ubiquitous Devices (UPSIDE)*, 2014.
 - Stefan Lee, Sven Bambach, David Crandall, John M. Franchak, and Chen Yu. This Hand is My Hand: A probabilistic approach to hand disambiguation in egocentric video. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Vision*, 2014. **Best paper award winner.** (Oral).
 - Jingya Wang, Mohammed Korayem, and David Crandall. Observing the natural world with Flickr. In *International Conference on Computer Vision Workshop on Computer Vision for Converging Perspectives*, 2013. **Best paper award winner.** (Oral).
 - Jerome E. Mitchell, David Crandall, Geoffrey Fox, and John Paden. Automatic near surface estimation from snow radar imagery. In *IEEE International Geoscience and Remote Sensing Symposium*, 2013. (Oral).
 - Jerome E. Mitchell, David Crandall, Geoffrey C. Fox, Maryam Rahnemoonfar, and John D. Paden. A semi-automatic approach for estimating bedrock and surface layers from multichannel coherent radar depth sounder imagery. In *SPIE Conference on Remote Sensing*, 2013. (Oral).
 - Mohammed Korayem, David Crandall, and Muhammad Abdul-Mageed. Subjectivity and sentiment analysis of Arabic: A survey. In *International Conference on Advanced Machine Learning Technologies and Applications*, 2012. (Poster).
 - Mohammed Korayem, Abdallah A. Mohamed, David Crandall, and Roman V. Yampolskiy. Solving Avatar Captchas automatically. In *International Conference on Advanced Machine Learning Technologies and Applications*, 2012. (Oral).
 - Mohammed Korayem, Abdallah A. Mohamed, David Crandall, and Roman V. Yampolskiy. Learning visual features for the Avatar Captcha Recognition Challenge. In *International Conference on Machine Learning Applications*, 2012.
 - Jiebo Luo, Amit Singhal, David Crandall, and Robert T. Gray. A psychophysical study of image orientation determination. In *SPIE Conference on Human Vision and Image Processing*, 2003.
 - Rangachar Kasturi, Sameer Antani, and David Crandall. A framework for reliable text-based indexing of video. In *Symposium on Document Image Understanding Technology*, 2001.
 - Sameer Antani, David Crandall, Anand Narasimamurthy, Vladimir Y. Mariano, and Rangachar Kasturi. Evaluation of methods for detection and localization of text from video. In *IAPR Workshop on Document Analysis Systems*, 2000.
- **Book chapters:**
 - David Crandall, Yunpeng Li, Stefan Lee, and Daniel Huttenlocher. Recognizing landmarks in large-scale social image collections. In Asaad Hakeem, Richard Szeliski, Mubarak Shah, Luc Van Gool, and Amir Zamir, editors, *Visual Analysis and Geolocalization of Large Scale Imagery*. Springer, 2016.
 - David Crandall, Pedro Felzenszwalb, and Daniel Huttenlocher. Object recognition by combining appearance and geometry. In J. Ponce, M. Hebert, C. Schmid, and A. Zisserman, editors, *Toward Category-Level Object Recognition*. Springer, 2007.

- **Theses:**

- David Crandall. *Part-based Statistical Models for Visual Object Class Recognition*. PhD thesis, Cornell University, 2008. (Ph.D. Dissertation).
- David Crandall. Extraction of unconstrained caption text from general-purpose video. Master’s thesis, The Pennsylvania State University, 2001. (M.S. Thesis).
- **Patents and Patent Filings:**
 - Robert Templeman, Zahid Rahman, David Crandall, and Apu Kapadia. Method and apparatus for virtual 3d model generation and navigation using opportunistically captured images, Patent disclosure filed August 16, 2013.
 - Robert Templeman, Apu Kapadia, David Crandall, and Mohammed Korayem. A method and system of enforcing privacy policies for mobile sensory devices, Patent disclosure filed October 14, 2013.
 - Jiebo Luo and David Crandall. Method for detecting objects in digital images, U.S. Patent #7,035,461, European Patent #1,394,723, issued 2006.
 - David Crandall and Jiebo Luo. Method for detecting color objects in digital images, U.S. Patent #7,263,220, European Patent #1,452,995, Japanese Patent #2004265407, issued 2007.
- **Letters to the editor:**
 - Noam Levin, David Crandall, and Salit Kark. Scale matters: differences between local, regional, and global analyses (letter to the editor). *Ecological Applications*, 26(7):23592362, December 2016. (impact factor = 4.126).
 - Johan Bollen, David Crandall, Damion Junk, Ying Ding, and Katy Borner. Response: “why we still need grant peer review”. *EMBO Reports*, 15(5):467, May 2014. (impact factor = 7.189).
- **Abstracts in conferences and workshops:**
 - Joshua Cannon and David Crandall. Advanced computer vision analysis of microelectronic imagery. In *National Conference on Undergraduate Research*, 2017.
 - John Paden, Mingze Xu, Jordan Sprick, Sravya Athinarapu, Theresa Stumpf, David Crandall, David Burgess, Martin Sharp, Luke Copeland, Wesley Van Wychen, Geoffrey Fox, and Carl Leuschen. 3d imaging and automated ice bottom tracking of (canadian) arctic aripelago ice sounding data. In *American Geophysical Union (AGU) Fall Meeting*, 2016. (Poster).
 - Jingya Wang, Mohammed Korayem, Saul Blanco, and David Crandall. Tracking natural events through social media and computer vision. In *European Conference on Computer Vision Workshop on Web-scale Vision and Social Media (VSM)*, 2016.
 - Sven Bambach, David Crandall, Linda Smith, and Chen Yu. Active vision: Learning visual objects through egocentric views of children and parents. In *European Conference on Computer Vision Workshop on Action and Anticipation for Visual Learning (AAVL)*, 2016.
 - Sven Bambach, Stefan Lee, David Crandall, and Chen Yu. Detecting and segmenting hands to recognize social interactions in egocentric video. In *European Conference on Computer Vision International Workshop on Egocentric Perception, Interaction, and Computing (EPIC)*, 2016.
 - Chenyou Fan and David Crandall. Deepdiary: Automatically captioning lifelogging image streams. In *ACM International Conference on Multimedia Workshop on Lifelogging Tools and Applications*, 2016.
 - Mohammed Korayem, Robert Templeman, Dennis Chen, Apu Kapadia, and David Crandall. Enhancing lifelogging privacy through computer vision. In *ACM International Conference on Multimedia Workshop on Lifelogging Tools and Applications*, 2016.
 - Liang Chen, Rong Jin, Simo Zhang, Stefan Lee, Zhenhua Chen, and David Crandall. A hybrid HMM-RNN model for optical music recognition. In *International Society for Music Information Retrieval Conference (ISMIR)*, 2016.

