David J. Crandall

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Education

Aug 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

Aug 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

Jul 2021 – **Luddy Professor of Computer Science**
Indiana University Luddy School of Informatics, Computing, and Engineering
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
Director, Center for Algorithms and Machine Learning

Jul 2018 – **Director of Graduate Studies, Department of Computer Science**
Indiana University Luddy School of Informatics, Computing, and Engineering

Jul 2016 – Jun 2021 **Associate Professor of Informatics and Computing**
Indiana University Luddy School of Informatics, Computing, and Engineering

Aug 2010 – Jun 2016 **Assistant Professor of Informatics and Computing**
Indiana University School of Informatics and Computing (Bloomington, IN)

Aug 2008 – Aug 2010 **Postdoctoral Associate**
Cornell University Department of Computer Science (Ithaca, NY)

Jul 2001 – Aug 2003 **Senior Research Scientist**
Eastman Kodak Company, Imaging Science Division (Rochester, NY)

Publications

- **Journal articles:**
  - Satoshi Tsutsui, Yanwei Fu, and David J. Crandall. Reinforcing generated images via meta-learning for one-shot fine-grained visual recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2022. (impact factor = 17.861, accepted, to appear).
  - Xiankai Lu, Wenguan Wang, Jianbing Shen, David Crandall, and Jiebo Luo. Zero-shot video object segmentation with co-attention siamese networks. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 4(4):2228–2242, April 2022. (impact factor = 17.861).
  - Yu Yao, Xizi Wang, Mingze Xu, Zelin Pu, Yuchen Wang, Ella Atkins, and David J. Crandall. DoTA: Unsupervised Detection of Traffic Anomaly in Driving Videos. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2022. (impact factor = 17.861, accepted, to appear).
  - Chuhua Wang, Yuchen Wang, Mingze Xu, and David Crandall. Stepwise goal-driven networks for trajectory prediction. *IEEE Robotics and Automation Letters (RA-L)*, 2022. (impact factor = 3.741, accepted, to appear).
  - Junbo Yin, Jianbing Shen, Xin Gao, David Crandall, and Ruigang Yang. Graph Neural Network and Spatiotemporal Transformer Attention for 3D Video Object Detection from Point Clouds. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2022. (impact factor = 17.861, accepted, to appear).
  - Sam Goree, David Crandall, and Norman Su. "It Was Really All About Books:" Speech-like Techno-Masculinity in the Rhetoric of Dot-Com Era Web Design Books. *ACM Transactions on Computer-Human Interaction*, 2022. (impact factor = 3.147, accepted, to appear).
  - Xiankai Lu, Wenguan Wang, Jianbing Shen, David J. Crandall, and Luc Van Gool. Segmenting objects from relational visual data. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2021. (impact factor = 17.861, accepted, to appear).
  - Joshua Smith, Md Alimoor Reza, Nathanael Smith, Jianxin Gu, Maha Ibrar, David Crandall, and Sara Skrabalak. Plasmonic anti-counterfeit tags with high encoding capacity rapidly authenticated with deep machine learning. *ACS Nano*, 2021. (impact factor = 14.588, accepted, to appear).
  - Roberto Hoyle, Luke Stark, Qatrunnada Ismail, David Crandall, Apu Kapadia, and Denise Anthony. Privacy norms and preferences for photos posted online. *ACM Transactions on Computer-Human Interaction*, 27(4), 2020. (impact factor = 2.227).
  - Lei Yuan, Violet Xiang, David Crandall, and Linda Smith. Learning the generative principles of a symbol system from limited examples. *Cognition*, 200, 2020. (impact factor = 3.537).
  - Md Alimoor Reza, Zhenhua Chen, and David J. Crandall. Deep neural network-based detection and verification of microelectronic images. *Journal of Hardware and Systems Security*, 4:44–54, 2020.
  - Md Alimoor Reza, Kai Chen, Akshay Naik, David J. Crandall, and Soon-Heung Jung. Automatic dense annotation for monocular 3d scene understanding. *IEEE Access*, 8:68852 – 68865, 2020. (impact factor = 4.098).
  - Victor Berger, Mingze Xu, Mohanad Al-Ibadi, Shane Chu, David Crandall, John Paden, and Geoffrey Fox. Automated Ice-Bottom Tracking of 2D and 3D Ice Radar Imagery Using Viterbi and TRW-S. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 12(9):3272 – 3285, 2019. (impact factor = 3.392).
  - Noam Levin, Saleem Ali, David Crandall, and Salit Kark. World heritage in danger: Big data and remote sensing can help protect sites in conflict zones. *Global Environmental Change*, 55:97–104, 2019. (impact factor = 6.371).

- Jeremy I. Borjon, Sara E. Schroer, Sven Bambach, Lauren K. Slone, Drew H. Abney, David J. Crandall, and Linda B. Smith. A view of their own: Capturing the egocentric view of infants and toddlers with head-mounted cameras. *Journal of Visualized Experiments*, 140, 2019. (impact factor = 1.325).
- Bo chiuan Chen, Dong-Chul Seo, Hsien-Chang Lin, and David Crandall. A framework for estimating sleep timing from digital footprints. *BMJ Innovations*, 4(4), 2018. (impact factor = 2.899).
- Chenyou Fan, Zehua Zhang, and David Crandall. Deepdiary: Lifelogging image captioning and summarization. *Journal of Visual Communication and Image Representation*, 55:40–55, August 2018. (impact factor = 2.164).
- Noam Levin, Saleem Ali, and David Crandall. Utilizing remote sensing and big data to quantify conflict intensity: The Arab Spring as a case study. *Applied Geography*, 94, 2018. (impact factor = 2.56).
- Tousif Ahmed, Roberto Hoyle, Patrick Shaffer, Kay Connelly, David Crandall, and Apu Kapadia. Understanding the physical safety, security, and privacy concerns of people with visual impairments. *IEEE Internet Computing*, 21(3):56 – 63, 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 (IJDAR)*, 5(2-3):138–157, 2002. (impact factor = 0.800).

- **Papers in competitive peer-reviewed conference proceedings:**
  - Kristen Grauman, Andrew Westbury, Eugene Byrne, Zachary Chavis, Antonino Furnari, Rohit Girdhar, Jackson Hamburger, Hao Jiang, Miao Liu, Xingyu Liu, Miguel Martin, Tushar Nagarajan, Ilija Radosavovic, Santhosh Kumar Ramakrishnan, Fiona Ryan, Jayant Sharma, Michael Wray, Mengmeng Xu, Eric Zhongcong Xu, Chen Zhao, Siddhant Bansal, Dhruv Batra, Vincent Cartillier, Sean Crane, Tien Do, Morrie Doulaty, Akshay Erapalli, Christoph Feichtenhofer, Adriano Fragomeni, Qichen Fu, Christian Fuegen, Abrham Gebreselasie, Cristina Gonzalez, James Hillis, Xuhua Huang, Yifei Huang, Wenqi Jia, Weslie Khoo, Jachym Kolar, Satwik Kottur, Anurag Kumar, Federico Landini, Chao Li, Yanghao Li, Zhenqiang Li, Karttikeya Mangalam, Raghava Modhugu, Jonathan Munro, Tullie Murrell, Takumi Nishiyasu, Will Price, Paola Ruiz Puentes, Merey Ramazanova, Leda Sari, Kiran Somasundaram, Audrey Southerland, Yusuke Sugano, Ruijie Tao, Minh Vo, Yuchen Wang, Xindi Wu, Takuma Yagi, Yunyi Zhu, Pablo Arbelaez, David Crandall, Dima Damen, Giovanni Maria Farinella, Bernard Ghanem, Vamsi Krishna Ithapu, C. V. Jawahar, Hanbyul Joo, Kris Kitani, Haizhou Li, Richard Newcombe, Aude Oliva, Hyun Soo Park, James M. Rehg, Yoichi Sato, Jianbo Shi, Mike Zheng Shou, Antonio Torralba, Lorenzo Torresani, Mingfei Yan, and Jitendra Malik. Ego4d: Around the world in 3,000 hours of egocentric video. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
  - Zehua Zhang and David Crandall. Hierarchically decoupled spatial-temporal contrast for self-supervised video representation learning. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2022. (35.0% acceptance rate).
  - Zhenhua Chen, Chuhua Wang, and David Crandall. Semantically stealthy adversarial attacks against segmentation models. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2022. (35.0% acceptance rate).
  - Xiaomeng Ye, Ziwei Zhao, David Leake, and David Crandall. Generation and evaluation of creative images from limited data: A class-to-class vae approach. In *International Conference on Computational Creativity (ICCC)*, 2022.
  - Action recognition based on cross-situational action-object statistics. In *IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL)*, 2022.
  - David Leake, Zachary Wilkerson, and David Crandall. Extracting case indices from convolutional neural networks: A comparative study. In *International Conference on Case-based Reasoning (ICCBR)*, 2022.
  - Norman Su and David J. Crandall. The affective growth of computer vision. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021. *(Poster, 23.7% acceptance rate).*
  - Sam Goree, Bardia Doosti, David J. Crandall, and Norman Su. Investigating the homogenization of web design: A mixed-methods approach. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2021. *(Oral, 26% acceptance rate).*
  - Yuchen Wang, Mingze Xu, John Paden, Lara Koenig, Geoffrey C. Fox, and David J. Crandall. Deep tiered image segmentation for detecting internal ice layers in radar imagery. In *IEEE International Conference on Multimedia and Expo (ICME)*, 2021. *(Oral, 15% acceptance rate).*
  - Shujon Naha, Qingyang Xiao, Prianka Banik, Md Alimoor Reza, and David J. Crandall. Part segmentation of unseen objects using keypoint guidance. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.
  - Satoshi Tsutsui, Yanwei Fu, and David J. Crandall. Whose hand is this? Person identification from egocentric hand gestures. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.

