

# Xin Li

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## Education

- 1996–2000 **Ph.D.**, Princeton University, Princeton, NJ, *Electrical Engineering*.  
1991–1996 **BS**, University of Science and Technology of China, *Electronics Engineering and Information Science, with the Highest Honor*.

## Experience

- 2015–Present **Lane Department of Computer Science and Electrical Engineering**, West Virginia University, Morgantown, WV.  
**Professor**
- 2009–2015 **Lane Department of Computer Science and Electrical Engineering**, West Virginia University, Morgantown, WV.  
**Associate Professor**
- 2003–2009 **Lane Department of Computer Science and Electrical Engineering**, West Virginia University, Morgantown, WV.  
**Assistant Professor**
- 2000–2002 **Sharp Labs of America**, Camas, WA.  
**Member of Technical Staff**

## Awards and Honors

- 2021 **Best Applied Paper Runner-UP Award** ACM Conference, CIKM
- 2020 **Runner-UP Award** AIM 2020 Challenge on Video Extreme Super-Resolution
- 2018 **Outstanding Researcher Award** College of Engineering and Mineral Resource, WVU
- 2017 **IEEE Fellow** Signal Processing Society, IEEE
- 2014 **Two Top 10% Paper Awards** IEEE International Conference on Image Processing (ICIP)
- 2013 **Top 10% Paper Awards** IEEE International Workshop on Multimedia Signal Processing
- 2012 **Outstanding Researcher Award** College of Engineering and Mineral Resource, WVU
- 2010 **Best Paper Award** SPIE Conference on Visual Communication and Image Processing (VCIP)
- 2008 **Outstanding Teacher Award** College of Engineering and Mineral Resource, WVU
- 2007 **Outstanding Associate Editor Award** Circuits and System Society, IEEE
- 2006 **Best Student Paper Runner-up Award** Asilomar Conf. on Sig., Sys., and Comp., IEEE
- 2001 **Best Student Paper Award** SPIE Conf. on Visual Comm. and Image Processing (VCIP)
- 1996 **Guo Moruo Scholarship** the highest honor in University of Science and Technology of China

## Research Interests

I am interested in both theory and applications areas of AI and ML, including

- Computer Vision and Pattern Recognition
- Image and Video Processing
- Computational Imaging
- Computational Neuroscience
- Cyber-security and Trustworthy Computing
- Smart Health and Agriculture
- Data Mining and Knowledge Discovery
- Robotics and Autonomous Vehicles

## Publications [Google Scholar Profile](#)

### Journal Articles

- Mole.Psy. 2022 **A neuronal social trait space for first impressions in the human amygdala and hippocampus,**  
*R. Cao, C. Lin, Xin Li, A. Todorov, N. Brandmeir, and S. Wang.*  
**Molecular Psychiatry**
- Comm. Biol. 2021 **Encoding of facial features by single neurons in the human amygdala and hippocampus,**  
*R. Cao, Xin Li, N. Brandmeir, and S. Wang.*  
**Communications Biology**
- IJCV 2021 **Deep Maximum a Posterior Estimator for Video Denoising,**  
*Lu Sun, Weisheng Dong, Xin Li, Jinjian Wu, Leida Li, Guangming Shi.*  
**International Journal of Computer Vision**
- TCSVT 2021 **Bayesian Correlation Filter Learning with Gaussian Scale Mixture Model for Visual Tracking,**  
*Y. Cao, W. Dong, T. Zhang, G. Shi, J. Wu, X. Xie, and Xin Li.*  
**IEEE Transactions on Circuits and Systems for Video Technology**
- TIST 2021 **Identifying Illicit Drug Dealers on Instagram with Large-scale Multimodal Data Fusion,**  
*Chuanbo Hu, Minglei Yin, Bin Liu, Yanfang Ye, and Xin Li.*  
**ACM Transactions on Intelligent Systems and Technology**
- PRL 2021 **Robust Subspace Clustering Network with Dual-Domain Regularization,**  
*Wu, Fangfang, Peng Yuan, Guangming Shi, Xin Li, Weisheng Dong, and Jinjian Wu.*  
**Pattern Recognition Letters**
- TIP 2021 **Model-Guided Deep Hyperspectral Image Super-resolution,**  
*Weisheng Dong, Chen Zhou, Fangfang Wu, Jinjian Wu, Guangming Shi, and Xin Li.*  
**IEEE Transactions on Image Processing**
- JEI 2021 **Toward semantic image inpainting: where global context meets local geometry,**  
*Yang, Wenxia, Xin Li, and Liang Zhang.*  
**Journal of Electronic Imaging**
- PRL 2021 **Face spoofing detection under super-realistic 3D wax face attack,**  
*Chuanbo Hu, Shan Jia, Zhengquan Xu, and Xin Li.*  
**Pattern Recognition Letters**
- NC 2021 **Toward Blind Joint Demosaicing and Denoising of Raw Color Filter Array Data,**  
*F. Wu, T. Huang, W. Dong, G. Shi, Z. Zheng, and Xin Li.*  
**Neurocomputing**