- Patrick Shaffer, Tousif Ahmed, Roberto Hoyle, Kay Connelly, David Crandall, and Apu Kapadia. Surveillance considerations concerning assistive devices for people with visual impairments. In *ACM SIGCHI Conference on Human Factors in Computing Systems Workshop on Everyday Surveillance*, 2016.
- Sven Bambach, Stefan Lee, David Crandall, and Chen Yu. Analyzing hands to recognize social interactions with a large-scale egocentric hands dataset. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Observing and Understanding Hands in Action*, 2016.
- Kai Zhen and David Crandall. Finding egocentric image topics through convolutional neural network based representations. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Computer Vision*, 2016. (Poster).
- Sven Bambach, Stefan Lee, David Crandall, and Chen Yu. Detecting and classifying hands in social and driving contexts. In *IEEE Intelligent Vehicles Symposium Workshop and Challenge on Vision for Intelligent Vehicles and Applications (VIVA)*, 2015. (Poster).
- Stefan Lee, Nicolas Maisonneuve, David Crandall, Alexei Efros, and Josef Sivic. Linking past to present: Discovering style in two centuries of architecture. In *IEEE Conference on Computer Vision and Pattern Recognition International Workshop on Large Scale Visual Recognition and Retrieval (BigVision)*, 2015. (Poster).
- Sven Bambach, Stefan Lee, David Crandall, John Franchak, and Chen Yu. Tracking hands of interacting people in egocentric video. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Observing and Understanding Hands in Action*, 2015. (Poster).
- Sven Bambach, Stefan Lee, David Crandall, and Chen Yu. This hand is my hand: Hand disambiguation in egocentric video. In *Midwest Computer Vision Workshop*, 2014. (Oral).
- Jingya Wang, Mohammed Korayem, and David Crandall. Observing the natural world with Flickr. In *Midwest Computer Vision Workshop*, 2014. (Poster).
- Robert Templeman, Mohammed Korayem, David Crandall, and Apu Kapadia. PlaceAvoider: Steering first-person cameras away from sensitive spaces. In *Midwest Computer Vision Workshop*, 2014. (Poster).
- Stefan Lee and David Crandall. Learning to identify local flora with human feedback. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Computer Vision and Human Computation*, 2014. (Poster).
- Robert Templeman, Mohammed Korayem, David Crandall, and Apu Kapadia. PlaceAvoider: Steering first-person cameras away from sensitive spaces. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Vision*, 2014. (Poster).
- Linda Smith, Chen Yu, Sven Bambach, and David Crandall. Watching is not the same as doing. In *International Conference on Infant Studies*, 2014.
- Mohammed Korayem, David Crandall, and Apu Kapadia. Objectavoider: Detecting sensitive objects in imagery from wearable cameras. In *Network and Distributed System Security Symposium (NDSS)*, 2014. (Poster).
- Casey McGlasson, Jared Lorince, David Crandall, and Peter Todd. Exploring the use of big data in color preference research. In *Annual Meeting of the Vision Sciences Society*, 2013. (Oral presentation).
- Casey McGlasson, Jared Lorince, David Crandall, and Peter M. Todd. Exploring sex differences in color preferences using online resources. In *25th Annual Human Behavior and Evolution Society Conference*, 2013. (Oral presentation).
- Jerome E. Mitchell, David Crandall, Geoffrey Fox, and John Paden. Automatic near surface estimation from radar imagery. In *American Geophysical Union (AGU) Fall Meeting*, 2012. (Oral presentation).

- Kavin Chandrasekaran, Srikanth Iyer, David Crandall, and Apu Kapadia. Automated activity monitoring using Kinect. In *UbiComp Workshop on Evaluating off-the-shelf technologies for personal health monitoring*, 2012. (Oral presentation).
- Tony Bao and David Crandall. Modeling consumer choice of photography device. In *Institute for Operations Research and Management Sciences (INFORMS) Management Science Conference*, 2012. (Oral presentation).
- Casey McGlasson, Jared Lorince, David Crandall, and Peter M. Todd. Testing an evolutionary account of color preferences with online photos. In *25th Annual Human Behavior and Evolution Society Conference*, 2012. (Poster).
- Tony Bao and David Crandall. An equilibrium analysis of online social content-sharing websites. In *Institute for Operations Research and Management Sciences (INFORMS) Management Science Conference*, 2011. (Oral presentation).
- Casey McGlasson, Jared Lorince, David Crandall, and Peter M. Todd. Testing an adaptive explanation for sex differences in color preferences with online photos. In *24th Annual Human Behavior and Evolution Society Conference*, 2011. (Oral presentation).
- David Crandall and Daniel P. Huttenlocher. Visual object class recognition using part-based probabilistic models. In *University of Rochester Center of Electronic Imaging Systems Annual Showcase*, 2008. (Oral presentation).

• **Technical reports:**

- Chenyou Fan and David Crandall. DeepDiary: automatic caption generation for lifelogging image streams. Technical report, arXiv 1606.07839, 2016.
- Ashwin K Vijayakumar, Michael Cogswell, Ramprasath R. Selvaraju, Qing Sun, Stefan Lee, David Crandall, and Dhruv Batra. Diverse beam search: Decoding diverse solutions from neural sequence models. Technical report, arXiv 1610.02424, 2016.
- Stefan Lee, Senthil Purushwalkam, Michael Cogswell, Viresh Ranjan, David Crandall, and Dhruv Batra. Stochastic multiple choice learning for training diverse deep ensembles. arXiv 1606.07839, 2016.
- Stefan Lee, Senthil Purushwalkam, Michael Cogswell, David Crandall, and Dhruv Batra. Why m heads are better than one: Training a diverse ensemble of deep networks. Technical report, arXiv 1511.06314, 2015.
- Mohammed Korayem, Robert Templeman, Dennis Chen, David Crandall, and Apu Kapadia. Screenavoider: Protecting computer screens from ubiquitous cameras. Technical report, arXiv 1412.0008, 2014.
- Johan Bollen, David Crandall, Damion Junk, Ying Ding, and Katy Borner. Collective allocation of science funding: from funding agencies to scientific agency. arXiv 1304.1067v1, 2013.
- Robert Templeman, Zahid Rahman, David Crandall, and Apu Kapadia. Placeraider: Virtual theft in physical spaces with smartphones. arxiv 1209.5982, 2013.
- David Crandall. Initial candidate detection for lung nodule segmentation. Technical report, Eastman Kodak Company, Rochester, NY, 2003.
- David Crandall. RegionGT: A segmentation-based ground truth tool. Technical report, Eastman Kodak Company, Rochester, NY, 2003.
- David Crandall and Jiebo Luo. Compound color object detection using spatial-color joint probability functions. Technical report, Eastman Kodak Company, Rochester, NY, 2003.
- David Crandall and Jiebo Luo. AREA 3.5: Improved automatic red eye reduction algorithm based on improved segmentation. Technical Report 330555Y, Eastman Kodak Company, Rochester, NY, 2002.

