

Sharon X. Huang

A. BIOGRAPHICAL INFORMATION

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Education

Rutgers, the State University of New Jersey, New Brunswick, NJ
Ph.D. in Computer Science, May 2006

Rutgers, the State University of New Jersey, New Brunswick, NJ
M.S. in Computer Science, May 2001

Tsinghua University, Beijing, China
B.E. in Computer Science, June 1999

Professional Experience

Associate Dean for Undergraduate Studies, College of IST, Penn State University, 07/2023 – present
Professor, The Pennsylvania State University, University Park, PA, 07/2022 – present
Associate Professor, The Pennsylvania State University, University Park, PA, 08/2018 – 06/2022
Associate Professor, Lehigh University, Bethlehem, PA, 06/2013 – 08/2018
Assistant Professor, Lehigh University, Bethlehem, PA, 08/2006 – 06/2013
Staff Scientist, Siemens Medical Solutions USA, Inc., Malvern, PA, 08/2005 - 08/2006
Research Assistant, Rutgers University, New Brunswick, NJ, 08/2002 – 06/2005
Teaching Assistant, Rutgers University, New Brunswick, NJ, 08/1999 – 05/2002
Summer Intern, Siemens Corporate Research, Inc., Princeton, NJ, 2001 and 2003
Research Programmer, Tsinghua University, Beijing, China, 1998-1999

B. PUBLICATIONS AND CREATIVE ACTIVITIES

Articles in Refereed Journals

- H.S. Yang, F. Wang, M. Greenblatt, S.X. Huang, Y. Zhang, “AI Chatbots in Clinical Laboratory Medicine: Foundations and Trends,” Accepted by *Clinical Chemistry*, 2023
- A.S. Adishesha, L. Jakielaszek, F. Azhar, P. Zhang, V. Honavar, F. Ma, C. Belani, P. Mitra, S.X. Huang, “Forecasting User Interests Through Topic Tag Predictions in Online Health Communities,” In *IEEE Journal of Biomedical and Health Informatics*, 2023.
- Y. Ou, S.X. Huang, K. Wong, J. Cummock, J. Volpi, J.Z. Wang, S. TC Wong, “BBox-Guided Segmentor: Leveraging expert knowledge for accurate stroke lesion segmentation using weakly supervised bounding box prior,” In *Computerized Medical Imaging and Graphics*, Vol. 107, article No. 102236, 2023.
- H. Ni, Y. Xue, L. Ma, Q. Zhang, X. Li, S.X. Huang, “Semi-supervised Body Parsing and Pose Estimation for Enhancing Infant General Movement Assessment,” In *Medical Image Analysis*, Vol. 83, article No. 102654, 2023.
- K. Liang, J. Tan, D. Zeng, Y. Huang, X. Huang, G. Tan, “ABSLearn: a GNN-based framework for aliasing and buffer-size information retrieval,” In *Pattern Analysis and Applications*, 2023.
- J. Ye, Y.-T. Yeh, Y. Xue, Z. Wang, N. Zhang, L. He, K. Zhang, R. Ricker, Z. Yu, A. Roder, N.P. Lopez, L. Organtini, W. Greene, S. Hafenstein, H. Lu, E. Ghedin, M. Terrones, S. Huang, S.X. Huang, “Accurate virus identification with interpretable Raman signatures by machine learning,” In *The Proceedings of the National Academy of Sciences*, 119 (23), e2118836119, 2022.
- K. Zhang, Z. Wang, H. Liu, N. Perea-Lopez, J. Ranasinghe, G. Bepete, A. Minns, R. Rossi, S. Lindner, S.X. Huang, M. Terrones, S. Huang, “Understanding the Excitation Wavelength Dependence and Thermal