- SP 2021 **Hybrid Sparsity Learning for Image Restoration: an Iterative and Trainable Approach,**  
*Fangfang Wu, Weisheng Dong, Guangming Shi, Tao Huang and Xin Li.*  
Signal Processing
- Frontiers  
2021 **Posed vs. Genuine Facial Emotion Recognition and Expression in Autism and Implications for Intervention,**  
*S. Jia, S. Wang, C. Hu, P. Webster, and Xin Li.*  
Frontiers in Psychology
- AR 2021 **Deep Neural Network Reveals the World of Autism From a First-Person Perspective,**  
*M. Ruan, P. Webster, S. Wang, and Xin Li.*  
Autism Research
- TCSVT 2020 **3D Face Anti-Spoofing with Factorized Bilinear Coding,**  
*Shan Jia, Xin Li, Chuanbo Hu, Guodong Guo, and Zhengquan Xu.*  
IEEE Transactions on Circuits and Systems for Video Technology
- CCC 2020 **A flexible neural representation of faces in the human brain,**  
*Cao, Runnan, Xin Li, Alexander Todorov, and Shuo Wang.*  
Cerebral Cortex Communications
- TIP 2020 **Image Feature Correspondence Selection: A Comparative Study and a New Contribution,**  
*C. Zhao, Z. Cao, J. Yang, K. Xian, and Xin Li.*  
IEEE Transactions on Image Processing
- JSTSP 2020 **Accelerating Convolutional Neural Network via Structured Gaussian Scale Mixture Models: a Joint Grouping and Pruning Approach,**  
*T. Huang, W. Dong, J. Liu, F. Wu, G. Shi, and Xin Li.*  
IEEE Journal of Selected Topics in Signal Processing
- TCI 2020 **Joint Demosaicing and Super-Resolution (JDSR): Network Design and Perceptual Optimization,**  
*Xu, Xuan, Yanfang Ye, and Xin Li.*  
IEEE Transactions on Computational Imaging
- JSTSP 2020 **Accurate and Lightweight Image Super-Resolution with Model-Guided Deep Unfolding Network,**  
*Ning, Qian, Weisheng Dong, Guangming Shi, Leida Li, and Xin Li.*  
IEEE Journal of Selected Topics in Signal Processing
- JSTSP 2020 **Accurate and Lightweight Image Super-Resolution with Model-Guided Deep Unfolding Network,**  
*Ning, Qian, Weisheng Dong, Guangming Shi, Leida Li, and Xin Li.*  
IEEE Journal of Selected Topics in Signal Processing
- Frontiers  
2020 **Detection of Genuine and Posed Facial Expressions of Emotion: Databases and Methods,**  
*S. Jia, S. Wang, C. Hu, P. Webster, and Xin Li.*  
Frontiers in Psychology
- BE 2020 **Classification and mapping of urban canyon geometry using Google Street View images and deep multitask learning,**  
*C. Hu, F. Zhang, F. Gong, C. Ratti, and Xin Li.*  
Building and Environment

- TCI 2019 **Deep Spatial-spectral Representation Learning for Hyperspectral Image Denoising,**  
*W. Dong, H. Wang, F. Wu, G. Shi, and Xin Li.*  
**IEEE Transactions on Computational Imaging**
- TIP 2018a **Moving Object Detection in Video via Hierarchical Modeling and Alternating Optimization,**  
*Linghao Li, Qinghua Hu and Xin Li.*  
**IEEE Transactions on Image Processing**
- JSTSP 2018 **Robust Tensor Approximation with Laplacian Scale Mixture Modeling for Multiframe Image and Video Denoising,**  
*Weisheng Dong, Tao Huang, Guangming Shi, Yi Ma, and Xin Li.*  
**IEEE Journal of Selected Topics in Signal Processing**
- RAL 2018 **Design of an Autonomous Precision Pollination Robot,**  
*Nicholas Ohi, Kyle Lassak, Ryan Watson, Jared Strader, Yixin Du, Chizhao Yang, Gabrielle Hedrick, Jennifer Nguyen, Scott Harper, Dylan Reynolds, Cagri Kilic, Jacob Hikes, Sarah Mills, Conner Castle, Benjamin Buzzo, Nicole Waterland, Jason Gross, Yong-Lak Park, Xin Li, and Yu Gu.*  
**IEEE Robotics and Automation Letters**
- TIP 2018b **Image Super-resolution with Parametric Sparse Model Learning,**  
*Yongbo Li, Weiheng Dong, Xuemei Xie, Guangming Shi, Jinjian Wu and Xin Li.*  
**IEEE Transactions on Image Processing**
- TCSVT 2018 **Distribution Sensitive Product Quantization,**  
*Linhao Li, Qinghua Hu, Yahong Han and Xin Li.*  
**IEEE Transactions on Circuits Systems for Video Technology**
- Access 2018 **Learning Parametric Sparse Models for Heavy Noise Removal from Images,**  
*Yongbo Li, Weiheng Dong, Xuemei Xie, Guangming Shi and Xin Li.*  
**IEEE Access**
- KIS 2017 **DeepAM: a heterogeneous deep learning framework for intelligent malware detection,**  
*Ye, Yanfang, Lingwei Chen, Shifu Hou, William Hardy and Xin Li.*  
**Knowledge and Information Systems**
- TMM 2017 **Color-Guided Depth Recovery via Joint Local Structural and Nonlocal Low-Rank Regularization,**  
*W. Dong, G. Shi, K. Peng, J. Wu, Z. Guo, and Xin Li.*  
**IEEE Transactions on Multimedia**
- TIP 2016 **Hyperspectral Image Super-Resolution via Non-Negative Structured Sparse Representation,**  
*W. Dong, F. Fu, G. Shi, and X.n Cao, J. Wu, G. Li, and Xin Li.*  
**IEEE Transactions On Image Processing**
- TIFS 2015 **Automated Depression Diagnosis based on Facial Dynamic Analysis and Sparse Coding,**  
*L. Wen, Y. Zhu, G. Guo and Xin Li.*  
**IEEE Transactions on Information Forensics & Security**
- IJCV 2015 **Image Restoration via Simultaneous Sparse Coding and Gaussian Scale Mixture,**  
*W. Dong, G. Shi, Y. Ma and Xin Li.*  
**International Journal on Computer Vision**