- David Crandall and Jiebo Luo. Shape-based segmentation for detecting articulated human figures in images. Technical Report 328988D, Eastman Kodak Company, Rochester, NY, 2002.
- Jiebo Luo, David Crandall, and Amit Singhal. A psychophysical study of image orientation perception. Technical Report 331287B, Eastman Kodak Company, Rochester, NY, 2002.
- David Crandall. A C++ wavelet decomposition library in IEM. Technical Report 331056F, Eastman Kodak Company, Rochester, NY, 2002.
- David Crandall. A neural network library in C++, and rudiments of an abstract classifier class. Technical Report 331055E, Eastman Kodak Company, Rochester, NY, 2002.
- David Crandall. Further lessons learned from the WOO2.1 whole-order orientation algorithm. Technical Report 329189V, Eastman Kodak Company, Rochester, NY, 2002.
- David Crandall. Guide to training, testing, and using the WOO2.1 whole-order orientation algorithm. Technical Report 329190P, Eastman Kodak Company, Rochester, NY, 2002.
- S. Antani, David Crandall, V. Mariano, A. Narasimhamurthy, and R. Kasturi. Reliable extraction of text in video. Technical Report CSE-00-022, Department of Computer Science and Engineering, The Pennsylvania State University, University Park, PA, 2000.
- S. Antani, U. Gargi, David Crandall, T. Gandhi, and R. Kasturi. Extraction of text in video. Technical Report CSE-99-016, Department of Computer Science and Engineering, The Pennsylvania State University, University Park, PA, 1999.

Selected awards

- Indiana University Trustees Teaching Award, 2017
- Best paper award, IEEE International Conference on Development and Learning (ICDL), 2016
- Honorable mention award, ACM SIGCHI International Conference on Human Factors in Computing (CHI), 2016 (awarded to 4% of CHI submissions)
- Google Faculty Research Award (2014, with Apu Kapadia)
- National Science Foundation CAREER award, 2013 – 2018
- Best paper award, IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Computer Vision, 2014 (sponsored by Intel)
- Best paper award, IEEE International Conference on Computer Vision Workshop on Converging Perspectives for Computer Vision, 2013 (sponsored by Google)
- Outstanding reviewer awards (one of many), IEEE Conference on Computer Vision and Pattern Recognition, 2013 and 2015
- Provost’s Award for Undergraduate Research and Creative Activity (as mentor to IU undergraduate Russell Conard), Indiana University, 2012
- Best paper runner-up, IEEE Conference on Computer Vision and Pattern Recognition, 2011 (sponsored by Google)
- Best paper honorable mention, International World Wide Web Conference, 2009
- National Science Foundation Graduate Research Fellowship, 2003 – 2006
- Finalist for the C.E.K. Mees Medal, Kodak’s highest honor for research excellence, with J. Luo, 2003
- Barry M. Goldwater Foundation Fellowship, 1999 – 2000

Funding

- Current grants and contracts:
 - (PI) U.S. Navy Naval Engineering and Education Consortium (NEEC), “Advanced Computer Vision Analysis of Microelectronic Imagery,” June 2016 - June 2019, \$446,118.
 - (PI) NSF Information Integration and Informatics (III), “CAREER: Observing the world through the lenses of social media,” Mar 2013 - Mar 2018, \$547,964 (with \$48,000 REU supplements).
 - (Co-PI) NSF Secure and Trustworthy Cyberspace (SATC), “TWC SBE: Medium: Collaborative: A Socio-Technical Approach to Privacy in a Camera-Rich World,” Oct 2014 - Sept 2018, \$1.2 million (\$800,000 for IU), with Apu Kapadia (IU) and Denise Anthony (Dartmouth).
 - (Co-PI) Indiana University Emerging Areas of Research (EAR) Program, “Learning: Machines, Brains & Children,” Jan 2017 - Dec 2020, \$2.5 million, with Co-PIs Linda Smith (IU Psychological & Brain Sciences) and Robert Goldstone (IU Cognitive Science), and collaborators from Psychology (Chen Yu, David Landy, Michael Jones, Karin James), Neuroscience (Olaf Sporns, Franco Pestilli), Informatics (Sriram Natarajan, Michael Ryoo), and Computer Science (Martha White).
 - (Co-I) NSF DIBBs, “CIF21 DIBBS: Middleware and High Performance Analytics Libraries for Scalable Data Science,” Oct 2014 - Sept 2019, \$5 million, with Geoffrey Fox, Judy Qiu, Fusheng Wang (Emory), Shantenu Jha (Rutgers), Madhav Marathe (Virginia Tech).
 - (Co-PI) IU Faculty Research Support Program (FRSP), “A Pianist’s Music Tutorin System,” June 2017 - Mar 2018, \$39,727, with Chris Raphael, David Carteledge (IU Music).
 - (Co-PI) Indiana University Social Science Research Commons Big Data for the Social Sciences Initiative, “Big Data Approaches for Characterizing Urban Landscapes and Inequality,” June 2016 - May 2017, \$15,000, with Tom Evans (IU Geography).
 - (Co-PI) Indiana University Ostrom Grants Program, “Workshop on Egocentric Video: from Science to Real-World Applications,” June 2016-June 2017, \$5,250.
- Past funding:
 - (PI) for Indiana University’s contract under ObjectVideo’s Finder program award from the Intelligence Advanced Research Projects Activity (IARPA), on “Visual analysis for image geo-location,” Mar 2012 - Sept 2016, \$359,009.
 - (PI) Google Research Award, “Privacy-Enhanced Life-Logging with Wearable Cameras,” Jun 2014 - Jun 2015, \$45,800, with A. Kapadia.
 - (PI) NVidia Hardware Donation program, July 2014 and July 2015, of Tesla K40 boards (approximate value of \$10,000).
 - (PI) Google Travel Award, June 2014, to attend Google I/O and Research at Google, \$2,500.
 - (Co-PI) Air Force Office of Scientific Research, “Cloud-Based Perception and Control of Sensor Nets and Robot Swarms,” Oct 2013 - Sep 2015, \$400,000, with G. Fox, K. Hauser.
 - (Co-PI) Indiana University Collaborative Research Grant, “A Novel Multimodal Methodology to Investigate Communicative Interactions Between Parents and Deaf Infants Before and After Cochlear Implantation,” Mar 2013 - Mar 2014, \$67,000, with Derek Houston, Linda Smith, Chen Yu, David Pisoni, Tonya Bergeson-Dana.
 - (PI) IU Faculty Research Support Program (FRSP), “FRSP Type II: Vision for Privacy: Privacy-aware Crowd Sensing using Opportunistic Imagery,” Jan 2012 - Jan 2013, \$49,990. Co-PI: Apu Kapadia.
 - (Co-PI) NSF Human Centered Computing (HCC), “EAGER: Large Scale Optical Music Recognition on the International Music Core Library Project,” Sep 2012 - Sep 2013, \$85,551 (plus REU supplement of \$13,000). PI: Chris Raphael.
 - (Co-PI) Indiana University Faculty Research Support Program, “Understanding active vision and sensorimotor dynamics in autistic and typically developing children,” Sep 2011 - Aug 2012, \$75,000.00. PI: Chen Yu (Psychological and Brain Sciences).
 - (PI) Lilly Endowment, Inc. and Indiana University Data to Insight Center, “Mining

photo-sharing websites to study ecological phenomena,” Aug 2010 – Dec 2011, \$49,838.68.