- Jagpreet Chawla, Nikhil Shripad Thakurdesai, Anuj Balasaheb Godase, Md Alimoor Reza, David J. Crandall, and Soon-Heung Jung. Error diagnosis of deep monocular depth estimation models. In *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2021.
- Ryan Peters, Andrei Amatuni, Sara Schroer, Shujon Naha, David Crandall, and Chen Yu. Are you with me? modeling joint attention from egocentric vision. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2021.
- Andrei Amatuni, Sara Schroer, Ryan Peters, Md Alimoor Reza, Yayun Zhang, David Crandall, and Chen Yu. In-the-moment visual information determines learning. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2021.
- Yayun Zhang, Andrei Amatuni, Ellis Cain, Xizi Wang, David Crandall, and Chen Yu. Statistical learning of verb meaning. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2021.
- Xiaomeng Ye, David Leake, Vahid Jalali, and David Crandall. Learning adaptations for case-based classification: A neural network approach. In *International Conference on Case-based Reasoning (ICCBR)*, 2021.
- Zachary Wilkerson, David Leake, and David Crandall. On combining knowledge-engineered and network-extracted features for retrieval. In *International Conference on Case-based Reasoning (ICCBR)*, 2021.
- Bardia Doosti, Shujon Naha, Majid Mirbagheri, and David Crandall. HOPE-Net: A Graph-based Model for Hand-Object Pose Estimation. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. *(Poster, 22.1% acceptance rate).*
- Xiankai Lu, Wenguan Wang, Jianbing Shen, Yu-Wing Tai, David Crandall, and Steven Hoi. Learning video object segmentation from unlabeled videos. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. *(Poster, 22.1% acceptance rate).*
- Zehua Zhang, Ashish Tawari, Sujitha Martin, and David Crandall. Interaction graph for object importance estimation in on-road driving videos. In *IEEE Conference on Robotics and Automation (ICRA)*, 2020. *(Oral, 42% acceptance rate).*
- Mang Ye, Jianbing Shen, David J. Crandall, Ling Shao, and Jiebo Luo. Dynamic Dual-Attentive Aggregation Learning for Visible-Infrared Person Re-Identification. In *European Conference on Computer Vision (ECCV)*, 2020. *(27% acceptance rate).*
- Shujon Naha, Md Alimoor Reza, Chen Yu, and David J. Crandall. Localizing novel attended objects in egocentric views. In *British Machine Vision Conference (BMVC)*, 2020. *(Poster, 29.1% acceptance rate).*
- Rakibul Hasan, David Crandall, Mario Fritz, and Apu Kapadia. Automatically Detecting Bystanders in Photos to Reduce Privacy Risks. In *IEEE Security and Privacy (Oakland)*, 2020.
- Satoshi Tsutsui, Arjun Chandrasekaran, Md Alimoor Reza, David Crandall, and Chen Yu. A Computational Model of Early Word Learning from the Infant's Point of View. In *Annual Conference of the Cognitive Science Society (CogSci)*, 2020. *(Oral, 22% acceptance rate).*
- Zehua Zhang, Chen Yu, and David Crandall. A self validation network for object-level human attention estimation. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2019. *(Poster, 21.6% acceptance rate).*
- Satoshi Tsutsui, Yanwei Fu, and David Crandall. Meta-reinforced synthetic data for one-shot fine-grained visual recognition. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2019. *(Poster, 21.6% acceptance rate).*
- Wenguan Wang, Xiankai Lu, Jianbing Shen, David Crandall, and Ling Shao. Zero-shot video object segmentation via attentive graph neural networks. In *IEEE International Conference on Computer Vision (ICCV)*, 2019. *(Oral, 25.0% acceptance rate).*

- Mingze Xu, Mingfei Gao, Yi-Ting Chen, Larry Davis, and David J. Crandall. Temporal recurrent networks for online action detection. In *IEEE International Conference on Computer Vision (ICCV)*, 2019. *(Poster, 25.0% acceptance rate).*
- Jianwei Yang, Zhile Ren, Mingze Xu, Xinlei Chen, David Crandall, Devi Parikh, and Dhruv Batria. Embodied visual recognition: Learning to move for amodal perception. In *IEEE International Conference on Computer Vision (ICCV)*, 2019. *(Poster, 25.0% acceptance rate).*
- Yu Yao, Mingze Xu, Chiho Choi, David J. Crandall, Ella M. Atkins, and Behzad Dariush. Egocentric vision-based future vehicle localization for intelligent driving assistance systems. In *IEEE Conference on Robotics and Automation (ICRA)*, 2019. *(Oral, 44% acceptance rate).*
- Rakibul Hasan, Yifang Li, Eman Hassan, Kelly Caine, David J. Crandall, Roberto Hoyle, and Apu Kapadia. Can privacy be satisfying? On improving viewer satisfaction for privacy-enhanced photos using aesthetic transforms. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2019. *(Oral, 23.8% acceptance rate).*
- Yu Yao, Mingze Xu, Yuchen Wang, David Crandall, and Ella Atkins. Unsupervised traffic accident detection in first-person videos. In *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2019. *(Oral, 45.0% acceptance rate).*
- Md Alimoor Reza, Akshay Naik, Kai Chen, and David Crandall. Automatic annotation for semantic segmentation in indoor scenes. In *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2019. *(Oral, 45.0% acceptance rate).*
- Jangwon Lee, Bardia Doosti, Yupeng Gu, David Cartledge, David J. Crandall, and Christopher Raphael. Observing pianist accuracy and form with computer vision. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2019. *(Poster+Oral, 39% acceptance rate).*
- Suzanne Menzel, Katie Siek, and David Crandall. Hello research! Developing an intensive research experience for undergraduate women. In *ACM Technical Symposium on Computer Science Education (SIGCSE)*, 2019. *(Oral, 34% acceptance rate).*
- Aniruddha M. Godbole and David J. Crandall. Empowering borrowers in their choice of lenders: Decoding service quality from customer complaints. In *ACM International Web Science Conference (WebSci)*, 2019. *(Oral, 34.2% acceptance rate).*
- Hadar Karmazyn Raz, Drew H. Abney, David Crandall, Chen Yu, and Linda Smith. How do infants start learning object names in a sea of clutter? In *Annual Conference of the Cognitive Science Society (CogSci)*, 2019.
- Sven Bambach, David Crandall, Linda Smith, and Chen Yu. Toddler-inspired visual object learning. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2018. *(Poster, 20.8% acceptance rate).*
- Mingze Xu, Chenyou Fan, Yuchen Wang, Michael Ryoo, and David Crandall. Joint person segmentation and identification in synchronized first- and third-person videos. In *European Conference on Computer Vision (ECCV)*, 2018. *(Poster).*
- Rakibul Hasan, Eman Hassan, Yifang Li, Kelly Caine, David J. Crandall, Roberto Hoyle, and Apu Kapadia. Viewer experience of obscuring scene elements in photos to enhance privacy. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2018. (Oral, 25.7% acceptance rate).
- Ashwin Vijayakumar, Michael Cogswell, Ramprasaath Selvaraju, Qing Sun, Stefan Lee, David Crandall, and Dhruv Batra. Diverse beam search for improved description of complex scenes. In *AAAI Conference on Artificial Intelligence*, 2018. *(Poster, 24.6% acceptance rate).*
- Mingze Xu, Aidean Sharghi, Xin Chen, and David Crandall. Fully-coupled two-stream spatiotemporal networks for extremely low resolution action recognition. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2018. *(40% acceptance rate).*