- Sensors 2014 **Robust Pedestrian Tracking and Recognition from FLIR Video: A Unified Approach via Sparse Coding,**  
*Xin Li, R. Guo and C. Chen.*  
Sensors
- TIP 2014 **Compressive Sensing via Nonlocal Low-rank Regularization,**  
*W. Dong, G. Shi, Xin Li, Y. Ma and F. Huang.*  
IEEE Transactions On Image Processing
- JSTSP 2013 **A Fixed Point Approach to Analysis and Optimization of Motion Compensated Predictive Coding,**  
*Xin Li.*  
IEEE Journal of Selected Topics in Signal Processing
- MPE 2013 **Nonlocal Regularized Algebraic Reconstruction Techniques for MRI: an Experimental Study,**  
*Xin Li.*  
Mathematical Problems in Engineering
- TAC 2013 **Facial Expression Recognition Influenced by Human Aging,**  
*R. Guo, G. Guo, and Xin Li.*  
IEEE Transactions on Affective Computing
- TIP 2012a **Doubly Centralized Sparse Representation for Image Restoration,**  
*W. Dong, L. Zhang, G. Shi, and Xin Li.*  
IEEE Transactions On Image Processing
- TIP 2012b **Nonlocal image restoration via bilateral variance estimation: a low-rank approach,**  
*W. Dong, G. Shi, and Xin Li.*  
IEEE Transactions On Image Processing
- TIP 2012c **Progressive Significance Map and Its Application to Error Resilient Image Transmission,**  
*Yang Hu, William A. Pearlman and X. Li.*  
IEEE Transactions On Image Processing
- SPIC 2012 **Image Reconstruction with Locally Adaptive Sparsity and Nonlocal Robust Regularization,**  
*W. Dong, G. Shi, and Xin Li.*  
Signal Processing: Image Communication
- IET 2012 **Image Denoising and Zooming under the LMMSE Framework,**  
*Lei Zhang, Xin Li, and D. Zhang.*  
Signal Processing: Image Communication
- SPL 2011 **The magic of nonlocal Perona-Malik diffusion,**  
*Xin Li.*  
IEEE Signal Processing Letters
- JSTSP 2011 **Image Recovery via Hybrid Sparse Representations: a Deterministic Annealing Approach,**  
*Xin Li.*  
IEEE Journal of Selected Topics in Signal Processing

- JEI 2011 **'Color Demosaicking by Local Directional Interpolation and Nonlocal Adaptive Thresholding,**  
*Lei Zhang, Xiaolin Wu and Antoni Buades and Xin Li.*  
**Journal of Electronic Imaging**
- TIP 2011 **'Fine-Granularity and Spatially-Adaptive Regularization for Projection-based Image Deblurring,**  
*Xin Li.*  
**IEEE Trans. on Image Processing**
- TCSVT 2009 **'Patch-based video processing: a variational Bayesian approach,**  
*Xin Li and Yunfei Zheng.*  
**IEEE Transactions on Circuits Systems for Video Technology**
- TIFS 2008 **'Automatic construction of dental charts for post-mortem identification,**  
*Diaa Nassar, A. Abaza, Xin Li and H. Ammar.*  
**IEEE Trans. on Information Forensics and Security**
- IJIST 2007 **'On modeling inter-channel dependency for color image denoising,**  
*Xin Li.*  
**International Journal of Imaging Systems and Technology**
- TCSVT 2007 **Video processing via implicit and mixture motion model,**  
*Xin Li.*  
**IEEE Transactions on Circuits Systems for Video Technology**
- EURASIP  
2007 **Image resolution enhancement via data-driven parametric models in the wavelet space,**  
*Xin Li.*  
**EURASIP Journal of Image and Video Processing**
- CVIU 2007 **Pedestrian detection and tracking in infrared imagery using shape and appearance,**  
*C. Dai, Y. Zheng, and Xin Li.*  
**Computer Vision and Image Understanding**
- SPL 2006a **Edge directed error diffusion,**  
*Xin Li.*  
**IEEE Signal Processing Letters**
- SPL 2006b **Accurate alignment of multiview sequences,**  
*C. Dai, Y. Zheng, and Xin Li.*  
**IEEE Signal Processing Letters**
- EURASIP  
2006a **Backward adaptive video coding based on Least Square prediction,**  
*Xin Li.*  
**EURASIP Journal of Image and Video Processing**
- EURASIP  
2006b **Super-resolution for synthetic zooming,**  
*Xin Li.*  
**EURASIP Journal of Image and Video Processing**
- TCSVT 2005 **Improved wavelet decoding via set theoretic estimation,**  
*Xin Li.*  
**IEEE Transactions on Circuits Systems for Video Technology**