Teaching

F 2016, Sp 2017	Developer and Instructor , CS B551: Elements of Artificial Intelligence for Data Science (Online)
F 2016, F 2015	Instructor , CS B551: Elements of Artificial Intelligence
Sp 2017, Sp 2016, Spr 2014, F 2012 F 2010	Developer and Instructor , CS B657: Computer Vision
F 2015, F 2014, F 2013, F 2012 F 2011, Sp 2011	Instructor , INFO I427: Search Informatics
Sp 2015	Developer and Instructor , CS B490/B695: Image Processing and Recognition
F 2014	Instructor , INFO I210: Information Infrastructure I
F 2013	Instructor , INFO I399: Research Methods for Informatics Undergraduates
Sp 2013	Developer and Instructor , CS B553/B554: Probabilistic Approaches to Artificial Intelligence
Sp 2010	Developer and Instructor , CS 7670: Seminar on Computer Vision (at Cornell)
F 2008	Instructor , INFO 2950: Math Methods for Information Science (at Cornell)
F 2007, Sp 2008	Instructor , CS 113: Introduction to C (at Cornell)
Su 2007	Instructor , CS 211: Algorithms and Data Structures in Java (at Cornell)
F 2003	Teaching Assistant , CS 664: Introduction to Computer Vision (at Cornell)
F 2000, Sp 2001	Lab instructor , CSE 275: Digital Design Lab (at Penn State)

Selected presentations

- **Invited talks at external seminars and colloquia:**

- Clemson University School of Computing Colloquium, Clemson, SC, March 2017
- George Washington University Department of Computer Science Colloquium, Washington, DC, March 2017
- George Mason University Department of Computer Science Colloquium, Fairfax, VA, March 2017
- Tulane University Department of Computer Science Colloquium, New Orleans, LA, March 2017
- Vanderbilt University Department of Electrical Engineering and Computer Science Colloquium, Nashville, TN, March 2017
- Michigan State University Department of Computer Science and Engineering Colloquium, East Lansing, MI, March 2017
- State University of New York at Buffalo Department of Computer Science and Engineering Colloquium, Buffalo, NY, March 2017
- University of Colorado at Boulder Computer Science Department Colloquium, Boulder, CO, February 2017
- Virginia Tech Department of Computer Science Colloquium, Blacksburg, VA, February 2017
- Colorado State University Department of Computer Science, Fort Collins, CO, February 2017
- Arizona State University School of Computing, Informatics, and Decision Systems Engineering Colloquium, Tempe, AZ, February 2017
- Rose-Hulman Institute of Technology, Terre Haute, IN, February 2017

- Lehigh University Department of Computer Science and Engineering Colloquium, Bethlehem, PA, February 2017
 - University of North Carolina at Chapel Hill Computer Science Department Colloquium, Chapel Hill, NC, May 2016
 - Penn State University Computer Science and Engineering Department Colloquium, State College, PA, April 2016
 - Dartmouth College Department of Computer Science Colloquium, Hanover, NH, October 2015
 - Virginia Tech Department of Electrical and Computer Engineering Seminar, Blacksburg, VA, October 2015
 - IEEE Central Indiana Section Seminar, Bloomington, IN, April 2015
 - Penn State University Social Science Research Institute Seminar, State College, PA, February 2015
 - Amazon Tech Talk, Seattle, December 2014
 - Washington University Computer Science and Engineering Colloquium, St. Louis, November 2013
 - IUPUI Electrical and Computer Engineering Seminar, Indianapolis, October 2013
 - Carnegie Mellon University VASC Seminar, Pittsburgh, April 2013
 - Rochester Institute of Technology Center for Image Science Colloquium, Rochester, September 2012
 - DePaul University College of Computing & Digital Media Colloquium, Chicago, January 2012
 - Toyota Technological Institute, Chicago, August 2011
 - Northwestern University Institute on Complex Systems Seminar, Evanston, IL, May 2011
 - College of William and Mary Computer Science Seminar, Williamsburg, April 2011
 - Rose-Hulman Institute of Technology, Terre Haute, January 2011
 - University of Missouri Electrical & Computer Engineering Colloquium, Columbia, March 2010
 - Stevens Institute of Technology Computer Science Colloquium, Hoboken, March 2010
 - University of Kentucky Computer Science & Engineering Colloquium, Lexington, March 2010
 - University of Oregon Computer Science Colloquium, Eugene, February 2010
 - University of Rochester Computer Science Colloquium, Rochester, February 2010
 - Carleton College Computer Science Colloquium, Northfield, MN, January 2010
 - Yahoo! Hadoop Summit, Santa Clara, May 2009
 - Sarnoff Corporation Seminar, Princeton, March 2008
 - Hewlett-Packard Labs Seminar, Palo Alto, December 2000
- **Invited talks at conferences and workshops:**
- Naval Engineering Educational Consortium Annual Meeting (Keynote), Dahlgren, VA, April 2017
 - IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Computer Vision (Keynote), Las Vegas, NV, June 2016
 - IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Computer Vision (Keynote), Las Vegas, NV, June 2016
 - UCLA Institute for Pure and Applied Mathematics (IPAM) Workshop on Culture Analytics Beyond Text: Image, Music, Video, Interactivity and Performance, Los Angeles, CA, March 2016
 - Science Europe Workshop on Assessment of Research for the Purpose of Resource Allocation, Brussels, Belgium, November 2015
 - Streaming Technology Requirements, Applications, and Middleware (STREAM) workshop, Indianapolis, IN, October 2015
 - ACM Multimedia Workshop on Geotagging and its Applications in Multimedia (Keynote), Orlando, FL, November 2014
 - International Glaciology Symposium, Lawrence, Kansas, September 2013
 - IEEE International Symposium on Technology and Society, Toronto, Canada, June 2013