- Stability of the SARS-CoV-2 Receptor-Binding Domain Using Surface-Enhanced Raman Scattering and Machine Learning,” In *ACS Photonics*, 9(9), pp. 2963-72, 2022.
- T. Cai, H. Ni, M. Yu, X. Huang, K. Wong, J. Volpi, J. Z. Wang, S. TC Wong, “DeepStroke: An Efficient Stroke Screening Framework for Emergency Rooms with Multimodal Adversarial Deep Learning,” In *Medical Image Analysis*, Vol. 80, article No.102522, 2022.
- Z. Wang, J. Ye, K. Zhang, L. Ding, T. Granzier-Nakajima, J. C. Ranasinghe, Y. Xue, S. Sharma, I. Biase, M. Terrones, S. H. Choi, C. Ran, R. E. Tanzi, S. X. Huang, C. Zhang, S. Huang, “Rapid biomarker screening of Alzheimer’s disease by interpretable machine learning and graphene-assisted Raman spectroscopy,” In *ACS Nano*, 16 (4), pp. 6426-6436, 2022.
- M.S. Tawfik, A.S. Adishesha, Y. Hsi, P. Purswani, R.T. Johns, P. Shokouhi, X. Huang, Z.T. Karpyn, “Comparative Study of Traditional and Deep-Learning Denoising Approaches for Image-Based Petrophysical Characterization of Porous Media,” In *Frontiers in Water*, 3: 800369, 2022.
- Y. Xue, Y.C. Guo, H. Zhang, T. Xu, S.H. Zhang, X. Huang, “Deep Image Synthesis from Intuitive User Input: A Review and Perspectives,” In *Computational Visual Media*, 8(1), pp. 3-31, 2022.
- C. Rong, J.H. Wang, J. Liu, J. Wang, F. Li, X. Huang, “Scheduling Massive Camera Streams to Optimize Large-Scale Live Video Analytics,” In *IEEE/ACM Transactions on Networking*, 30(2), pp. 867-880, 2021.
- V. Pisztor, Y. Ou, X. Huang, F. Chiaromonte, J. Li, “Epsilon Consistent Mixup: Structural Regularization with an Adaptive Consistency-Interpolation Tradeoff,” In *Stat*, p. e425, Sept. 2021.
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- H. Liu, T.J. Mu, X. Huang, “Detecting human–object interaction with multi-level pairwise feature network,” In *Computational Visual Media*, 7(2), pp. 229-239, 2021.
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- P. Purswani, Z.T. Karpyn, K. Enab, Y. Xue, X. Huang, “Evaluation of image segmentation techniques for image-based rock property estimation,” In *Journal of Petroleum Science and Engineering*, Vol. 195, article No. 107890, 2020.
- R. Ju, P. Zhou, S. Wen, W. Wei, Y. Xue, X. Huang, X. Yang, “3D-CNN-SPP: A Patient Risk Prediction System From Electronic Health Records via 3D CNN and Spatial Pyramid Pooling,” In *IEEE Transactions on Emerging Topics in Computational Intelligence*, 5(2), pp. 247-261, 2020.
- T. Xu, C. Langouras, M. A. Koudehi, B. E. Vos, N. Wang, G. H. Koenderink, X. Huang, and D. Vavylonis, “Automated Tracking of Biopolymer Growth and Network Deformation with TSOAX,” In *Scientific Reports*, 9(1), 1717, 2019.
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- Y. Song, R. Fan, S. Huang, Z. Zhu, and R. Tong, “A Three-stage Real-time Detector for Traffic Signs in Large Panoramas,” In *Computational Visual Media*, Vol. 5, No. 4, pp. 403-416, 2019.
- H. Zhang, T. Xu, H. Li, S. Zhang, X. Wang, X. Huang, D. Metaxas, “StackGAN++: Realistic Image Synthesis with Stacked Generative Adversarial Networks,” In *IEEE Trans. On Pattern Analysis and Machine Intelligence*, Vol. 41, No. 8, pp. 1947-1962, 2018.
- Y. Xue, T. Xu, H. Zhang, L. R. Long, and X. Huang, “SegAN: Adversarial Network with Multi-scale L1 Loss for Medical Image Segmentation,” In *Neuroinformatics*, 16(3-4):383-392, 2018.