- SPIC 2004 **Scalable video compression via overcomplete motion compensated wavelet coding,**  
*Xin Li.*  
**Signal Processing: Image Communication**
- TIP 2003 **Demosaicing by successive approximation,**  
*Xin Li.*  
**IEEE Transactions on Image Processing**
- EURASIP 2003 **A fast and efficient topological coding algorithm for compound images,**  
*Xin Li.*  
**EURASIP Journal of Image and Video Processing**
- TIP 2003 **On exploiting geometric constraints of image wavelet coefficients,**  
*Xin Li.*  
**IEEE Transactions on Image Processing**
- SPL 2003 **New results of phase shifting in the wavelet space,**  
*Xin Li.*  
**IEEE Signal Processing Letters**
- TCSVT 2002 **Novel sequential error concealment techniques using orientation adaptive interpolation,**  
*Xin Li and M. Orchard.*  
**IEEE Transactions on Circuits Systems for Video Technology**
- TIP 2001a **New edge directed interpolation,**  
*Xin Li and M. Orchard.*  
**IEEE Transactions on Image Processing**
- TIP 2001b **Edge directed prediction for lossless compression of natural images,**  
*Xin Li and M. Orchard.*  
**IEEE Transactions on Image Processing**
- Selected Conference Papers**
- AAAI 2021 **Robust Depth Completion with Uncertainty-Driven Loss Functions,**  
*Y. Zhu, W. Dong, L. Li, J. Wu, G. Shi, and Xin Li.*  
**Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI)**  
(Acceptance rate: 15%)
- CIKM 2021 **Detection of Illicit Drug Trafficking Events on Instagram: A Deep Multimodal Multilabel Learning Approach,**  
*Chuanbo Hu, Minglei Yin, Bin Liu, Xin Li and Yanfang Ye.*  
**30th ACM International Conference on Information and Knowledge Management (CIKM)**  
(Best Applied Paper Runner-up, Acceptance rate: 24%)
- NeurIPS 2021 **Uncertainty-Driven Loss for Single Image Super-Resolution,**  
*Q. Ning, W. Dong, J. Wu, G. Shi and Xin Li.*  
**Thirty-Fifth Conference on Neural Information Processing Systems (NeurIPS)**  
(Acceptance rate: 26%)
- ACMMM 2021 **Self-Contrastive Learning with Hard Negative Sampling for Self-supervised Point Cloud Learning,**  
*Bi'an Du, Xiang Gao, Wei Hu, and Xin Li.*  
**ACM Symposium on Multimedia**  
(Acceptance rate: 27%)

- ACSAC 2021 **dStyle-GAN: Generative Adversarial Network based on Writing and Photography Styles for Drug Identification in Darknet Markets**,  
*Zhang, Y., Qian, Y., Fan, Y., Ye, Y., Li, X., Xiong, Q., and Shao, F.*  
**Annual Computer Security Applications Conference**  
 (Acceptance rate: 21%)
- IJCAI 2020 **Beyond network pruning: a joint search-and-training approach**,  
*X. Lu, H. Huang, W. Dong, G. Shi, and Xin Li.*  
**International Joint Conference on Artificial Intelligence (IJCAI)**  
 (Acceptance rate: 12.6%)
- ECCV 2020 **Sparse-to-Dense Depth Completion Revisited: Sampling Strategy and Graph Construction**,  
*X. Xiong, H. Xiong, K. Xian, C. Zhao, Z. Cao, and Xin Li.*  
**European Conference on Computer Vision (ECCV)**  
 (Acceptance rate: 27%)
- ECCVW 2020 **Deformable Kernel Convolutional Network for Video Extreme Super-Resolution**,  
*Xuan Xu and Xin Li.*  
**ECCV AIM Challenge on Video Extreme Super-Resolution,**  
**(Runner-Up Award)**
- CVPR 2019 **NM-Net: Mining Reliable Neighbors for Robust Feature Correspondences**,  
*C. Zhao, C. Li, J. Yang, Z. Cao, and Xin Li.*  
**IEEE Conference on Computer Vision and Pattern Recognition (CVPR)**  
**Oral Paper,**(Acceptance rate: 5.6%)
- WWW 2019 **Your Style Your Identity: Leveraging Writing and Photography Styles for Drug Trafficker Identification in Darknet Markets over Attributed Heterogeneous Information Network**,  
*Zhang, Yiming, Yujie Fan, Wei Song, Shifu Hou, Yanfang Ye, Xin Li.*  
**The World Wide Web Conference (WWW)**  
 (Acceptance rate: 18%)
- IJCAI 2018 **Automatic Opioid User Detection from Twitter: Transductive Ensemble Built on Different Meta-graph Based Similarities over Heterogeneous Information Network**,  
*Yujie Fan, Yiming Zhang, Yanfang Ye and Xin Li.*  
**International Joint Conference on Artificial Intelligence (IJCAI)**  
 (Acceptance rate: 20%)
- ACSAC 2018 **ICSD: An Automatic System for Insecure Code Snippet Detection in Stack Overflow over Heterogeneous Information Network**,  
*Yanfang Ye, Lingwei Chen, Shifu Hou, Xin Li.*  
**Annual Computer Security Applications Conference (ACSAC)**  
 (Acceptance rate: 20%)
- CIKM 2017 **Social Media for Opioid Addiction Epidemiology: Automatic Detection of Opioid Addicts from Twitter and Case Studies**,  
*Yanfang Ye, Yujie Fan, Yiming Zhang, Xin Li and Wanhong Zheng.*  
**26th ACM International Conference on Information and Knowledge Management (CIKM)**  
 (Acceptance rate: 20%)