- Radio Echo Sounding Workshop, Copenhagen, Denmark, May 2013
- Midwest Computer Vision Workshop, Ann Arbor, MI, May 2011
- Midwest Computer Vision Workshop, Chicago, IL, December 2010
- NetSci Symposium on Arts, Humanities, and Complex Networks (Keynote), Boston, MA, May 2010
- Kodak Digital Imaging Conference, Rochester, NY, July 2003
- **Oral paper presentations at conferences and workshops:**
 - ACM Conference on Human Factors in Computing (CHI), San Jose, CA, May 2016
 - IEEE International Conference on Computer Vision Workshop on Converging Cameras for Computer Vision, Sydney, Australia, December 2013
 - IAPR International Conference on Pattern Recognition, Tsukuba, Japan, November 2012
 - International World Wide Web Conference, Lyon, France, April 2012
 - IEEE Conference on Computer Vision and Pattern Recognition, Colorado Springs, CO, June 2011
 - International World Wide Web Conference, Madrid, Spain, January 2010
 - ACM Conference on Knowledge Discovery and Data Mining, Las Vegas, NV, August 2008
 - European Conference on Computer Vision, Graz, Austria, May 2006
- **Talks at internal seminars and colloquia:**
 - Indiana University School of Optometry Colloquium, Bloomington, IN, February 2017
 - Data Science Meets Social Science Workshop, Bloomington, IN, November 2016
 - IU Neuroimaging Hackathon, Bloomington, IN, November 2015
 - Indiana University Department of Information and Library Science Colloquium, Bloomington, IN, April 2015
 - Indiana University Department of Statistics Colloquium, Bloomington, IN, November 2014
 - Indiana University Informatics Student Association CATALYST, Bloomington, IN, February 2014
 - Indiana University Complex Systems Seminar, Bloomington, IN, October 2011
 - Indiana University School of Informatics and Computing Intelligent Systems Seminar, Bloomington, IN, November 2011
 - Indiana University Data-to-Insight Center Seminar, Bloomington, IN, April 2011
 - Indiana University Databases Group, Bloomington, IN, April 2011
 - Cognitive Lunch Seminar, Bloomington, IN, February 2011
 - Computer Science Algorithms Reading Group, Bloomington, IN, November 2010
 - School of Informatics and Computing Colloquium, Bloomington, IN, February 2010
 - Cornell University Artificial Intelligence Seminar, Ithaca, NY, April 2009
 - Cornell University Artificial Intelligence Seminar, Ithaca, NY, May 2006
 - Eastman Kodak Imaging Science Division Colloquium, Rochester, NY, July 2003
 - Eastman Kodak Imaging Science Division Colloquium, Rochester, NY, February 2003

Service

- Editorial boards and guest editor service
 - Associate Editor, *IEEE Transactions on Multimedia*, 2017 – 2019
 - Guest editor, *Journal of Visual Communications and Image Representations* Special Issue on Egocentric Vision and Lifelogging Applications, 2017
 - *Image and Vision Computing*, 2016 – 2018
 - *Digital Applications in Archaeology and Cultural Heritage*, 2014 – 2017
 - *Studies in Digital Heritage*, 2017 – 2020

- Conference and workshop organizing committees, area and session chairs
 - Organizing Committee (Tutorials Co-Chair), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
 - Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
 - Co-organizer, Workshop on The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security, at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
 - Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE International Conference on Computer Vision (ICCV), 2017
 - Co-organizer, Second Workshop on Social Web for Environmental and Ecological Monitoring, at Web Science, 2017
 - Co-organizer, Workshop on Egocentric Vision: from Science to Real-world Applications, 2017
 - Co-organizer, Workshop on Social Web for Environmental and Ecological Monitoring, at AAAI International Conference on Weblogs and Social Media (ICWSM), 2016
 - Program committee area chair, IEEE Winter Conference on Applications of Computer Vision (WACV), 2015
 - Data visualization challenge chair, ACM Web Science Conference, 2014
 - Session chair, Signal, Speech and Video Processing Track, IAPR International Conference on Pattern Recognition, 2012
 - Session chair, Robot and Computer Vision Track, IAPR International Conference on Pattern Recognition, 2012
- Conference program committees
 - IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016)
 - ACM Multimedia (2009, 2010, 2017)
 - International Conference on Pattern Recognition (ICPR 2008, 2012, 2014, 2016)
 - IEEE International Conference on Computer Vision (ICCV 2007, 2009, 2011, 2013, 2015, 2017)
 - International Conference on Social Informatics (SocInfo 2016)
 - Digital Heritage International Conference (DH 2015)
 - ACM Web Science Conference (WebSci 2014)
 - International World Wide Web Conference (WWW 2010, 2012, 2013)
 - IEEE Conference on Big Data (BIGDATA 2013)
 - ACM Conference on Knowledge Discovery and Data Mining (KDD 2010, 2011)
 - ACM International Conference on Web Search and Data Mining (WSDM 2010, 2011, 2012)
 - European Conference on Computer Vision (ECCV 2008, 2010, 2012, 2014, 2016)
- Workshop program committees
 - ACM Multimedia Workshop on Lifelogging Tools and Applications (2016)
 - ECCV Workshop on Web-scale Vision and Social Media (2016)
 - ECCV Workshop on Egocentric Perception, Interaction and Computing (2016)
 - INSCI International Workshop on Internet and Social Media for Environmental Monitoring (2016)
 - IEEE ICCV Workshop on Web-scale Vision and Social Media (2015)
 - IEEE ICCV Workshop on Vision from Satellite to Street (2015)
 - IEEE International Conference on Multimedia and Expo Workshop on Wearable and Ego-vision Systems for Augmented Experience (2015)
 - International Conference on Data Mining Workshop on Social Multimedia Data Mining (2014)
 - ACM Multimedia Workshop on Geotagging and its Applications in Multimedia (2012, 2014)
 - CVPR Workshop on Computer Vision and Human Computation (2014)
 - IEEE CVPR Workshop on Visual Analysis and Geo-localization of Large-Scale Imagery (2013)
 - IEEE ICCV Workshop on Large Scale Visual Commerce (2013)
 - IEEE ICCV Workshop on Computer Vision for Converging Perspectives (2013)