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- T. Xu, D. Vavylonis, X. Huang, "3D Actin Network Centerline Extraction with Multiple Active Contours," In *Medical Image Analysis*, Vol. 18, No. 2, pp. 272-284, 2014.
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- H. Li, X. Huang, L. He, "Object Matching Using A Locally Affine Invariant and Linear Programming Techniques," In *IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)*, Vol. 35, No. 2, pp. 411-424, 2013.
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- H. Li, T. Shen, X. Huang, "Approximately Global Optimization for Robust Alignment of Generalized Shapes," In *IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)*, Vol. 33, No. 6, pp. 1116-1131, 2011.
- E. Kim, X. Huang, G. Tan, "Markup SVG - An Online Content Aware Image Abstraction and Annotation Tool," In *IEEE Trans. on Multimedia (TMM)*, Vol. 13, No. 5, pp. 993-1006, 2011.
- T. Shen, H. Li, X. Huang, "Active Volume Models for Medical Image Segmentation," In *IEEE Trans. on Medical Imaging (TMI)*, Vol. 30, No. 3, pp. 774-791, 2011.
- W. Wang, X. Huang, A. Esmaili, "Texture Based Foam Segmentation and Analysis," In *Industrial & Engineering Chemistry Research*, Vol. 50, No. 10, pp. 6071-6081, 2011.
- M. B. Smith, H. Li, T. Shen, X. Huang, E. Yusuf, D. Vavylonis, "Segmentation and Tracking of Cytoskeletal Filaments using Open Active Contours," In *Cytoskeleton*, Vol. 67, No. 11, pp. 693-705, November 2010.

M. Cheng, F.L. Zhang, N. J. Mitra, X. Huang, S.M. Hu, “RepFinder: Finding Approximately Repeated Scene Elements for Image Editing,” In *ACM Trans. on Graphics*, Vol. 29, No. 4, 2010. Also in *SIGGRAPH*, 2010.

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X. Huang, N. Paragios, D. Metaxas, “Shape Registration in Implicit Spaces using Information Theory and Free Form Deformations,” In *IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)*, Vol. 28, No. 8, pp. 1303-1318, 2006.

Y. Wang, X. Huang, C.-S. Lee, S. Zhang, Z. Li, D. Samaras, D. Metaxas, A. Elgammal, and P. Huang, “High Resolution Acquisition, Learning and Transfer of Dynamic 3-D Facial Expressions,” In *Computer Graphics Forum*, Vol. 23, No. 3, pp. 677-686, 2004. Also in *Eurographics*, 2004.

Refereed Highly Selective Conference Papers

H. Ni, C. Shi, K. Li, S.X. Huang, M.R. Min, “Conditional Image-to-Video Generation with Latent Flow Diffusion Models,” In *Proc. Of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

H. Ni, Y. Liu, S.X. Huang, Y. Xue, “Cross-identity Video Motion Retargeting with Joint Transformation and Synthesis,” In *Proc. of IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023.

J. Liu, Y. Xue, J. Duarte, K. Shekhawat, Z. Zhou, X. Huang, “End-to-end Graph-constrained Vectorized Floorplan Generation with Panoptic Refinement,” In *Proc. of the European Conference on Computer Vision (ECCV)*, 2022.

Y. Ou, Y. Yuan, X. Huang, S. TC Wong, J. Volpi, J.Z. Wang, K. Wong, “Patcher: Patch Transformers with Mixture of Experts for Precise Medical Image Segmentation,” In *Proc. of the International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2022.

H. Ni, Y. Xue, K. Wong, J. Volpi, S. TC Wong, J.Z. Wang, X. Huang, “Asymmetry Disentanglement Network for Interpretable Acute Ischemic Stroke Infarct Segmentation in Non-Contrast CT Scans,” In *Proc. of the International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2022.

F. Yang, X. Huang, Z. Zhou, “Deep Depth from Focus with Differential Focus Volume,” In *Proc. Of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

J. Liu, P. Ji, N. Bansal, C. Cai, Q. Yan, X. Huang, Y. Xu, “PlaneMVS: 3D Plane Reconstruction from Multi-View Stereo,” In *Proc. Of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

P. Jin, X. Zhang, Y. Chen, S.X. Huang, Z. Liu, Y. Lin, “Unsupervised learning of full-waveform inversion: Connecting CNN and partial differential equation in a loop,” In *Proc. Of International Conference on Learning Representations (ICLR)*, 2022.