- NeurIPS 2016 **Learning Parametric Sparse Models for Image Super-Resolution,**  
*Yongbo Li, Weisheng Dong, Xuemei Xie, Guangming Shi, Xin Li, Donglai Xu.*  
**30th Conference on Neural Information Processing Systems (NeurIPS)**  
 (Acceptance rate: 20%)
- ICCV 2015 **Low-Rank Tensor Approximation with Laplacian Scale Mixture Modeling for Multi-frame Image Denoising,**  
*Weisheng Dong, Guangyu Li, Guangming Shi, Xin Li and Yi Ma.*  
**International Conference on Computer Vision (ICCV)**  
 (Acceptance rate: 30%)
- ICIP 2014 **Image Restoration via Bayesian Structured Sparse Coding,**  
*Weisheng Dong, Guangming Shi, Xin Li and Yi Ma.*  
**IEEE International Conference on Image Processing (ICIP)**  
 (Top 10% Best Paper Award)
- ICIP 2014 **Graph-based Joint Denoising and Super-resolution of Generalized Piecewise Smooth Images,**  
*Wei Hu, Gene Cheung, Xin Li, Oscar Au.*  
**IEEE International Conference on Image Processing (ICIP)**  
 (Top 10% Best Paper Award)
- IWMSP 2013 **Depth Map Denoising using Graph-based Transform and Group Sparsity,**  
*Wei Hu, Gene Cheung, Xin Li, Oscar Au.*  
**15th International Workshop on Multimedia Signal Processing (IWMSP)**  
 (Top 10% Best Paper Award)
- CVPR 2011 **Sparsity-based image denoising via dictionary learning and structural clustering,**  
*Weisheng Dong, Xin Li, Lei Zhang and Guangming Shi.*  
**IEEE Conference on Computer Vision and Pattern Recognition (CVPR)**  
 Oral Paper, (Acceptance rate: 3.5%)
- VCIP 2010 **Collective sensing: a fixed-point approach in the metric space,**  
*Xin Li.*  
**SPIE Conference on Visual Communication and Image Processing (VCIP)**  
 Best Paper Award
- Asilomar  
 2006 **Video modeling via spatio-temporally adaptive localized learning,**  
*Yunfei Zheng and Xin Li.*  
**IEEE Asilomar Conference on Signals, Systems, and Computers**  
 Best Student Paper Award Runner-up
- VCIP 2001 **Novel sequential error concealment techniques using orientation adaptive interpolation,**  
*Xin Li and M.T. Orchard.*  
**SPIE Conference on Visual Communication and Image Processing (VCIP)**  
 Best Student Paper Award
- Book and Book Chapters**
- 2018 **Image Restoration: Fundamentals and Advances,**  
*Edited by Bahadir Gunturk and Xin Li.*  
 CRC Press

- 2018 **Sparsity-based Denoising of Photographic Images: from Model-based to Data-driven**,  
*Weisheng Dong, Guangming Shi and Xin Li.*  
**Denoising of Photographic Images, Marcelo Bertalmío (Editor)**  
Springer Press
- 2017 **Sparsity based Nonlocal Image Restoration: an Alternating Optimization Approach**,  
*Xin Li.*  
**Convex Optimization for Image Processing, Vishal Monga (Editor)**  
Springer Press
- 2014 **Digital Image Interpolation**,  
*Xin Li.*  
**Encyclopedia of Image Processing**  
Taylor & Francis Publication
- 2013 **Image Processing at Your Fingertips: the New Horizon of Mobile Imaging**,  
*Xin Li.*  
**Mobile Imaging, Joel Trussel (Area Editor)**  
Elsevier Online Reference
- 2012 **Patch-Based Image Processing: from Dictionary Learning to Structural Clustering**,  
*Xin Li.*  
**Perceptual Digital Imaging: Methods and Applications, Rastislav Lukac (Editor)**  
CRC Press

## Research Grants Funding Record

- 2022-2026 **Model-Based Investigation of Aberrant Neural Face Representation in Autism**, *NIH NIMH R01*, Co-PI, Total: \$1.9M.  
Share: \$450K
- 2020-2025 **CAREER: Single-neuron mechanisms of social attention in humans**, *NIH NSF*, Transferred PI, Total: \$500K.  
Share: \$316,648
- 2022-2024 **HCC: Small: Toward Computational Modeling of Autism Spectrum Disorder: Multi-modal Data Collection, Fusion, and Phenotyping**, *NSF*, PI, Total: \$500K.  
Share: \$253,453
- 2020-2021 **3D transformer-based pose estimation**, *ObEN Inc. (donation)*, PI, Total: \$20K.  
Share: \$20,000
- 2021-2024 **Integrated Invasive Pest Survey Using Satellites, Unmanned Aerial Systems, Sensors, And Artificial Intelligence**, *USDA*, PI, Total: \$400K.  
Share: \$160,000
- 2021-2022 **High-quality Face Morphing**, *NSF-CITeR*, PI, Total: \$300K.  
Share: \$30,000
- 2021-2022 **Deepfake Video Fingerprinting**, *NSF-CITeR*, PI, Total: \$80K.  
Share: \$40,000
- 2020-2021 **Does fracking induce higher risk of stroke? a Geographic Information System approach**, *NSF-CRESH*, PI, Total: \$34K.  
Share: \$34,000