- AAAI Workshop on Learning Rich Representations from Low-Level Sensors (2013)
- ECCV Workshop on Visual Analysis and Geo-localization of Large-scale Imagery (2012)
- ACM Workshop on Hot Topics in Planet-scale Measurement (HotPlanet 2011)
- IEEE Workshop on Information Theory in Computer Vision and Pattern Recognition (2011)
- ICMLA Workshop on Machine Learning with Multimedia Data (2009)
- Conference and workshop paper review
 - ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2016)
 - IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EPIROB 2016, 2017)
 - ACM Conference on Human Factors in Computing Systems (CHI 2015, 2016, 2017)
 - IEEE International Conference on Intelligent Robots and Systems (IROS 2013, 2015)
 - CTS Human Robot Interaction Workshop (CTS-HRI 2012)
 - Workshop on Privacy in the Electronic Society (WPES 2012)
 - SIGGRAPH Asia 2011
 - Northeastern Student Colloquium on Artificial Intelligence (2006, 2008)
- Journal manuscript review
 - *ACM Computing Surveys*
 - *ACM Transactions on Multimedia Computing, Communications and Applications*
 - *Computer Vision and Image Understanding*
 - *Concurrency and Computation: Practice and Experience*
 - *Data Mining and Knowledge Discovery*
 - *Embedded Systems Letters*
 - *IEEE Journal of Biomedical and Health Informatics*
 - *IEEE Transactions on Geoscience and Remote Sensing*
 - *IEEE Transactions on Image Processing*
 - *IEEE Transactions on Intelligent Transportation Systems*
 - *IEEE Transactions on Knowledge and Data Engineering*
 - *IEEE Transactions on Multimedia*
 - *IEEE Transactions on Neural Networks and Learning Systems*
 - *IEEE Transactions on Pattern Analysis and Machine Intelligence*
 - *Image and Vision Computing*
 - *International Journal of Computer Vision*
 - *Journal of Computer Science and Technology*
 - *Knowledge and Information Systems*
 - *Optical Engineering*
 - *Pattern Recognition*
 - *Pattern Recognition Letters*
 - *PLOS ONE*
 - *The Visual Computer*
- Proposal review
 - National Science Foundation proposal review panelist, CISE, 2011, 2014, 2015, 2016
 - Cambridge University Press book proposal reviewer, 2017
 - External reviewer, Hong Kong Research Grant Council, 2011, 2016, 2017
 - External reviewer, Chilean Government Commission for Scientific and Technological Development (CONICYT), 2011
- Professional organization service
 - Student Volunteer Coordinator, IEEE Conference on Computer Vision and Pattern Recognition, 2006
 - Secretary, IEEE Computer Society Penn State Chapter, 1999 – 2001

- University, School, Department service
 - Assistant Dean for Research Faculty Advisory Council (2016–)
 - Co-Organizer, School of Informatics and Computing Research Horizons event (2016)
 - Informatics – Computer Science Structure Committee (2016)
 - Founder and organizer, Intelligent and Interactive Systems (IIS) Seminar Series (2015–2016)
 - Chair, Informatics Lecturer Promotion Committee (2016)
 - Informatics Program Undergraduate Committee (2015–present)
 - Computer Science Program Graduate Admissions & Awards committee (2010–present)
 - School of Informatics and Computing Undergraduate Research Committee (2015–present)
 - Informatics I210 curriculum committee (2015–present)
 - Informatics Program Undergraduate Task Force (2014–2015)
 - Informatics Interactive and Intelligent Systems hiring committee (2014–2015)
 - Informatics Natural Language Processing ad hoc hiring committee (2014)
 - Informatics I501 Redesign Committee (2014)
 - Liberal Arts Pathways Task Force (2013)
 - Informatics Digital Humanities ad hoc hiring committee (2013)
 - Computer Science Program Faculty search, graphics and visualization subcommittee (2012–2013)
 - Computer Science Program Faculty search committee (2011–2012)
 - Department of Computer Science and Informatics Technical Writer search committee (2012)
 - Computer Science Program Data and Search undergraduate concentration committee (2010–present)
 - School of Informatics and Computing newsletter advisory committee (2011–2012)
 - School of Informatics and Computing Diversity Day Celebration Committee (2011)
- Outreach activities
 - Co-organized annual Intelligent and Interactive Systems Open House, 2011–2016 (with S. Sabanovic)
 - Taught workshops at IU Mini University, for returning education students and alumni (2011, 2012, 2016)
 - Talk at 2014 IU Informatics & Computing Association Catalyst event, on “Computer vision meets big data”
 - Faculty and staff outreach program, IU LGBT Student Support Services
 - Volunteer income tax preparer, Alternatives Federal Credit Union, Ithaca, NY (2006-2010)
 - Developed robotics program for middle school students, Ithaca and Brooklyn, NY (2007)
 - Volunteer English tutor at Penn State, RIT and University of Pennsylvania (1998-2003)

Awards earned by student advisees

- Paul Purdom Fellowship, Chenyou Fan (CS Ph.D. student), 2016–2017
- NSF Graduate Research Fellowship, Benjamin Newman (CS senior), April 2016
- CVPR HANDS workshop travel award, Sven Bambach (CS Ph.D. student), April 2016
- CogSci 2016 travel award, Sven Bambach (CS Ph.D. student), March 2016
- Paul Purdom Fellowship, Sven Bambach (CS Ph.D. student), 2015–2016
- Heidelberg Laureate Forum travel award, Stefan Lee (CS Ph.D. student), August 2015
- ICCV doctoral consortium selectee, Stefan Lee (CS Ph.D. student), October 2015
- Hutton Honors College Research Grant, Benjamin Newman (CS senior), 2015
- CVPR doctoral consortium selectee, Kun Duan (CS Ph.D. student), June 2014
- SBP student travel grant, Haipeng Zhang (CS Ph.D. student), April 2014
- WACV travel grant, Kun Duan (CS Ph.D. student), March 2014
- Forbes 30 under 30 in Energy, Russell Conard (Informatics graduate), 2013
- Xerox Idea and Patent Award, Kun Duan (CS Ph.D. student), 2013
- ICWSM travel award, Mohammed Korayem (CS Ph.D. student), 2013

- ASONAM best paper award, Haipeng Zhang (CS Ph.D. student), 2013
- IU Graduate and Professional Student Organization Travel Award, Haipeng Zhang (CS Ph.D. student), 2013
- Building Entrepreneurs in Software and Technology (BEST) competition winner, Russell Conard (Informatics undergraduate), 2012
- Provost's Award for Outstanding Research, Russell Conard (Informatics undergraduate), May 2012