J. Ye, Y. Xue, P. Liu, K.C. Cheng, R. Zaino, X. Huang, “A Multi-attribute Controllable Generative Model for Histopathology Image Synthesis,” In *Proc. of the International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 613-623, 2021.

Y. Ou, Y. Yuan, X. Huang, K. Wong, J. Volpi, J. Z. Wang, S. T.C. Wong, “LambdaUNet: 2.5D Stroke Lesion Segmentation of Diffusion-weighted MR Images,” In *Proc. of the International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 731-741, 2021.

Y. Xue, Z. Zhou, X. Huang, “Neural Wireframe Renderer: Learning Wireframe to Image Translations,” In *Proc. of the European Conference on Computer Vision (ECCV)*, pp. 279-295, 2020.

J. Ye, Y. Xue, L.R. Long, S. Antani, Z. Xue, K. Cheng, X. Huang, “Synthetic Sample Selection via Rein-

- forcement Learning,” In *Proc. Of International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 53-63, 2020.
- H. Ni, Y. Xue, Q. Zhang, X. Huang, “SiamParseNet: Joint Body Parsing and Label Propagation in Infant Movement Videos,” In *Proc. Of International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 396-405, 2020.
- M. Yu, T. Cai, X. Huang, K. Wong, J. Volpi, J.Z. Wang, S. TC Wong, “Toward Rapid Stroke Diagnosis with Multimodal Deep Learning,” In *Proc. Of International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 616-626, 2020.
- Y. Xue, H. Tang, Z. Qiao, G. Gong, Y. Yin, Z. Qian, C. Huang, W. Fan, X. Huang, “Shape-Aware Organ Segmentation by Predicting Signed Distance Maps,” In *Proc. of the 34th AAAI Conference on Artificial Intelligence (AAAI)*, 34(7):2565-72, 2020.
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- Y. Xue, X. Huang, “Improved Disease Classification in Chest X-rays with Transferred Features from Report Generation,” In *Proc. of International Conf. on Information Processing in Medical Imaging (IPMI)*, pp. 125-138, 2019.
- Y. Xue, T. Xu, L.R. Long, Z. Xue, S. Antani, G.R. Thoma, X. Huang, “Multimodal Recurrent Model with Attention for Automated Radiology Report Generation,” In *Proc. Of International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 457-466, 2018.
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- E. Kim, H. Li, X. Huang, “A Hierarchical Image Clustering Cosegmentation Framework,” In *Proc. of IEEE Computer Society Conf. on Computer Vision and Pattern Recognition (CVPR)*, pp. 686-693, 2012.
- M. Gao, J. Huang, X. Huang, S. Zhang, D. Metaxas, “Simplified Labeling Process for Medical Image Segmentation,” In *Proc. of International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, pp. 387-394, 2012.
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- T. Shen, Y. Zhu, X. Huang, J. Huang, D. Metaxas, L. Axel, "Active Volume Models with Probabilistic Object Boundary Prediction Module," In *Proc. of the 11th Annual International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS-5241, pp. 331-341, 2008.
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- J. Huang, X. Huang, D. Metaxas, "Optimization and Learning for Registration of Moving Dynamic Textures," In *Proc. Of IEEE International Conf. on Computer Vision (ICCV)*, pp. 1-8, 2007.
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- L. Wolf, X. Huang, I. Martin, and D. Metaxas, "Patch-based Texture Edges and Segmentation," In *Proc. of the 9th European Conf. on Computer Vision (ECCV)*, LNCS 3952, pp. 481-493, 2006.

W. He, X. Huang, D. Metaxas, and X. Ying, "Efficient Learning by Combining Confidence-rated Classifiers to Incorporate Unlabeled Medical Data," In *Proc. of the 8th International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS-3749, pp. 745-752, 2005.