- Mingze Xu, Chenyou Fan, John Paden, Geoffrey Fox, and David Crandall. Multi-task spatiotemporal neural networks for structured surface reconstruction. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2018. *(40% acceptance rate).*
- Zehua Zhang, Sven Bambach, David Crandall, and Chen Yu. From coarse attention to fine-grained gaze: A two-stage 3d fully convolutional network for predicting eye gaze in first person video. In *British Machine Vision Conference (BMVC)*, 2018. *(Oral, 4.3% acceptance rate).*
- Satoshi Tsutsui, Sven Bambach, David Crandall, and Chen Yu. Estimating head motion from egocentric vision. In *ACM International Conference on Multimodal Interaction (ICMI)*, 2018.
- Scott Workman, Menghua Zhai, David Crandall, and Nathan Jacobs. A unified model for near and remote sensing. In *IEEE International Conference on Computer Vision (ICCV)*, 2017. *(Poster, 28% acceptance rate).*
- Chenyou Fan, Jangwon Lee, Mingze Xu, Krishna Kumar Singh, Yong Jae Lee, David Crandall, and Michael Ryoo. Identifying first-person camera wearers in third-person videos. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. *(Poster, 29.0% acceptance rate).*
- 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. *(Oral, 25.0% acceptance rate).*
- Sven Bambach, David Crandall, Linda Smith, and Chen Yu. An egocentric perspective on active vision and visual object learning in toddlers. In *IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL)*, 2017. *(Oral, 37.1% acceptance rate).*
- Satoshi Tsutsui and David J. Crandall. A data driven approach for compound figure separation using convolutional neural networks. In *IAPR International Conference on Document Analysis and Recognition (ICDAR)*, 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. *(Oral, 35.3% acceptance rate).*
- 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. *(Oral, 45.0% acceptance rate).*
- 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 (NeurIPS)*, 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:**
  - Vibhas Vats and David Crandall. Controlling the quality of distillation in response-based network compression. In *AAAI International Workshop on Practical Deep Learning in the Wild*, 2022.
  - Chia-Fang Chung, Alejandra Ramos, Pei-Ni Chiang, Chien-Chun Wu, Connie Anne Tan, Weslie Khoo, and David Crandall. Computer vision for dietary assessment. In *CHI Workshop on Realizing AI in Healthcare: Challenges Appearing in the Wild*, 2021.
  - David Leake, Xiaomeng Ye, and David Crandall. Supporting case-based reasoning with neural networks: An illustration for case adaptation. In *AAAI Spring Symposium on Combining Machine Learning and Knowledge Engineering (AAAI-MAKE)*, 2021.
  - David Leake and David Crandall. Bringing case based reasoning to deep learning. In *International Conference on Case-Based Reasoning Special Track on Challenges and Promises*, 2020.
  - Shujon Naha, Qingyang Xiao, Prianka Banik, Md Alimoor Reza, and David J. Crandall. Pose-guided knowledge transfer for object part segmentation. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Visual Learning with Limited Labels*, 2020.
  - Sam Goree and David Crandall. Studying empirical color harmony in design. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Computer Vision for Fashion, Art, and Design*, 2020.
  - Ishtiak Zaman and David Crandall. Genetic-GAN: Synthesizing images between two domains by genetic crossover. In *European Conference on Computer Vision Workshop on Advances in Manipulation*, 2020.
  - Oluwanisola Ibikunle, John Paden, Maryam Rahnemoonfar, David Crandall, and Masoud Yari. Snow radar layer tracking using an iterative neural network approach. In *IEEE International Geoscience and Remote Sensing Symposium*, 2020.
  - Katie Spoon, David Crandall, and Katie Siek. Towards Detecting Dyslexia in Children's Handwriting Using Neural Networks. In *ICML Workshop on AI for Social Good*, 2019. ***Best poster award.***
  - Satoshi Tsutsui, Dian Zhi, Md Alimoor Reza, David Crandall, and Chen Yu. Active object manipulation facilitates visual object learning: An egocentric vision study. In *IEEE CVPR Workshop on Egocentric Perception, Interaction, and Computing (EPIC)*, 2019.
  - Tousif Ahmed, Rakibul Hasan, Kay Connelly, David Crandall, and Apu Kapadia. Conveying situational information to people with visual impairments. In *CHI Workshop on Addressing the Challenges of Situationally-Induced Impairments and Disabilities in Mobile Interaction*, 2019.
  - Zhenhua Chen, Chuhua Wang, Tiancong Zhao, and David Crandall. Generalized capsule networks with trainable routing procedure. In *International Conference on Machine Learning Workshop on Generalization*, 2019.
  - Mohanad Al-Ibadi, Jordan Sprick, Sravya Athinarapu, Victor Berger, Theresa Stumpf, John Paden, Carl Leuschen, Fernando Rodriguez, Mingze Xu, David Crandall, Geoffrey Fox, David Burgess, Martin Sharp, Luke Copland, and Wesley Van Wychen. Crossover analysis and automated layer-tracking assessment of the extracted DEM of the basal topography of the Canadian Arctic Archipelago ice-cap. In *IEEE Radar Conference*, 2018.

- Victor Berger, Mingze Xu, David Crandall, John Paden, and Geoffrey Fox. Automated tracking of 2d and 3d ice radar imagery using Viterbi and TRW-S. In *IEEE International Geoscience and Remote Sensing Symposium*, 2018.
- Satoshi Tsutsui, Tommi Kerola, Shunta Saito, and David Crandall. Minimizing supervision for free-space segmentation. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshop on Autonomous Driving (WAD)*, 2018.
- Jangwon Lee, Haodan Tan, David Crandall, and Selma Sabanoivc. Forecasting hand gestures for human-drone interaction. In *ACM/IEEE International Conference on Human Robot Interaction (HRI)*, 2018. *(Late-breaking Report).*
- Zhenhua Chen, Tingyi Wanyan, Ramya Rao, Benjamin Cutilli, James Sowinski, David Crandall, and Robert Templeman. Addressing supply chain risks of microelectronic devices through computer vision. In *IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, 2017.
- Sven Bambach, Zehua Zhang, David Crandall, and Chen Yu. Exploring inter-observer differences in first-person object views using deep learning models. In *IEEE International Conference on Computer Vision Workshop on Mutual Benefits of Cognitive and Computer Vision*, 2017.
- 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. Artificial intelligence and manufacturing. In *Smart Factories: Issues of Information Governance*, 2019.
  - Geoffrey Fox, Judy Qiu, David Crandall, Gregor Von Laszewski, Oliver Beckstein, John Paden, Ioannis Paraskevakos, Shantenu Jha, Fusheng Wang, Madhav Marathe, Anil Vullikanti, and Thomas Cheatham. Contributions to high-performance big data computing. In *Future Trends of HPC in a Disruptive Scenario*, volume 34, pages 34 – 81. IOS Press, 2019.
  - 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, U.S. Patent #9,998,684, issued 2018.
  - Robert Templeman, Apu Kapadia, David Crandall, and Mohammed Korayem. A method and system of enforcing privacy policies for mobile sensory devices, U.S. Patent #10,592,687, issued 2020.
  - 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.

- **Editorials, letters to the editor:**
  - Sam Goree, Bardia Doosti, David Crandall, and Norman Su. Yes, websites really are starting to look more similar. *The Conversation*, 2020.
  - Mariella Dimiccoli, Cathal Gurrin, David Crandall, Xavier Giro i Nieto, and Petia Radeva. Introduction to the special issue: Egocentric vision and lifelogging. *Journal of Visual Communication and Image Representation*, 2018.
  - Jisun An, David J. Crandall, Roman Fedorov, Casey Fiesler, Fabio Giglietto, Bahareh Heravi, Jessica Pater, Konstantinos Pelechrinis, Daniele Quercia, Katrin Weller, and Arkaitz Zubiaga. Reports of the Workshops Held at the 2016 International AAAI Conference on Web and Social Media. *AI magazine*, 37(4), 2016.
  - Noam Levin, David Crandall, and Salit Kark. Scale matters: differences between local, regional, and global analyses (letter to the editor). *Ecological Applications*, 26(7):2359–2362, 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:**
  - Dibson Gondim, Khaleel Al-Obaidy, Natasha Gibson, Yingnan Ju, David Crandall, Muhammad Idrees, John Eble, David Grignon, and Liang Cheng. Using deep convolutional neural networks to classify kidney neoplasms. In *United States and Canadian Academy of Pathology Annual Meeting*, 2019.
  - Samuel Harding, David Crandall, and Bennett Bertenthal. Testing the limits of transferability. In *Society of Computers in Psychology (SCiP)*, 2018.
  - Jangwon Lee, Haodan Tan, David Crandall, and Selma Sabanovic. Forecasting hand gestures for human-drone interaction. In *ACM/IEEE International Conference on Human Robot Interaction Late-Breaking Reports*, 2018.
  - Zhenhua Chen, David Crandall, and Rob Templeman. Addressing supply chain risks of microelectronics through computer vision. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Computer Vision Challenges and Opportunities for Privacy and Security (CVPR CV-COPS)*, 2017.