Students supervised

- Graduated Ph.D. student advisees (all at IU):
 - Jeffrey Johnson (Computer Science), “Selective Determinism for Autonomous Navigation in Multi-Agent Systems,” 2017. Now at Apple.Sven Bambach (Computer Science), “Analyzing Hands with First-Person Computer Vision,” 2016. Now postdoc at IU.
 - Stefan Lee (Computer Science), “Data-driven Computer Vision for Science and the Humanities,” 2016. Now a postdoc at Virigina Tech.
 - Mohammed Korayem (Computer Science), “Social and Egocentric Image Classification for Scientific and Privacy Applications,” 2015. Now at CareerBuilder, LLC.
 - Kun Duan (Computer Science), “Conditional Random Field Models for Structured Visual Object Recognition,” 2014. Went to GE Global Research, now at SnapChat.
 - Haipeng Zhang (Computer Science), “Analyzing the Dynamics between User-sensed Data and the Real World,” 2014. Now at IBM Research China.
- Ph.D. research committee chair of (all at IU):
 - Jingya Wang (Computer Science)
- Ph.D. advisory committee chair of (all at IU):
 - Bardia Doosti (Computer Science)
 - Chenyou Fan (Computer Science)
 - Eman Hassan (Computer Science)
 - Jangwon Lee (Informatics, Robotics)
 - Mingze Xu (Computer Science)
 - Ishtiak Zaman (Computer Science)
- Currently on Ph.D. committee of (all at IU):
 - Tousif (Eshan) Ahmad (Computer Science)
 - Tasneem Alowaisheq (Computer Science)
 - Bo-Chiuan Chen (Public Health)
 - Liang Chen (Informatics)
 - Leif Christiansen (Informatics)
 - Devendra Dhami (Computer Science)
 - Tousif Eshan (Informatics)
 - Qatrunnada Ismail (Computer Science)
 - Moshen Jafariasbagh (Computer Science)
 - Yucong Jiang (Computer Science)
 - Yuxiang Jiang (Computer Science)
 - Rong Jin (Informatics)
 - Kiran Kumar (Psychology)
 - Can Liu (Computer Science)
 - Anthony Meyer (Lingusitics)
 - Mrinmoy Maity (Computer Science)
 - Jerome Mitchell (Computer Science)
 - Noor Abo Mokh (Linguistics)
 - Pablo Moriano (Informatics, Complex systems)
 - Dimitar Nikolov (Computer Science)

- AJ Piergiovanni (Computer Science)
- Alex Rudnick (Computer Science)
- Brian Schack (Computer Science)
- Alex Seewald (Computer Science)
- Prashant Shiralkar (Computer Science)
- Eriya Terada (Computer Science)
- Zachary Tosi (Cognitive Science)
- Satoshi Tsutsui (Information and Library Science)
- Ali Varamesh (Computer Science)
- Sanna Wager (Informatics)
- Linger Xu (Computer Science)
- Bingjing Zhang (Computer Science)
- Served on Ph.D. committee of (all at IU):
 - Casey Bennett (Informatics), now at Centerstone Research Institute
 - Alex Breuer (Computer Science), now at U.S. Army Research Lab
 - Peng Chen (Computer Science)
 - Yupeng Gu (Informatics, Music), now postdoc at Indiana University
 - Yushen Han (Informatics), now at Apple
 - Roberto Hoyle (Computer Science), now Visiting Assistant Professor at Oberlin College
 - Vahid Jalalibarsari (Computer Science)
 - Alex James (Informatics, Theory)
 - Jingru Luo (Computer Science), now at Bosch
 - Yifan Pan (Computer Science), now at Rocket Fuel, Inc.
 - Zahid Rahman (Informatics, Security), now at Salesforce
 - Paul Rohwer (Computer Science)
 - Robert Templeman (Informatics, Security), now at Naval Surface Warfare Center Crane
 - Jiaan Zeng (Computer Science), now at Electronic Arts
 - Yajia Zhang (Computer Science), now at Bosch
- M.S. thesis chair of (all at IU):
 - Devendra Dhama (Computer Science), “Morphological Classification of Galaxies into Spirals and Non-Spirals,” 2015. Now in IU Ph.D. program.
 - Sumit Gupta (Computer Science), “Evaluation of Convolutional Neural Networks for Infrared, Fine-grained Recognition, and Ego-centric Scene Classification,” 2016.
 - Harsh Seth (Computer Science), “Automated Answering Apps for People with Visual Impairments using Google Glass,” 2015. Now at Sears.
 - Manu Singh (Computer Science), “Tag selection and propagation for large-scale visual landmark recognition,” 2016. Now at IBM Watson.
- B.S. thesis supervisor of (all at IU):
 - Robert Doan (Informatics), “Feature Extraction for Writer Recognition,” 2016. Now at Informatica.
 - Russell Conard (Informatics), “An Algorithm for Bird Species Identification using Support Vector Machines,” 2011. Now at Duo Security.
- External Ph.D. committee member for:
 - Luca Aiello, University of Torino, 2012. Now at Yahoo!
 - Yi Xu, University of North Carolina at Chapel Hill
- Supervised independent study projects with (all at IU):
 - Computer Science Ph.D. students: Stefan Lee, Erkang You, Kun Duan, Haipeng Zhang, Mohammed Korayem, Jingya Wang, Yuxiang Jian, Sven Bambach, Tasneem Alowaisheq, Mohsen Sayyadi, Eman Hassan, Chenyou Fan, Ishtiak Zahman, Kai Zhen, Xuan Dong, Zhenhua Chen, Wen Chen, AJ Piergiovanni, Leif Christiansen, Shujon Naha, Zehua Zhang