- 2020-2021 **Detecting Face Morphing: Dataset Construction and Benchmark Evaluation**, *NSF-CITeR*, PI, Total: \$50K.  
Share: \$50,000
- 2020-2021 **Age invariant face recognition**, *NSF-CITeR*, PI, Total: \$80K.  
Share: \$40,000
- 2020-2025 **Mid-Atlantic Sustainable Biomass for Value-added Products Consortium (MASBio)**, *USDA*, co-PI, Total: \$10M.  
Share: \$250,000
- 2020-2023 **Optically controlled quantum phase transitions at Van der Waals interfaces**, *DOE-EPSCoR*, co-PI, Total: \$750K.  
Share: \$250,000
- 2020-2023 **III: Small: Mining Heterogeneous Network from Multiple Data Sources to Reduce Risks for Opioid Overdose Risks**, *NSF*, co-PI, Total: \$490K.  
Share: \$167,000
- 2019-2020 **Advancing the State-of-the-Art in Facial Super-resolution: RCAN meets GAN**, *NSF-CITeR*, PI, Total: \$50K.  
Share: \$50,000
- 2018-2022 **West Virginia Center for Cognitive Computing**, *NSF-CITeR*, co-PI, Total: \$1.2M.  
Share: \$300,000
- 2018-2022 **Utilizing Artificial Intelligence Technologies to Link Darknet and Surface Net to Combat Opioid Trafficking**, *NIJ/DOJ*, co-PI, Total: \$986K.  
Share: \$300,000
- 2018-2021 **CICI: SSC: SciTrust: Enhancing Security for Modern Software Programming Cyberinfrastructure**, *NSF*, co-PI, Total: \$649K.  
Share: \$192,684
- 2018-2019 **Building a Multimodal Imaging System to Support Multimodal Data Fusion via Deep learning**, *DOD-DURIP*, PI, Total: \$250K.  
Share: \$250,000
- 2018-2021 **Precision Pollination Robot**, *USDA-NRI*, co-PI, Total: \$1M.  
Share: \$171,544
- 2016-2017 **Fusion of V2X data with local sensors for automated driving applications**, *TOYOTA Inc. (donation)*, co-PI, Total: \$100K.  
Share: \$50,000
- 2016-2017 **Using Social Media to Study Opioid Addiction: Perception, Pattern and Acceptance**, *WVU Neuroscience-Engineering Initiative*, PI, Total: \$25K.  
Share: \$25,000
- 2014-2017 **CIF:SMALL: Image Restoration via Bayesian Structured Sparse Coding**, *NSF*, PI, Total: \$150K.  
Share: \$150,147
- 2014-2017 **CCSS: Simultaneous Sparse Coding for Energy Efficient Sensing: from Low-illumination to Super-Clarity Imaging**, *NSF*, PI, Total: \$249K.  
Share: \$249,429

- 2015-2016 **Partial Face Matching Across the Infrared Band**, *NSF-CITeR*, co-PI, Total: \$65K.  
Share: \$32,700
- 2009-2012 **ECCS:IHCS: From compressed sensing to collective sensing: a complex network approach**, *NSF*, PI, Total: \$292K.  
Share: \$292,470
- 2009-2012 **CIF:SMALL: Nonlocal sparse representation on graphical models: theory, algorithms and applications**, *NSF*, PI, Total: \$172K.  
Share: \$172,479
- 2010-2012 **Advanced Communication for Mobile Networks**, *Army Research Lab*, co-PI, Total: \$1.6M.  
Share: \$200,000
- 2009-2012 **Intelligent Camera Networks for the Recognition of Human Activities in Urban Environments**, *DOD-EPSCoR*, co-PI, Total: \$600K.  
Share: \$80,000
- 2008-2011 **Ascertaining Identity within Human Networks in Night Environments**, *DOD-EPSCoR*, co-PI, Total: \$730K.  
Share: \$100,000
- 2008-2009 **Iris recognition beyond 1000nm**, *NSF-CITeR*, co-PI, Total: \$130K.  
Share: \$40,000
- 2007-2007 **Flexible and high-performance biometric tools for small-to-medium scale identification applications**, *NSF-SBIR*, PI, Total: \$100K.  
Share: \$30,000
- 2007-2008 **Multispectral and multiframe iris analysis**, *NSF-CITeR*, co-PI, Total: \$108K.  
Share: \$40,000
- 2006-2007 **Visual computing center**, *WV-HEPC*, PI, Total: \$50K.  
Share: \$50,000
- 2005-2005 **Research support for DOD multimodal biometrics**, *DOD Biometrics Fusion Center*, co-PI, Total: \$325K.  
Share: \$50,000
- 2005-2006 **Spatially adaptive restoration of astronomical images**, *NASA-EPSCoR*, PI, Total: \$30K.  
Share: \$30,000
- 2004-2005 **Nonideal iris image acquisition and recognition**, *NSF-CITeR*, co-PI, Total: \$100K.  
Share: \$30,000
- 2003-2004 **Geometric coding and processing in fingerprint images**, *NSF-CITeR*, PI, Total: \$76K.  
Share: \$76,000
- 2003-2004 **Super-resolution for fingerprint images**, *DOD-Center of Excellence*, PI, Total: \$60K.  
Share: \$28,000

## Invited Talks

- 2005 **Video processing via implicit motion models**, *John Hopkins University*.
- 2005 **Video processing via implicit motion models**, *FastVDO Inc.*.
- 2006 **Video modeling via spatio-temporal adaptive localized learning**, *New York University*.
- 2010 **Image processing as I have known it**, *University of Science and Technology of China*.