- Roberto Hoyle, Qatrunnada Ismail, Luke Stark, David Crandall, Apu Kapadia, , and Denise Anthony. Contextual privacy ethics and wearable devices. In *ACM Conference on Computer-Supported Cooperative Work and Social Computing Workshop on Networked Privacy*, 2017.
- Satoshi Tsutsui and David Crandall. Using artificial tokens to control languages for multilingual image caption generation. In *IEEE Conference on Computer Vision and Pattern Recognition Workshop on Language and Vision*, 2017.
- 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 archipelago 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:**
  - Eman T. Hassan and David J. Crandall. A study of cross-domain generative models applied to cartoon series. Technical report, arXiv:1710.00755, 2017.
  - Satoshi Tsutsui and David Crandall. Using artificial tokens to control languages for multilingual image caption generation. Technical report, arXiv:1706.06275, 2017.
  - Satoshi Tsutsui and David J. Crandall. A data driven approach for compound figure separation using convolutional neural networks. Technical report, arXiv1708.03035, 2017.
  - Scott Workman, Menghua Zhai, David Crandall, and Nathan Jacobs. A unified model for near and remote sensing. Technical report, arXiv:1708.03035, 2017.
  - 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

- Luddy named professorship (2021)
- Google Faculty Research Award (2020, with Apu Kapadia)
- Runner-up, CNIL Privacy Protection Prize, 2021 (with R. Hasan, A. Kapadia, M. Fritz)
- Grant Thornton Scholar, 2019
- Best Poster Award, International Conference on Machine Learning AI for Social Good Workshop, 2019
- Provost's Award for Undergraduate Research and Creative Activity (as mentor to IU undergraduate Katie Spoon), Indiana University, 2019
- Outstanding reviewer awards (one of many), IEEE Conference on Computer Vision and Pattern Recognition, 2013, 2015, 2018, 2019
- 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)
- 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

- Currently recommended for funding but not yet formally awarded:
  - (PI) U.S. Department of Defense, via Purdue, "Embedded Systems Security/Artificial Intelligence (ESS/AI) Research and Workforce Development (Years 2-3)," Oct 2022 – Sept 2024, $4,200,000, with 11 IU Co-PIs.

  - (PI) Defense Threat Assessment Agency (DTRA, via Dzyne Technologies), "Phase II: Reconstructing 3d building maps from overhead monocular images (Years 3-4)," Oct 2022 – Sep 2024, $330,000.

- Current grants and contracts:
  - (PI) U.S. Department of Defense, via Purdue, "Embedded Systems Security/Artificial Intelligence (ESS/AI) Research and Workforce Development (Year 1)," Jun 2021 – Sept 2022, $2,100,000, with 11 IU Co-PIs.
  - (PI) Defense Threat Assessment Agency (DTRA, via Dzyne Technologies), "Phase II: Reconstructing 3d building maps from overhead monocular images," Oct 2020 – Sep 2022, $330,000.
  - (PI) National Science Foundation, "AI Institute: Planning: AI Institute for Rural Health, Wellness, and Resilience," Aug 2020 – July 2022, $499,744 (with Co-PIs Kay Connelly, Selma Sabanovic, Katie Siek, David Wild).
  - (PI) Office of Naval Research (ONR), "Combining Deep Learning and Case-based Reasoning for Robust, Accurate, Explainable Classification," Oct 2019 – Sept 2022, $899,995, with David Leake.
  - (PI) Electronics and Telecommunications Research Institute (ETRI), "Depth Map Prediction Based on Machine Learning (Year 4)," Jan 2022 – Dec 2022, $83,621.
  - (PI) U.S. Navy Naval Engineering and Education Consortium (NEEC), "Advanced data visualizations for robust deep machine learning," June 2019 – Oct 2022, $420,000, with Katy Borner.
  - (PI) Indiana University Institute for Advanced Study, "Midwestern Workshop on Computer Vision," Nov 2019 – Nov 2022, $13,000.
  - (PI) Meta, Inc., Gift for Research on Egocentric Computer Vision, May 2022, $95,000.
  - (Co-PI) National Science Foundation, via NC State, "The Institute for an AI-Engaged Future of Learning," Oct 2021 – Sept 2026, $20 million ($4 million for IU), IU PI Cindy Hmelo-Silver.
  - (Co-PI) NSF, "Visual category learning by toddlers provides new principles for teaching rapid generalization," Aug 2019 - July 2022, $548,791, with PI Linda Smith and Co-PI Chen Yu.
  - (Co-PI) Defense Threat Reduction Agency (DTRA), via Iowa State, "Artificial intelligence-based predictive modeling of the host microbiome to improve vaccine effectiveness," Jun 2021 – May 2024, $279,527, with PI Paul Macklin.
  - (Co-PI) National Institutes of Health, "Infants' self-generated visual statistics support object and category learning," Sept 2021 – July 2026, $3.3 million, PI Linda Smith with Co-PIs Chen Yu and Jim Rehg.
  - (Co-PI) National Institutes of Health, "The Statistics of Infant First-Person Visual Experience," Sept 2021 – July 2026, $3.4 million, PI Linda Smith with Co-PIs Jason Gold and Rowan Candy.

- Past funding:
  - (PI) Facebook, Gift for Research on Egocentric Computer Vision, December 2020, $40,000.
  - (PI) Electronics and Telecommunications Research Institute (ETRI), "Depth Map Prediction Based on Machine Learning (Year 3)," Jan 2021 – Dec 2021, $84,466.
  - (PI) Naval Surface Warfare Center Crane Division, "Next-generation, biologically-inspired object tracking," May 2021 – Sept 2021, $40,000 (with Co-PI Justin Wood).
  - (Co-PI) Office of Naval Research, "Undergraduate Cybersecurity Research Program at Indiana University," Aug 1, 2020 – Jun 30, 2021, $249,986.00, with PI Scott Shackelford and Co-PIs Esfandiar Haghverdi, Apu Kapadia, Xiaofeng Wang.
  - (PI) Facebook, Gift for Research on Egocentric Computer Vision, October 2019, $95,000.
  - (Co-PI) Indiana University Emerging Areas of Research (EAR) Program, "Learning: Machines, Brains & Children," Jan 2017 - Jun 2021, $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 (Sriraam Natarajan, Michael Ryoo),

and Computer Science (Martha White).
- (Co-PI) IU Precision Health Initiative Pilot Grant, "Supporting the development and evaluation of automated algorithms to identify eating behaviors from photos," Aug 2019 - July 2020, $10,000, with Christina Chung.
- (PI) U.S. General Services Administration, Apr 2019 – Aug 2021, $245,018.60.
- (Co-PI) Google Faculty Research Award, "Privacy Sensitive Augmented Reality for the Visually Impaired," Feb 2020 – Jan 2021, $45,000, with PI Apu Kapadia.
- (PI) Electronics and Telecommunications Research Institute (ETRI), "Depth Map Prediction Based on Machine Learning (Year 2)," Jan 2020 – Dec 2020, $82,515.
- (Co-I) NSF DIBBs, "CIF21 DIBBS: Middleware and High Performance Analytics Libraries for Scalable Data Science" (OAC-1443054), Oct 2014 - Sept 2020, $5 million, with Geoffrey Fox, Judy Qiu, Fusheng Wang (Emory), Shantenu Jha (Rutgers), Madhav Marathe (Virginia Tech).
- (PI) Indiana Innovation Institute (IN3), "Achieving Scientifically Secured User Reassurance in Electronics (ASSURE)," Mar 2018 – Jul 2020, $660,038, with Martin Swany and Sara Skrabalak (IU Chemistry).
- (PI) for Indiana University's subcontract of NASA Translational Research Institute, "Cervical Lymphatic Function Quantification and Associated Molecular Changes in Response to Simulated Microgravity," October 2017 - April 2020, $216,993, with Dawn Kernagis and Jonathan Clark (Florida Institute for Human and Machine Cognition) and Eva Sevick (University of Texas).
- (PI) NSF Information Integration and Informatics (III), "CAREER: Observing the world through the lenses of social media" (IIS-1253549), Mar 2013 - Feb 2020, $595,964 (with $96,000 REU supplements).
- (PI) Electronics and Telecommunications Research Institute (ETRI), "Depth Map Prediction Based on Machine Learning," Jan 2019 – Dec 2019, $88,429.
- (PI) U.S. Defense Threat Assessment Agency (DTRA, via Dzyne Technologies), "Phase I: Reconstructing 3d building maps from overhead monocular images," Apr 2019 – Oct 2019, $48,000.
- (Co-PI) NSF Secure and Trustworthy Cyberspace (SATC), "TWC SBE: Medium: Collaborative: A Socio-Technical Approach to Privacy in a Camera-Rich World" (CNS-1407788), Oct 2014 - Sept 2019, $1.2 million ($800,000 for IU), with Apu Kapadia (IU) and Denise Anthony (Dartmouth).
- (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 SATC, "Student Travel Grants for the Second International Workshop on The Bright and Dark Side of Computer Vision: Challenges and Opportunities for Privacy and Security", June 2018 - May 2019, $10,000, with Apu Kapadia.
- (PI) Google, "Pushing the Limits of Computer Vision," July 2017 - June 2018, $36,000.
- (Co-PI) IU Faculty Research Support Program (FRSP), "A Pianist's Music Tutoring System," June 2017 - Mar 2018, $39,727, with Chris Raphael, David Carteledge (IU Music).
- (PI) NSF SATC, "A Workshop on Computer Vision Challenges and Opportunities for Privacy and Security" (CNS-1744748), August 2017 - July 2018, $15,000, with Apu Kapadia.
- (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.
- (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" (IIS-1257141), 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 2021, S 2021, F 2020, F 2019, F 2018, S 2017, F 2017, F 2016	**Developer and Instructor,** CS B551: Elements of Artificial Intelligence (Online)
F 2021, S 2021, F 2020, F 2019, F 2018, F 2017, F 2016, F 2015	**Instructor,** CS B551: Elements of Artificial Intelligence
S 2020, S 2019	**Developer and Instructor,** CS B657: Computer Vision (Online & Residential)
S 2018, S 2017, S 2016, S 2014, F 2012, F 2010	**Developer and Instructor,** CS B657: Computer Vision (Residential)
S 2019	**Co-instructor,** Info I509/I609: Intelligent and Interactive Systems Seminar
F 2015, F 2014, F 2013, F 2012, F 2011, S 2011	**Instructor,** INFO I427: Search Informatics
S 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
S 2013	**Developer and Instructor,** CS B553/B554: Probabilistic Approaches to Artificial Intelligence
S 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:**
  - Washington University at St. Louis Computer Science and Engineering Colloquium, St. Louis, MO, December 2021