X. Huang, D. Metaxas, and T. Chen, "Metamorphs: Deformable Shape and Texture Models," In *Proc. of the IEEE Computer Society Conf. on Computer Vision and Pattern Recognition (CVPR)*, pp. 496-503, 2004.

X. Huang, Z. Li, and D. Metaxas, "Learning Coupled Prior Shape and Appearance Models for Segmentation," In *Proc. of the 7th International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS-3216, pp. 60-69, 2004.

X. Huang, N. Paragios, and D. Metaxas, "Establishing Local Correspondences towards Compact Representations of Anatomical Structures," In *Proc. of the 6th International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS-2879, pp. 926-934, 2003.

M. Singh, and X. Huang, "Computing Layered Surface Representations: An Algorithm for Detecting and Separating Transparent Overlays," In *Proc. of the IEEE Computer Society Conf. on Computer Vision and Pattern Recognition (CVPR)*, pp. 11-18, 2003.

Book Chapters

T. Xu, C. Zhou, X. Huang, "Model-based Curvilinear Network Extraction toward Quantitative Microscopy," In *Biomedical Image Segmentation: Advances and Trends*, Chapter 9, A. El-Baz, X. Jiang and J. S. Suri (Editors), CRC Press, November 2016.

E. Kim, X. Huang, "A Data Driven Approach to Cervigram Image Analysis and Classification," In *Color Medical Image Analysis*, M. Emre Celebi and Gerald Schaefer (Editors), Springer, 2012.

T. Shen, S. Zhang, J. Huang, X. Huang, D. Metaxas, "Integrating Shape and Texture in 3D Deformable Models: From Metamorphs to Active Volume Models," In *Multi Modality State-of-the-Art Medical Image Segmentation and Registration Methodologies*, Volume I, Chapter 1, A.S. El-Baz, R. Acharya U, and M. Mirmehdi (Editors), Springer, March 2011.

Z. Qian, X. Huang, L. Axel, D. Metaxas, "Automatic Segmentation of Cardiac Tagged MRI," In *Medical Image Analysis: Methodologies and Applications*, N. Paragios, J. Duncan, and N. Ayache (Editors), Springer, 2010.

X. Huang, G. Tsechpenakis, "Medical Image Segmentation," In *Information Discovery on Electronic Health Records*, V. Hristidis (Editor), Chapman & Hall, Chapter 10, 2009.

X. Huang, C. Xu, Y. Song, "Fast Nonrigid Image Registration using Salient Region Feature and Free Form Deformations," In *Encyclopedia of Healthcare Information Systems*, N. Wickramasinghe and E. Geisler (Editors), Medical Information Science Reference, 2008.

D. Metaxas, X. Huang, T. Chen, "Integrating Shape and Texture in Deformable Models: From Hybrid Methods to Metamorphs," In *Mathematical Models in Computer Vision: The Handbook*, N. Paragios, Y. Chen and O. Faugeras (Editors), Springer, 2005.

N. Paragios, M. Taron, X. Huang, M. Rousson, and D. Metaxas, "On the Representation of Shapes Using Implicit Functions," In *Statistics and Analysis of Shapes*, H. Krim and A. Yezzi (Editors), Springer Verlag, 2005.

Other Refereed Conference and Workshop Papers

P. Jin, Y.-T. Yeh, J. Ye, Z. Wang, Y. Xue, Z. Zhang, S. Huang, E. Ghedin, H. Lu, A. Schmitt, S.X. Huang, M. Terrones, "Strain-level Identification and Analysis of Avian Coronavirus Using Raman Spectroscopy and Interpretable Machine Learning," In *Proc. of the IEEE Int'l Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2023.

A. Subbkrishna Adishesha, D.J. Vanselow, P. La Riviere, X. Huang, K.C. Cheng, "Zebrafish Histotomography Noise Removal in Projection and Reconstruction Domains," In *Proc. of the IEEE Int'l Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 140-144, 2021.