- 2010 **Where does sparsity come from?**, *Hong Kong Polytechnic University*.
- 2011 **Video and image processing: a manifold learning approach**, *FutureWei Inc.*.
- 2012 **Exploiting Structured Sparsity for Higher-quality MRI Reconstruction: a Low-rank Approach**, *Virginia Tech.*.
- 2012 **How nature works: a personal view of scientific research**, *Xidian University*.
- 2015 **Low Rank Method and Its Applications into Image Processing**, *Army Research Lab*.
- 2016 **Information Fusion Problems in Multispectral and Hyperspectral Image Processing**, *University of Dayton*.
- 2016 **Low Rank Method and Its Applications into Image and Video Processing**, *Penn. State University*.
- 2017 **Detecting Opioid Users from Twitter and Understanding their Perceptions toward Medication-Assisted Treatment (MAT)**, *WVU Health Science Center*.
- 2018 **Image processing as I have known it**, *Huazhong Univ. of Science and Technology (HUST)*.
- 2019 **Toward Personalized AI: Some Personal Thoughts**, *ObEN Inc.*.
- 2020 **Probing into Illicit Drug Networks: a Data Mining Perspective**, *NSF-CRESH Summer School*.
- 2021 **Advancing the State-of-the-Art in Facial Super-resolution: CycleGAN meets StyleGAN**, *NSF-CITeR Webinar*.
- 2022 **Machine Learning in Physical Sciences: from Nanometer to Lightyear**, *WVU Physics Department Colloquium*.

## Patents

- 2001 **Methods and Apparatus for Multi-layer Data Hiding**, *Heather Yu, Min Wu, Xin Li, and A. Gelman*, European Patent WO0131565, assigned to Matsushita Electric (Japan).
- 2001 **Computer-Implemented Method and Apparatus for Audio Data Hiding**, *Heather Yu and Xin Li*, European Patent WO01300828, assigned to Matsushita Electric (Japan).
- 2005 **Scalable layered coding in a multi-layer, compound image data**, *Xin Li, Louis Kerofsky, Kristine Matthews*, US Patent 6898313.
- 2005 **Method and apparatus for adaptive compression of scanned documents**, *Xin Li*, US Patent 6853755.
- 2005 **Nonlinear edge-enhancement filter**, *Xin Li*, US Patent 6873741.
- 2005 **Resolution-scalable video compression**, *Xin Li*, US Patent 6944225.
- 2005 **High performance lossless compression of grayscale compound images**, *Xin Li*, US Patent 6865298.
- 2006 **Resolution scalable video coder for low latency**, *Xin Li*, US Patent 7010043.
- 2006 **Compound image compression method and apparatus**, *Xin Li*, US Patent 7139433.
- 2007 **Palette-based image compression method, system and data file**, *Xin Li*, US Patent 7162077.
- 2007 **Wavelet Domain Motion Compensation System**, *Xin Li, Louis Kerofsky and Shawmin Lei*, US Patent 7242717.

## Teaching Interests

CS (UG)	Discrete Math, Intro. to Algorithms, Intro. to Data Science	CS (Grad.)	Computer Vision, Pattern Recognition, Data Mining
EE (UG)	Signals and Systems, DSP, Intro. to Image Processing	EE (Grad.)	Advanced Image Processing, Video Processing, Wavelet Theory
CpE (UG)	Digital Logic, Computer Security, Intro. to Deep Learning	CpE (Grad.)	Machine Learning, Neural Computation, Switching Theory

## Teaching Experience (Past Five Years)

- Fall 2021 **CS320: Introduction to Algorithms**, Enrollment: 65, Average SEI: 4.6/5.0.
- Spring 2021 **EE465: Intro. to Digital Image Processing**, Enrollment: 25, Average SEI: 4.7/5.0.
- Fall 2020 **EE565: Advanced Image Processing**, Enrollment: 15, Average SEI: 4.8/5.0.
- Spring 2020 **EE465: Intro. to Digital Image Processing**, Enrollment: 28, Average SEI: 4.8/5.0.
- Fall 2019 **CS221: Analysis of Algorithms**, Enrollment: 54, Average SEI: 4.8/5.0.
- Fall 2019 **EE569: Digital Video Processing**, Enrollment: 8, Average SEI: 4.9/5.0.
- Spring 2019 **EE465: Intro. to Digital Image Processing**, Enrollment: 30, Average SEI: 4.7/5.0.
- Fall 2018 **EE565: Advanced Image Processing**, Enrollment: 13, Average SEI: 4.98/5.0.
- Spring 2018 **EE465: Intro. to Digital Image Processing**, Enrollment: 25, Average SEI: 4.5/5.0.
- Fall 2017 **CS221: Analysis of Algorithms**, Enrollment: 46, Average SEI: 4.7/5.0.
- Spring 2017 **EE465: Intro. to Digital Image Processing**, Enrollment: 34, Average SEI: 4.6/5.0.
- Fall 2016 **CS221: Analysis of Algorithms**, Enrollment: 42, Average SEI: 4.5/5.0.
- Fall 2016 **EE569: Digital Video Processing**, Enrollment: 12, Average SEI: 4.9/5.0.
- Spring 2016 **EE465: Intro. to Digital Image Processing**, Enrollment: 44, Average SEI: 4.5/5.0.

## Professional Services

### Journal Editorship

- 2021-2023 **Senior Area Editor**, *IEEE Transactions on Image Processing (TIP)* .
- 2018-2020 **Senior Area Editor**, *IEEE Signal Processing Letters (SPL)* .
- 2017-2019 **Associate Editor**, *IEEE Transactions on Image Processing (TIP)* .
- 2014-2017 **Associate Editor**, *IEEE Trans. on Circuits and Systems for Video Technology (TCSVT)* .
- 2010-2015 **Associate Editor**, *IEEE Transactions on Image Processing (TIP)* .
- 2014-2016 **Associate Editor**, *SPIE Journal of Electronic Imaging (JEI)* .