- Naval Surface Warfare Center Crane Division Distinguished Lecture Series, Crane, Indiana, December 2021
- Penn State University AI Initiative, State College, PA, September 2021
- KBR Trusted and Assured Microelectronics Center of Excellence seminar, online, November 2020
- University of Texas at San Antonio AI Summit, San Antonio, TX, November 2019
- Washington University at St. Louis Computer Science and Engineering Colloquium, St. Louis, MO, October 2019
- Fudan University Colloquium, Shanghai, July 2019
- ShanghaiTech Colloquium, Shanghai, July 2019
- Briefing to U.S. House of Representatives Manufacturing Caucus, Washington, DC, February 2019
- University of Minnesota Department of Computer Science Seminar, Minneapolis, MN, February 2019
- Midwest Computer Vision Workshop, Ann Arbor MI, April 2018
- Naval Surface Warfare Center Crane Division Distinguished Lecture Series, Crane, Indiana, December 2017
- University of Tokyo Institute of Industrial Science Seminar, Tokyo, Japan, July 2017
- University of Electro-Communications Department of Informatics Seminar, Tokyo, Japan, July 2017
- National Informatics Institute, Tokyo Japan, July 2017
- 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, workshops, and meetings:**
  - International Congress of Infant Studies Tutorial on Using Head-mounted Eye Tracking in Infant Research, Ottawa, ON, July 2022
  - Northwestern University Analytics Exchange, Chicago, IL, May 2022
  - AAAI Workshop on Artificial Intelligence with Biased or Scarce Data (keynote), virtual, February 2022
  - IEEE International Conference on Intelligent Robots and Systems (IROS) Workshop on Egocentric vision for interactive perception, learning, and control, virtual, October 2021
  - IEEE Conference on Computer Vision and Pattern Recognition Workshop on Egocentric Perception, Interaction, and Computing (Keynote), virtual, June 2021
  - Society for Research in Child Development (SRCD) Biennial Meeting, Symposium on Dynamics of the dyad: Reciprocal relations between infant action and caregiver input, virtual, April 2021
  - KBR Trusted and Assured Microelectronics (TAM) Center of Excellence webinar, virtual, November 2020
  - Facebook Ego4D Workshop, Mountain View, February 2020
  - IEEE Workshop on Applied Image Pattern Recognition (AIPR 2019) Tutorial on Deep Learning, Washington, DC, October 2019
  - Indiana Lab Day, Indianapolis, IN, October 2019
  - Microelectronics Integrity Meeting (MIM 2019), Indianapolis, IN, August 2019
  - JFAC Hardware Assurance Working Group on Computer Vision, Washington, DC, June 2019
  - Joint Sorbonne Universite and Indiana University Symposium on AI (Keynote), Paris, France, June 2019
  - JFAC Hardware Assurance Working Group on Computer Vision, Gainesville, FL, November 2018
  - International Workshop on Incorporating Spatial Analysis and Big Data in International Relations Studies and Conflict Research, Jerusalem, December 2018
  - Manufacturing Policy Initiative Roundtable on Smart Manufacturing, Washington, DC, November 2018
  - IEEE Conference on Development and Learning and Epigenetic Robotics (ICDL-Epirob)

Workshop on Active Vision, Attention, and Learning (AVAL), Tokyo, Japan, September 2018
  - Manufacturing Policy Initiative Advisory Board Meeting, Washington, DC, June 2018
  - Workshop on Deep, fast and shallow learning in humans and machines, Bloomington, IN, May 2018
  - U.S. Air Force Science and Technology 2030 Workshop, Bloomington, IN, May 2018
  - IEEE Conference on Computer Vision and Pattern Recognition Workshop on Mutual Benefits of Cognitive and Computer Vision (MBCCV), Salt Lake City, UT, June 2018
  - Intelligence Community Technical Exchange, Washington, DC, February 2018
  - IEEE Western New York Image and Signal Processing Workshop (Keynote), Rochester, NY, November 2017
  - 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
  - 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:**
  - IEEE Conference on Robotics and Automation, Macau, November 2019
  - IEEE Applied Imagery Pattern Recognition workshop, Washington, DC, October 2017
  - IEEE International Conference on Image Processing, Beijing, China, September 2017
  - 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 Luddy School of Informatics, Computing, and Engineering Colloquium, September 2020,
  - IU UITS Peebles Memorial Lecture, Bloomington, IN, April 2020 (postponed to 2021 due to COVID)
  - Indiana University AI Summit (for Indianapolis business leaders), Bloomington, IN, January

2020
- Indiana University Research Unplugged (IU 200th Anniversary Celebration), Bloomington, IN, September 2019
- Indiana University Social Science Research Commons, Bloomington, IN, February 2018
- 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 service to journals
  - Associate Editor, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2017 –
  - Associate Editor, *IEEE Transactions on Multimedia*, 2017 –
  - *IEEE Transactions on Multimedia* Best Paper Award Selection Committee, 2019, 2020
  - Guest co-editor, *IEEE Transactions on Multimedia Weakly Supervised Learning for Image and Video Understanding*, 2021
  - Guest co-editor, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)* Special Issue on Egocentric Perception, 2020
  - Guest editor, *Journal of Visual Communications and Image Representations* Special Issue on Egocentric Vision and Lifelogging Applications, 2017
  - Associate Editor, *Image and Vision Computing, 2016 –*
  - Associate Editor, *Studies in Digital Heritage, 2017 – 2020*
  - Associate Editor, *Digital Applications in Archaeology and Cultural Heritage, 2014 – 2019*
- Conference and workshop organizing committees, area and session chairs
  - Program Co-Chair, IEEE Winter Conference on Applications of Computer Vision, 2022.
  - Area Chair, European Conference on Computer Vision (ECCV), 2022.
  - Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
  - Co-organizer, Ninth Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE International Conference on Computer Vision (ICCV), 2021.
  - Co-organizer, QuoVadis: Interdisciplinary, Socio-Technical Workshop on the Future of Computer Vision and Pattern Recognition (QuoVadis-CVPR) at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021.
  - Co-organizer, Eighth Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021.

- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021
- Area Chair, International Conference on Computer Vision (ICCV), 2021
- Area Chair, IEEE Winter Conference on Applications of Computer Vision (WACV), 2021
- Co-organizer, Fourth Workshop on The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security, at European Conference on Computer Vision, 2020
- Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE International Conference on Computer Vision (CVPR), 2020
- Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at European Conference on Computer Vision (ECCV), 2020
- Area Chair, Neural Information Processing Systems (NeurIPS), 2020
- Area Chair, European Conference on Computer Vision (ECCV), 2020
- Area Chair, IEEE Winter Conference on Applications of Computer Vision (WACV), 2020
- Area Chair, IEEE International Conference on Learning Representations (ICLR), 2020
- Area Chair, AAAI Conference on Artificial Intelligence (AAAI), 2020
- Senior Program Committee, International Joint Conference on Artificial Intelligence (IJCAI), 2020
- Co-organizer, Tutorial on Deep Learning, IEEE Workshop on Advanced Image Pattern Recognition (AIPR), 2019
- Session Chair, IEEE International Conference on Computer Vision (ICCV), Seoul, South Korea, 2019
- Session Chair, IEEE International Conference on Intelligent Robots and Systems (IROS), Macau, 2019
- Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE International Conference on Computer Vision (ICCV), Seoul, 2019
- Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, 2019
- Co-organizer, Third Workshop on Language Learning, at IEEE International Conference on Development and Learning and Epigentic Robotics (ICDL-EPIROB), 2019
- Co-organizer, Third 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), Long Beach, 2019
- Senior Program Committee, International Joint Conference on Artificial Intelligence (IJCAI), 2019
- Area Chair, IEEE International Conference on Computer Vision (ICCV), Seoul, South Korea, 2019
- Member, IEEE Winter Conference on Applications of Computer Vision (WACV) Awards Committee, 2019
- Area Chair, IEEE Winter Conference on Applications of Computer Vision (WACV), Hawaii, 2019
- Co-organizer, Special Session on Personal Data Analytics and Lifelogging, International Conference on Multimedia Modeling, Thessalonki, Greece, 2019
- Session Chair, British Machine Vision Conference (BMVC), Newcastle, UK, 2018
- Co-organizer, Workshop on Active vision, Attention, and Learning, IEEE International Conference on Development and Learning and Epigenetic Robotics, Tokyo, 2018
- Organizing Committee (Invited Speaker Co-Chair), IEEE Applied Image Pattern Recognition (AIPR) Conference, Washington, DC, 2018
- Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at European Conference on Computer Vision (ECCV), Munich, 2018
- Co-organizer, Third Workshop on Social Web for Environmental and Ecological Monitoring, at AAAI International Conference on Weblogs and Social Media (ICWSM), Stanford, CA, 2018
- Co-organizer, Second 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), Salt Lake City, UT, 2018
  - Area chair, IEEE Winter Conference on Applications of Computer Vision (WACV), Lake Tahoe, NV, 2018
  - Organizing Committee (Tutorials Co-Chair), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu, HI, 2017
  - Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu, HI, 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), Honolulu, HI, 2017
  - Session chair, Image Classification I, IEEE International Conference on Image Processing (ICIP), Beijing, 2017
  - Session chair, Image and Video Retrieval, IEEE International Conference on Image Processing (ICIP), Beijing, 2017
  - Co-organizer, Workshop on Egocentric Perception, Interaction, and Computing (EPIC), at IEEE International Conference on Computer Vision (ICCV), Venice, 2017
  - Co-organizer, Second Workshop on Social Web for Environmental and Ecological Monitoring, at Web Science, Troy, NY, 2017
  - Co-organizer, Workshop on Egocentric Vision: from Science to Real-world Applications, Bloomington, IN, 2017
  - Co-organizer, Workshop on Social Web for Environmental and Ecological Monitoring, at AAAI International Conference on Weblogs and Social Media (ICWSM), Cologne, 2016
  - Area chair, IEEE Winter Conference on Applications of Computer Vision (WACV), Lake Placid, NY, 2016
  - Data visualization challenge chair, ACM Web Science Conference, Bloomington, IN, 2014
  - Session chair, Signal, Speech and Video Processing Track, IAPR International Conference on Pattern Recognition, Tsukuba, Japan, 2012
  - Session chair, Robot and Computer Vision Track, IAPR International Conference on Pattern Recognition, Tsukuba, Japan, 2012
- Conference program committees (in addition to senior PC roles listed above)
  - AAAI Conference on Artificial Intelligence (AAAI 2019)
  - IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020)
  - AsiaCCS2022: Workshop on the security implications of Deepfakes and Cheapfakes (WDC 2022)
  - IEEE International Conference on Physical Attacks and Inspection in Electronics (PAINE 2019, 2021)
  - Southern Data Science Conference (2018)
  - ACM Multimedia (2009, 2010, 2017, 2018)
  - European Conference on Computer Vision (ECCV 2008, 2010, 2012, 2014, 2016, 2018)
  - International Conference on 3d Vision (3DV 2018)
  - IEEE International Conference on Computer Vision (ICCV 2007, 2009, 2011, 2013, 2015, 2017)
  - International Conference on Pattern Recognition (ICPR 2008, 2012, 2014, 2016)
  - 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)

- Workshop program committees
  - CVPR Workshop on Mutual Benefits of Cognitive and Computer Vision (MBCCV, 2019)
  - ICCV Workshop on 3D Reconstruction in the Wild (3DRW, 2019)
  - BMVC Workshop on Applications of Egocentric Vision (EgoApp, 2019)
  - ECCV Workshop on 3D Reconstruction in the Real World (3DRW, 2018)
  - ACCV Workshop on Attention and Intention Understanding (2018)
  - ICCV Workshop on Web-scale Vision and Social Media (2017)
  - ICIAP First International Workshop on Social Signal Processing and Beyond (2017)
  - 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 Conference on Human Factors in Computing Systems (CHI 2015, 2016, 2017, 2018, 2019, 2020)
  - ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2020)
  - 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)
  - 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, 2019, 2021
  - External reviewer, Japan Science and Technology Agency, 2019
  - External reviewer, Hong Kong Research Grant Council, 2011, 2016, 2017, 2018, 2019
  - Cambridge University Press book proposal reviewer, 2017, 2018
  - 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
  - Luddy School of Informatics, Computing, and Engineering Dean Search (2021–2022)
  - IUPUI HCC Third Year Review Committee (2020)
  - Chair, Precision Health Initiative faculty hiring committee (2019–2020)
  - IU Associate Vice President for Commercialization and Innovation hiring committee (2019–2020)
  - Co-Organizer, Indiana Lab Day AI track (2019)
  - Chair, Emerging Areas of Research faculty hiring committee (2018–2019)
  - Chair, Precision Health Initiative faculty hiring committee (2018–2019)
  - Director of Graduate Studies, Computer Science Program (2018–)
  - Director, Informatics Intelligent and Interactive Systems Ph.D. Program Track (2018)
  - IU – Fudan University Institute Committee (2017)
  - Assistant Dean for Research Faculty Advisory Council (2016–2019)
  - Co-Organizer, School of Informatics and Computing Research Horizons event (2016, 2018)
  - Informatics – Computer Science School Structure Committee (2016)
  - Founder and organizer, Intelligent and Interactive Systems (IIS) Seminar Series (2015–2018)
  - Chair, Informatics Lecturer Promotion Committee (2016)
  - Informatics Program Undergraduate Committee (2015–2017)
  - Computer Science Program Graduate Admissions & Awards committee (2010–2017)
  - School of Informatics and Computing Undergraduate Research Committee (2015–2017)
  - Informatics I210 curriculum committee (2015–2018)
  - 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 (2010–2015)
  - School of Informatics and Computing newsletter advisory committee (2011–2012)
  - School of Informatics and Computing Diversity Day Celebration Committee (2011)
- Outreach activities
  - Speaker, Bloomington Rotary Club, 2020
  - Panelist, IU CS Computer Science Club LGBTQ+ in Computing panel, 2019
  - Co-organizer, Workshop on Opportunities for Undergraduate Research in Computer Science (OurCS), 2018
  - 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, 2018, 2019)
  - 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

- NSF Graduate Research Fellowship, Sam Goree (Informatics Ph.D. student), 2020
- National Center for Women in Technology (NCWIT) Aspirations in Computing Award, Katie Spoon (CS senior), April 2019
- Provost's Award for Outstanding Research, Katie Spoon (CS senior), April 2019
- NSF Graduate Research Fellowship, Katie Spoon (CS senior), April 2019
- IU Provost's Travel Award for Women in Science, Violet Zhang (CS M.S. student), 2018
- First place, 12th grade division, Hoosier Science and Engineering Fair, Abraham Oliver (High school intern), 2018
- Best Paper award, CVPR Workshop on Deep Learning in Robotics, Jangwon Lee (CS Ph.D. student), 2017
- IU Provost's Travel Award for Women in Science, Eman Hassan (CS Ph.D. student), 2017
- IU Provost's Travel Award for Women in Science, Wen Chen (CS Ph.D. student), 2017
- Bradley Postdoctoral Fellowship, Stefan Lee (CS Ph.D. student), 2016–2018
- 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 awards, Sven Bambach and Stefan Lee (CS Ph.D. students), 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

Postdoctoral scholar supervision

- Completed postdocs (at all IU):
  - Sven Bambach, 2016–2018. Now at Nationwide Children's Hospital.
  - Md Alimoor Reza, 2018–2021. Now at Drake University.
- Current postdocs (at all IU):
  - Weslie Khoo, 2021–present.