Y. Ou, Y. Xue, Y. Yuan, T. Xu, V. Pisztor, J. Li, X. Huang, "Semi-Supervised Cervical Dysplasia Classifi-

- cation With Learnable Graph Convolutional Network,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), 2020.
- S. Gupta, Y. Xue, Y. Ding, D. Vanselow, M. Yakovlev, D.B. van Rossum, S. X. Huang, K.C. Cheng, “Supervised Machine Learning for Region Assignment of Zebrafish Brain Nuclei based on Computational Assessment of Cell Neighborhoods,” In *Proc. of the SPIE Medical Imaging 2020: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 11317, 2020.
- Q. Zhang, Y. Xue, X. Huang, “Online Training Strategies for Body Part Segmentation in Infant Movement Videos,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), 2019.
- Y. Xue, T. Xu, X. Huang, “Adversarial Learning with Multi-Scale Loss for Skin Lesion Segmentation,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), 2018.
- Y. Xue, P. Zhou, T. Jiang, S. Mao, X. Huang, “Distributed learning for multi-channel selection in wireless network monitoring,” In *Proc. of IEEE International Conference on Sensing, Communication, and Networking* (SECON), pp. 1-9, 2016.
- T. Xu, C. Xin, L.R. Long, S. Antani, Z. Xue, E. Kim, X. Huang, “A New Image Data Set and Benchmark for Cervical Dysplasia Classification Evaluation,” In *Proc. of the 6th International Workshop on Machine Learning in Medical Imaging* (MLMI), LNCS Vol. 9352, pp. 26-35, 2015.
- T. Xu, E. Kim, X. Huang, “Adjustable AdaBoost Classifier and Pyramid Features for Image-Based Cervical Cancer Diagnosis,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 281-285, 2015. (Best Student Paper Award Finalist)
- S. Wan, X. Huang, H.C. Lee, J.G. Fujimoto, C. Zhou, “Spoke-LBP and Ring-LBP: New Texture Features for Tissue Classification,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 195-199, 2015.
- S. Huang, M. Gao, D. Yang, X. Huang, A. Elgammal, X. Zhang, “Unbalanced Graph-Based Transduction on Superpixels for Automatic Cervigram Image Segmentation,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 1556-1559, 2015.
- T. Xu, X. Huang, E. Kim, L.R. Long, S. Antani, “Multi-test Cervical Cancer Diagnosis with Missing Data Estimation,” In *Proc. of SPIE, Medical Imaging: Computer-Aided Diagnosis*, Vol. 9414, 2015.
- S. Wan, X. Huang, C. Zhou, “OCM Image Texture Analysis for Tissue Classification,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 93-96, 2014.
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- X. Cui, S. Zhang, J. Huang, X. Huang, D. Metaxas, L. Axel, “Left Endocardium Segmentation using Spatio-temporal Metamorphs,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 226-229, 2012.
- T. Xu, H. Li, T. Shen, N. Ojicic, D. Vavylonis, X. Huang, “Extraction and Analysis of Actin Networks based on Open Active Contour Models,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 1334-1340, 2011.
- Y. Yu, J. Huang, S. Zhang, C. Restif, X. Huang, D. Metaxas, “Group Sparsity based Classification for Cervigram Segmentation,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 1425-1429, 2011.
- E. Kim, S. Antani, X. Huang, L.R. Long, D. Demner-Fushman, “Using Relevant Regions in Image Search and Query Refinement for Medical CBIR,” In *Proc. of SPIE, Medical Imaging: Advanced PACS-based Imaging Informatics and Therapeutic Applications*, 2011.
- E. Kim, X. Huang, “Crowdsourcing Image Segmentation using SVG,” In *Proc. of 9th International Conference on Scalable Vector Graphics*, 2011.
- S. Zhang, J. Huang, M. Uzunbas, T. Shen, F. Delis, X. Huang, N. Volkow, P. Thanos, D. Metaxas, “3D Segmentation of Rodent Brain Structures using Active Volume Model with Shape Priors,” In *Proc. of the IEEE Int’l Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 433-436, 2011.