### Technical Committee Activities

- 2017 **Session Chair**, *IEEE International Conference on Image Processing (ICIP)*.
- 2011-2016 **Member**, *IEEE SPS Image, Video, and Multidimensional Signal Processing Technical Committee (IVMSP-TC)* .
- 2014 **Session Chair**, *IEEE International Conference on Image Processing (ICIP)*.
- 2013 **Tutorial Chair**, *IEEE International Conference on Image Processing (ICIP)*.
- 2012 **Area Chair**, *IEEE International Conference on Image Processing (ICIP)*.

Journal IEEE Pattern Analysis and Machine Intelligence (**TPAMI**)

Reviewer IEEE Transactions on Image Processing (**TIP**)  
 IEEE Transactions on Signal Processing (**TSP**)  
 IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**)  
 IEEE Transactions on Computational Imaging (**TCI**)  
 IEEE Journal of Selected Topics in Signal Processing (**JSTSP**)  
 IEEE Transactions on Information Forensics and Security (**TIFS**)  
 IEEE Transactions on Multimedia (**TMM**)  
 IEEE Transactions on Geoscience and Remote Sensing (**TGRS**)  
 IEEE Signal Processing Letters (**SPL**)  
 Springer International Journal of Computer Vision (**IJCV**)  
 SIAM Journal on Imaging Sciences (**SIIMS**)  
 ACM Transactions on Intelligent Systems and Technology (**ACM TIST**)  
 Elsevier Computer Vision and Image Understanding (**CVIU**)  
 Elsevier Signal Processing: Image Communication (**SPIM**)  
 Elsevier Journal of Visual Communication and Image Representation (**JVCIR**)  
 Elsevier Pattern Recognition (**PR**)  
 Elsevier Signal Processing (**SP**)  
 Image and Vision Computing (**IVC**)  
 SPIE Journal of Electronic Imaging (**JEI**)

Conference AAAI Conference on Artificial Intelligence (**AAAI** 2022)

Program IEEE Conference on Computer Vision and Pattern Recognition (**CVPR** 2011-2021)

Committees International Conference on Learning Representations (**ICLR** 2022)  
 IEEE Conference on Computer Vision (**ICCV** 2015,2017,2019)  
 European Conference on Computer Vision (**ECCV** 2018, 2020)  
 Neural Information Processing Symposium (**NeurIPS** 2015)  
 International Conference on Multimedia & Expo (**ICME** 2015)  
 Visual Communication and Image Processing (**VCIP** 2006,2008,2010)  
 Picture Coding Symposium (**PCS** 2014, 2015)  
 Asian Conference on Computer Vision (**ACCV** 2014)  
 International Conference on Acoustics, Speech, and Signal Processing (**ICASSP** 2011-2015)  
 Winter Conference on Computer Vision (**WACV** 2020)  
 Data Compression Conference (**DCC** 2001-2002)

NSF Panel Signal Processing System (SPS), Computer and Information Foundation (CIF), Communi-  
 Participation cations, Circuits, and Sensing-Systems (CCSS), National Robotics Initiative (NRI), CISE  
 Research Initiation Initiative (CRII), Addressing Systems Challenges through Engineering  
 Teams (ASCENT), Stimulating Collaborative Advances Leveraging Expertise in the Mathe-  
 matical and Scientific Foundations of Deep Learning (SCALE MoDL)

## Academic Services

**Mentoring Experiences** **Postdoc researchers:** Dr. Chuanbo Hu (2019-present), Dr. Runnan Cao (2020-present), Dr. Paula Webster (2019-2020)

**PhD Students:** Congxia Dai (2003-2007), Yunfei Zheng (2004-2008), Ayman Abaza (2005-2008), Qiang Hao (2007-2012), Lingyun Wen (2010-2014), Wentian Zhou (2011-2016), Yixin Du (2016-2019), Xuan Xu (2017-2020), Ahmed Sidiya, Stephen Itschner, Jinge Wang, Xudong Liu, Minglei Yin, Mindi, Ruan, Na Zhang, Nyma Ferdous, Sruthi Valichala

**MS Students:** Yasoda Dantla (2003), Kaustubh Deshpande (2004), Purva Burve (2005), Sandyha Gabbita (2005), Niveditha Amarnath (2005), Mayank Agarwal (2006), Nikhil Chintalapudi (2007), Lakshmi D. Pasupuleti (2007), Divya Doma (2008), Priyanka Namburi (2009), Xu Geng (2009), Omar Alhmouz (2012), Raghu Yalamanchili (2013), Navya Thum (2013), Nitin Are (2014), Aditya Jakka (2015), Usha Kalyani Alluri (2015), Yuan Li (2016), Priyaankadevi Guggilapu (2017), Hasnat Rubaiyat (2018), Surekha Pachipulusu (2019), Wei Song (2019), Douglas Kerr (2020), Jacob Dameron (2021), Nathan Utzman (2022)

**University Services** **Chair:** Faculty Search Committee (2020-2021), Promotion and Tenure (2016-2019)

**Area Chair:** CSEE Graduate Committee Area 2 Signals and Systems (2019-present), Biometrics Curriculum (2016-2019), College Curriculum Committee (2016-2019)

**Member:** Faculty Search Committee (2012-2013, 2015-2016, 2018-2019), Promotion and Tenure (2006-2007, 2012-2013), CSEE Graduate Committee (2004-present), EE Curriculum Committee (2004-present), BIOM Curriculum Committee (2004-present)