Graduate student supervision

- Graduated Ph.D. student advisees (all at IU):
  - Sven Bambach (Computer Science and Cognitive Science), "Analyzing Hands with First-Person Computer Vision," 2016. Now at Nationwide Children's Hospital.
  - Xuan Dong (Computer Science), "Data-driven non-intrusive speech quality and intelligibility assessment," 2020.
  - Bardia Doosti (Computer Science), "Hand Pose Estimation from Single RGB Images," 2021. Now at Google.
  - Kun Duan (Computer Science), "Conditional Random Field Models for Structured Visual Object Recognition," 2014. Now at Quibi.
  - Chenyou Fan (Computer Science), "First-person Multiview Video Organization and Recognition," 2019. Now at Chinese University of Hong Kong.
  - Eman Hassan (Computer Science), "Cross-domain Visual Learning and Applications in Privacy, Retrieval, and Model Adaptation," 2021. Now at Blackmagic Design.
  - Jeffrey Johnson (Computer Science), "Selective Determinism for Autonomous Navigation in Multi-Agent Systems," 2017. Now at Uber.
  - Mohammed Korayem (Computer Science), "Social and Egocentric Image Classification for Scientific and Privacy Applications," 2015. Now at CareerBuilder, LLC.
  - Kiran Kumar (Psychology and Cognitive Science, Co-Chair with Rich Shiffrin as primary Chair), "Analyzing cursor movements with an HMM to assess individual differences in cognition reliably and quickly," 2020. Now at SAP
  - Jangwon Lee (Informatics, Robotics), "Learning Activities from Human Demonstration Videos," 2018. Now Assistant Professor at Korea Aerospace University.
  - Stefan Lee (Computer Science), "Data-driven Computer Vision for Science and the Humanities," 2016. Now Assistant Professor at Oregon State.
  - Satoshi Tsutsui (Informatics), "Rethinking the role of training data for computer vision: Scientific studies of egocentric vision," 2021. Now at National University of Singapore.
  - Mingze Xu (Computer Science), "Deep Neural Networks for Online Action Detection in Video," 2020. Now at Amazon.
  - Tian (Linger) Xu (Computer Science and Cognitive Science, Co-Chair with Chen Yu as primary Chair), "Intelligence with Interaction: Understanding Coordinated Behaviors with Developmental, Computational and Robotic Approaches," 2018. Now postdoc at Indiana University.

  - Haipeng Zhang (Computer Science), "Analyzing the Dynamics between User-sensed Data and the Real World," 2014. Now faculty at Shanghai Tech.

- Served on Ph.D. committee of (all at IU):
  - Tousif (Eshan) Ahmad (Computer Science), "Towards the Design of Wearable Assistive Technologies to Address the Privacy and Security Concerns of People with Visual Impairment," 2018. Now at Samsung.
  - Casey Bennett (Informatics), "Robotic Faces: Exploring Dynamical Patterns of Social Interaction between Humans and Robots," 2015. Now at Centerstone Research Institute.
  - Alex Breuer (Computer Science), "Minimal Krylov subspaces for dimension reduction ," 2012. Now at U.S. Army Research Lab
  - Madhavun Candadai (Cognitive Science), "Bits from Behaviors: Using information to understand function in embedded, embodied and dynamical neural networks ," 2020. Now at Path Robotics.
  - Peng Chen (Computer Science), "Visualization, Mining and Stream Processing of Big Data Provenance," 2015. Now at Facebook.
  - Liang Chen (Informatics), "Human-Interactive Optical Music Recognition and Music Renotation," 2018. Now at Google.
  - Leif Christiansen (Informatics), "Extending Model Use in Virtual Heritage: User-Centric Implementation of a Protected Remote Rendering Visualization Tool," 2019. Now at Google.
  - Devendra Dhami (Computer Science), now at UT Dallas
  - Adam Duncan (Engineering), "Securing Field-Programmable Gate Arrays Against Post-Synthesis Attacks," 2019. Now at NSWC Crane.
  - Yupeng Gu (Informatics, Music), "Creating Expressive Piano Performance Using Statistical Models," 2015.
  - Yushen Han (Informatics), "Score-informed Musical Source Separation and Reconstruction," 2013. Now at Apple.
  - Rakibul Hasan (Computer Science), "A socio-technical approach to protect people's privacy in the context of sharing images on social media," 2020. Now at Arizona State University
  - Syed Mahbub Hafiz (Computer Science), "Private Information Retrieval in Practice" 2021. Now at UC Davis.
  - Roberto Hoyle (Computer Science), "Reactive techniques to protect privacy in the context of wearable cameras," 2016. Now Assistant Professor at Oberlin College.
  - Vahid Jalalibarsari (Computer Science), "Using Ensembles of Adaptations for Case Based Reasoning," 2014.
  - Chuck Jia (Math), "Mathematical Analysis and Numerical Simulations of Two Atmospheric Models," 2020. Now at Facebook.
  - Yucong Jiang (Computer Science), "Piano Score Following with Hidden Timbre or Tempo Using Switching Kalman Filters," 2020. Now Assistant Professor at University of Richmond.
  - Yuxiang Jiang (Computer Science), "Protein function prediction and its application to prioritizing disease-associated mutations," 2020.
  - Rong Jin (Informatics), "Graph-based Rhythm Interpretation in OMR," 2017. Now at Facebook.
  - Ao Li (Statistics), "Topics in Spatial Statistics: Nonparametric Variogram Estimation, Levy's Brownian Motion, and White Noise Space on the Circle," 2020.
  - Jingru Luo (Computer Science), "Optimal Motion Planning for Manipulation and Legged Locomotion," 2015. Now at Bosch.
  - Weixi Ma (Computer Science), "λKanren: Higher-order Logic Programming Made Simpler," 2021. Now at Facebook.
  - Katherine Metcalf (Computer Science), "Representing Textual and Temporal Concepts Through Learned Continuous-Space Vector Embeddings," 2018. Now at Apple.
  - Anthony Meyer (Lingusitics), "A Multilinear Approach to the Unsupervised Learning of

Morpholog," 2018.
  - Xianghang Mi (Computer Science), "Characterize Emerging Cybersecurity Threats: an Ecosystem Approach," 2020. Now at Facebook.
  - Jerome Mitchell (Computer Science), "A Study for the Automatic Analysis of Internal Layers from Polar Radar Imagery," 2018. Now at Intel.
  - Atreyee Mukherjee (Computer Science), "Towards Effective Domain Adaptation of Dependency Parsing," 2020. Now at AppZen.
  - Phillip Odom (Computer Science), "Effective Human-in-the-Loop Learning in Structured Noisy Domain," 2017. Now at Georgia Tech.
  - Yifan Pan (Computer Science), "Keyword Search on Graph Data," 2015. Now at Rocket Fuel, Inc.
  - AJ Piergiovanni (Computer Science), "Learning from Videos," 2020. Now at Google.
  - Alex Rudnick (Computer Science), "Cross-Lingual Word Sense Disambiguation for Low-Resource Hybrid Machine Translation," 2018. Now at Google.
  - Mohsen Sayyadiharikandeh (Computer Science), "Mining user behaviors in social networks using machine learning," 2020.
  - Fatemeh Sharifi (Computer Science), "Computational tools for studying the mechanisms of arms race between bacteria and phages," 2021.
  - Anthony Tai (Statistics), "Initialization Strategy and Activation Function Selection for Neural Networks Based on Gaussian Process Optimization," 2021. Now at NSWC Crane
  - Robert Templeman (Computer Science), "Safe Sensing: Controlling Exposure in a Sensor Rich World," 2014. Now at Naval Surface Warfare Center Crane.
  - Zoë Tosi (Cognitive Science), "Self-organization in a neural circuit model: Proposing a new model of neural organization," 2021. Now at Lawrence Livermore National Lab
  - Adithya Vadapalli, "Distributed Point Functions and their Applications to Secure Multi-party Computation," 2021. Now at University of Waterloo.
  - Sanna Wager (Informatics), "A data-driven pitch correction algorithm for singing voice," 2021. Now at Amazon.
  - Tongxin Wang (Computer Science), "Machine Learning Approaches for Extracting Biological Insights from Heterogeneous Omics Data," 2021. Now at Facebook.
  - Xueqiang Wang (Computer Science), "Towards intelligent and scalable security analysis of mobile and IOT systems," 2021. Now at Amazon.
  - Yuan Xie (Computer Science), "Neural Networks based Algorithms for Learning Contextual Information and Distributional Representations," 2020. Now at Microsoft.
  - Jiaan Zeng (Computer Science), "Resource Sharing for Multi-Tenant NoSQL Data Store in Cloud," 2015. Now at Electronic Arts.
  - Bingjing Zhang (Computer Science), "Harp: A Machine Learning Framework on top of the Collective Communication Layer for the Big Data Software Stack," 2017. Now at Petuum.
  - Furu Zhang (Optometry), "Imaging physiological activities of photoreceptors with adaptive optics: Optical coherence tomography in the living human eye," 2019. Now at U.S. Food and Drug Administration.
  - Haoyu Zhang (Computer Science), "String Similarity Joins and Search under Edit Distance," 2020. Now at Facebook.
  - Yajia Zhang (Computer Science), "Knowledge Driven Motion Planning," 2015. Now at Bosch.
- External Ph.D. committee member for:
  - Luca Aiello, "Ruling information overload in online social networks," University of Torino, 2012. Now at Yahoo.
  - Darian Frajberg, "Artificial Intelligence and Augmented Reality for Entertainment Applications," Politecnico di Milano, 2019.
  - Ali Varamesh, "Overcoming Complexity of Visual Perception by Efficient Pose Estimation and Self-supervised Representation Learning," KU Leuven, 2022.