- Computer Science M.S. students: Kiran Kumar, Xiaoyang Chen, Janhavi Virkar, Weiran Li, Yuanzhe Dong, Tod Curtis, Chaitanya Bilgikar, Zhaozhou Situ, Srikanth Iyer, Devendra Dhama, Harsh Seth, Rohan Pillai, Prasanth Velamala, Tingyi Wang, Haresh Neeraj Kumar, Sumit Gupta, Manu Singh, Andrew Sarkisian, Hanfei Mei, Yang Zhang, Achyut Boggaram, Mridul Birla
- Informatics Ph.D. students: Yushen Han, Rong Jin, Alex James, Liang Chen, Zachary Tosi, Jangwon Lee
- Computer Science B.S. students: Andrew Sarkisian, Jake Pusateri, Charles Pederson, Benjamin Newman, Russell Conard, Paul Grubbs, Xiaohang Liu, James Sowinski, Ben Lewis
- Informatics B.S. students: Robert Doan, Joshua Cannon
- Supervised undergraduate research projects with (at IU unless otherwise noted):
 - Benjamin Newman, Eyetracking for psychology studies, 2015-2016. (Now in Ph.D. program at CMU.)
 - Demetris Coleman (REU from Auburn University), Neural networks for image recognition, Summer 2015.
 - Tayla Frizell (REU from Mississippi Valley State University), Recognizing and analyzing children’s handwriting, Summer 2015.
 - Anthony Chamberlain, Applications of Google Glass, Summer 2015.
 - Dennis Chen (REU from Olin College), First-person scene classification, Summer 2014.
 - Gustavo Goncalves (REU from Dillard University), Object recognition and tracking for quadcopters, Summer 2014.
 - Alex Seewald (REU from Earlham College), Deep learning for scene classification, Summer 2014. (Now in Ph.D. program at IU.)
 - David Zhang, Optical music recognition, Summer - Fall 2013.
 - Joshua Sherfield (REU from Norfolk State University), Studying color distributions on Flickr, Summer 2013. (Now in M.S. program at Norfolk State University.)
 - Russell Conard, Recognizing birds in flight with ground-based cameras, 2011. (Project on IU Provost’s Award for Undergraduate Research; he founded a start-up, Ornicept, based on this project.)
 - Paul Grubbs, Accelerating computer vision algorithms with GPUs, 2011. (Now in Ph.D. program at Cornell.)
 - Boris Burkov, Object recognition for vehicle navigation, at Cornell, 2010. (Now at Facebook.)
 - Jacob Bank, Analyzing geo-spatial and temporal tagging patterns in Flickr images, at Cornell, 2009. (Now in graduate program at Stanford.)
 - Andrew Owens, Efficient large-scale image matching for 3-D reconstruction, at Cornell, 2009 - 2010. (Now in Ph.D. program at MIT.)
 - Nick Gallo, Building visual dictionaries for bag-of-parts models, at Cornell, 2009. (Now in Ph.D. program at UC Irvine.)
 - Evan Herbst, Object recognition with bag-of-parts models, at Cornell, 2006 - 2007. (Graduated with Ph.D. from University of Washington in 2014, now at Amazon.)
 - Toni Ivanov, Inference with belief propagation on pictorial structures models, at Cornell, 2004 - 2005. (Now at NASA Jet Propulsion Laboratory.)
- Supervised high school student research projects with:
 - Graham Todd, 3d wearable cameras, Fall 2016.
 - Gregory Zhu, Implementing and investigating combinatorial games, Summer 2015.
 - Kalpa Anjur, Effect of Candy Crush Saga on human memory, Fall 2014.
 - Gideon Popkin, Ground segmentation from LIDAR data, at Cornell, Summer 2008. (Now in B.S. program at University of Maryland.)

Selected appearances in popular media

- **General and local articles:**
 - *Rose-Hulman Institute of Technology Rose Thorn*, “Let’s go deeper”, March 27, 2017.
 - *Indiana Daily Student*, “Artificial intelligence researchers teach computers to think like people”, Sept 6, 2016.
 - *Indiana Daily Student*, “Students explore artificial intelligence at open house”, April 17, 2016.
- **First-person image privacy:**
 - *Vice*, “ScreenAvoider Uses Deep Machine Learning to Keep Digital Displays Private”, December 3, 2014.
 - *Claims Journal*, “How Wearable Devices Are Disrupting the Insurance Industry”, April 9, 2015.
- **Lifelogging privacy (Ubicomp 2014 paper):**
 - *Fast Company*, “An Experiment In Common Courtesy In The Age Of Google Glass Everywhere”, September 30, 2014.
- **Science funding (EMBO 2014 and Scientometrics 2017 papers):**
 - *Science*, “With this new system, scientists never have to write a grant application again”, April 13, 2017.
 - *Science*, “Making every scientist a research funder”, February 7, 2014.
 - *Scientific American (Information Culture Blog)*, “Put your money where your citations are: a proposal for a new funding system”, August 27, 2013.
 - *Science Careers Magazine*, “A New Funding Model for Scientists”, January 13, 2014.
- **First-person computer vision (NDSS 2014 paper):**
 - *MIT Technology Review*, “Not OK, Glass: PlaceAvoider Software Limits Life-Logging Devices”, January 28, 2014.
 - *Communications of the ACM*, “Not OK, Glass”, January 30, 2014.
 - *Fast Company*, “This software flags inappropriate Google Glass photos”, January 30, 2014.
- **Indoor 3d reconstruction (NDSS 2013 paper):**
 - *MIT Technology Review*, “PlaceRaider: The Military Smartphone Malware Designed to Steal Your Life”, September 28, 2012.
 - *PC World*, “PlaceRaider app lets phone camera spy on people”, September 30, 2012.
 - *Gizmodo*, “Scary New Malware Uses Your Smartphone To Map Your House for Robbers”, September 28, 2012.
 - *The Atlantic*, “Spookiest Smartphone Malware Yet?”, September 29, 2012.
 - *Slashdot*, “PlaceRaider Builds a Model of Your World With Smartphone Photos”, September 30, 2012.
 - *New Scientist*, “Hijacked smartphone camera spies on your world”, October 1, 2012.
 - *WGN Chicago*, “Live interview with Mike McConnell”, October 3, 2012.
- **Bird recognition (project with IU undergraduate Russell Conard):**
 - *The Atlantic*, “The Computerized Birder: Can Software Stop Bird Strikes on Wind Farms?”, September 22, 2012.
 - *Bloom Magazine*, “The Young Turks of Technology”, August 8, 2012.

- **Flickr ecology project (WWW 2012 paper):**
 - *New Scientist*, “Snow snaps give you a better weather picture”, May 5, 2012.
 - *Communications of the ACM Tech News*, “Snow snaps give you a better weather picture”, May 22, 2012.
- **3D reconstruction project (CACM 2012 paper):**
 - *ReadWrite*, “Researchers find online photos are worth much more than 1,000 words”, June 11, 2012.
 - *Slashdot*, “Modeling people and places with Internet photo collections”, May 15, 2012.
- **Social co-occurrences project (PNAS 2010 paper):**
 - *New Scientist*, “Online photo coincidences betray your friends”, December 10, 2010.
 - *Cornell Chronicle*, “Geotagging reveals not only where you are, but also people you might know”, December 8, 2010.
 - *BBC World Service*, “Flickr and Privacy”, December 21, 2010.
- **Photo mapping project (WWW 2009 paper):**
 - *Wired*, “The world’s most photogenic sites, according to Flickr”, April 27, 2009.
 - *The Guardian*, “Cornell team maps out 35 million Flickr photos”, April 27, 2009.
 - *Cornell Chronicle*, “Analysis of Flickr photos could lead to online travel books”, April 28, 2009.
 - *New Scientist*, “Flickr users make accidental maps”, April 29, 2009.
 - *Wall Street Journal*, “On grid’s birthday, beautiful Manhattan maps”, May 22, 2011.
 - *CNN.com*, “10 record-breaking bridges”, December 12, 2011.
 - *Budget Travel Magazine*, “25 Most photographed places on Earth”, May 24, 2011.
 - *The Daily Mail*, “The Eiffel Tower is the world’s most photographed landmark... but London’s Trafalgar Square comes a close second”, April 30, 2009.
 - *The Sydney Morning Herald*, “Revealed: the world’s most photographed landmarks”, April 30, 2009.