  - Yi Xu, "Toward Robust Video Event Detection and Retrieval under Adversarial Constraints," University of North Carolina at Chapel Hill, 2016.
  - Jianwei Yang, "Structured Visual Understanding, Generation, and Reasoning," Georgia Tech, 2020.

- Current Ph.D. research committee chair of (all at IU):
  - Zhenhua Chen (Computer Science)
  - Shujon Naha (Computer Science)
  - Ishtiak Zaman (Computer Science)
  - Zehua Zhang (Computer Science)
- Current Ph.D. advisory committee chair of (all at IU):
  - Mohammad Haghir Ebrahimabadi (Computer Science)
  - Sam Goree (Informatics)
  - Alexander Hayes (Informatics)
  - Vibhas Vats (Computer Science)
  - Chuhua Wang (Computer Science)
  - Jingya Wang (Computer Science)
  - Yuchen Wang (Intelligent Systems Engineering)
  - Xizi Wang (Computer Science)
  - Qingyang Xiao (Computer Science)
  - Ziwei Zhao (Computer Science)
- Currently on Ph.D. committee of (all at IU):
  - Tasneem Alowaisheq (Computer Science)
  - Dmitrii Avdiukhin (Computer Science)
  - Wen Chen (Computer Science)
  - Yue Chen (Computer Science)
  - Zheng Chen (Computer Science)
  - Boli Fang (Computer Science)
  - Jiale Guan (Computer Science)
  - Elham Jafari (Computer Science)
  - Moshen Jafariasbagh (Computer Science)
  - Kyrie Jig (Informatics)
  - Yingnan Ju (Engineering)
  - Zoher Kachwala (Computer Science)
  - Lindsey Kitchell (Psychology)
  - Can Liu (Computer Science)
  - Kaiyuan Liu (Computer Science)
  - Yuchen Liu (Computer Science)
  - Noor Abo Mokh (Linguistics)
  - Pablo Moriano (Informatics, Complex systems)
  - Nandini Ramanan (Informatics)
  - Natasha Randall (Informatics)
  - Hadar Raz (Psychology)
  - Craig Sanders (Psychology)
  - Brian Schack (Computer Science)
  - Alexander Shroyer (Intelligent Systems Engineering)
  - John Stein (Computer Science)
  - Britain Taylor (Intelligent Systems Engineering)
  - Eriya Terada (Computer Science)
  - Weixuan Wang (Public Health)
  - Zihao Wang (Computer Science)
  - Yadi Wei (Computer Science)

  - Zachary Wilkerson (Computer Science)
  - Alan Wu (Engineering)
  - Zhennan Wu (Computer Science)
  - Xiaomeng Ye (Computer Science)
  - Rui Zhang (Computer Science)
  - Zhuohuang Zhang (Speech and hearing & CS)
- M.S. thesis chair of (all at IU):
  - Ben Cutilli (Computer Science), "Exploring Representation Learning through Alternate Lenses," 2021
  - Nikhil Thakurdesai (Computer Science), "Image Segmentation using Graph Neural Networks," 2021
  - Vibhas Vats (Data Science), "Response-based Knowledge Distillation," 2021
  - Raunak Vijan (Computer Science), "Generative Models for the Automatic Generation of 2-dimensional Layouts in Visual Design," 2020.
  - Shujun Liu (Computer Science), "Towards Control Flow Aware Non-black-box Falsification of Hybrid Systems," 2020.
  - Yongming Fan (Computer Science), "Segmentation of Retina Optic Disc and Central Retina Artery from a New Approach Hough Transform," 2020.
  - Saurabh Mathur (Computer Science), "Evaluation of Bayesian Methods for Uncertainty Estimation in Deep Learning," 2020.
  - Jagpreet Chawla (Computer Science), "Analyzing and Improving Monocular Depth Estimation Models using Error Detection Network," 2020. Now at Amazon.
  - Katie Spoon (Computer Science), "Detecting Dyslexia in Handwriting using Neural Networks," 2019. Now at IBM Research.
  - Devendra Dhami (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.

Undergraduate research supervision

- B.S. thesis supervisor of:
  - Jerry Gu (UTSC), "Style Transfer on Real World Images to Comic Style Images," 2020
  - Robert Doan (IU Informatics), "Feature Extraction for Writer Recognition," 2016. Now at Informatica.
  - Russell Conard (IU Informatics), "An Algorithm for Bird Species Identification using Support Vector Machines," 2011. Now at Duo Security.
- Supervised undergraduate research projects with (at IU unless otherwise noted):
  - Guangyuan Weng (REU from ShanghaiTech), Modeling egocentric object learning, Summer 2020.
  - Jianxin (Jerry) Gu (REU from University of Science and Technology of China), Applied computer vision, Summer 2019.
  - Kai Chen (REU from Fudan University), Scene segmentation, Summer 2019.
  - Alejandra Ramos (REU from Case Western Reserve University), Food recognition, Summer 2019.
  - Hoa Nguyen (REU from UC Merced), Food recognition, Summer 2019.
  - Trevor Martin (REU from Oberlin), First-person visual recognition, Summer 2019.

  - Fiona Ryan (REU from IU), Visual gaze estimation, Fall 2019.
  - Emmanuel Klutse (REU from Tougaloo College), Image matching and text recognition, Summer 2018.
  - Gerald Pineda (REU from DePauw University), Image matching and text recognition, Summer 2018.
  - Alan Lu (REU from UIUC), Computer vision techniques for providing useful information to people with visual impairments, Summer 2017.
  - Dylan Vener (REU from Rose Hulman), Computer vision techniques for providing useful information to people with visual impairments, Summer 2017.
  - Tyler Rarick (REU from Rose Hulman), Deep learning for computer vision, Summer 2017.
  - Ethan Petersen (REU from Rose Hulman), Automatic driver attention classification, Summer 2017.
  - Zunaeed Salahuddin, Fingering recognition for the piano, 2017–.
  - 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 at Google.)
  - Andrew Owens, Efficient large-scale image matching for 3-D reconstruction, at Cornell, 2009 - 2010. (Graduated with Ph.D. from MIT, now at Google.)
  - 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:
  - Abraham Oliver, Misere Tic-tac-toe, Summer 2017 - Spring 2018. (Now at Stanford.)
  - Graham Todd, 3d wearable cameras, Fall 2016. (Now at Stanford.)
  - Gregory Zhu, Implementing and investigating combinatorial games, Summer 2015. (Now at University of Pennsylvania.)
  - Kalpa Anjur, Effect of Candy Crush Saga on human memory, Fall 2014. (Now at Carnegie Mellon.)

– 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 media:**
  - *The Herald-Times*, "IU faculty to help shape the future at Luddy School's new artificial intelligence center", Aug 9, 2021.
  - *WFYI All IN*, "Artificial Intelligence", Sept 16, 2021.
  - *TechRepublic*, "AI is not yet perfect, but it's on the rise and getting better with computer vision", Dec 9, 2021.
  - *Indiana Business Journal*, "Artificial intelligence is no longer science fiction", May 29, 2019.
  - *IU Alumni Magazine*, "IU Experts Embrace the Potential of Artificial Intelligence", Winter 2018.
  - *WTIU Public Television*, "IU Matters: Artificial Intelligence", April 19, 2018.
  - *WFIU Public Radio Noon Edition*, "The Near Future of Artificial Intelligence", October 6, 2017.
  - *Indianapolis Business Journal*, "Can we teach computers to learn like kids do?", August 26, 2017.
  - *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.
- **Web design trends:**
  - *Tech Radar*, "Websites becoming more and more similar, research finds", 2020.
  - *One Zero*, "It's Not Just You: Websites Really Do All Look the Same Now", 2020.
- **Vehicle prediction:**
  - *NVidia News Center*, "AI Can Predict the Future Location of Vehicles", September 27, 2018.
- **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.