- E. Kim, T. Shen, X. Huang, "A Parallel Cellular Automata with Label Priors for Interactive Brain Tumor Segmentation," In *Proc. of 23rd IEEE International Conf. on Computer-Based Medical Systems (CBMS)*, 2010.
- E. Kim, X. Huang, G. Tan, L.R. Long, S. Antani, "A Hierarchical SVG Image Abstraction Layer for Medical Imaging," In *Proc. Of SPIE, Medical Imaging: Advanced PACS-based Imaging Informatics and Therapeutic Applications*, Vol. 7628, 2010.
- S. Zhang, J. Huang, W. Wang, X. Huang, D. Metaxas, "Cervigram Image Segmentation based on Reconstructive Sparse Representations," In *Proc. Of SPIE, Medical Imaging: Image Processing*, Vol. 7623, 2010.
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- E. Kim, W. Wang, H. Li, X. Huang, "A Parallel Annealing Method for Automatic Color Cervigram Image Segmentation," In *Proc. of the MICCAI-GRID Workshop: Medical Imaging on GRID, HPC and GPU Infrastructures*, 2009.
- D. Lopresti, X. Zhou, X. Huang, G. Tan, "Document Analysis Support for the Manual Auditing of Elections," In *Proc. of the 10th International Conf. on Document Analysis and Recognition (ICDAR)*, pp. 733-737, 2009.
- H. Li, T. Shen, M. B. Smith, I. Fujiwara, D. Vavylonis, and X. Huang, "Automated Actin Filament Segmentation, Tracking, and Tip Elongation Measurements based on Open Active Contour Models," In *Proc. of the IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 1302-1305, 2009.
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- Y. Zhu, T. Shen, D. Lopresti, and X. Huang, "Interactive Polygons in Region-based Deformable Contours for Medical Images," In *Proc. of the IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 37-40, 2009.
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- H. Li, T. Shen, M. B. Smith, I. Fujiwara, D. Vavylonis and X. Huang, "Automated Actin Filament Length Measurements in TIRFM Images Using Open Active Contours," Abstract in Biophysics Society 53rd Annual Meeting, Boston, 2009.
- Y. Artan, X. Huang, "Combining Multiple 2ν -SVM Classifiers for Tissue Segmentation," In *Proc. of the IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 488-491, 2008.
- Y. Zhu, X. Huang, D. Lopresti, L. R. Long, S. Antani, Z. Xue, and G. Thoma, "Web-Based Multi-Observer Segmentation Evaluation Tool," In *Proc. Of the 21st IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, pp. 167-169, 2008.
- X. Huang, W. Wang, Z. Xue, S. Antani, L. R. Long, J. Jeronimo, "Cluster Features for Lesion Detection in Digital Cervigrams," In *Proc. Of SPIE, Medical Imaging: Image Processing*, Vol. 6914, 2008.
- Y. Song, X. Huang, B. Mueller, and B. Mychalczak, "Phase Impact Factor: A Novel Parameter for Determining Optimal CT Phase in 4D Radiation Therapy Treatment Planning for Mobile Lung Cancer," In *Proc. Of SPIE, Medical Imaging: Visualization, Image-guided Procedures, and Modeling*, Vol. 6918, 2008.
- W. Qu, X. Huang, Y. Jia, "Segmentation in Noisy Medical Images Using PCA Model Based Particle Filtering," In *Proc. Of SPIE, Medical Imaging: Image Processing*, Vol. 6914, 2008.
- K. Okada, X. Huang, "Robust Click-Point Linking: Matching Visually Dissimilar Local Regions," In *Proc. Of IEEE International Workshop on Beyond Multiview Geometry: Robust Estimation and Organization of Shapes from Multiple Cues*, pp.1-8, 2007.

J. Huang, X. Huang, D. Metaxas, and L. Axel, "Dynamic Texture based Heart Localization and Segmentation in 4-D Cardiac Images," In *Proc. of the IEEE International Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 852-855, 2007.

V. Potesil, X. Huang, X. S. Zhou, "Automated tumor delineation using joint PET/CT information," In *Proc. Of SPIE, Medical Imaging: Computer-aided Diagnosis*, Vol. 6514, 2007.

X. Huang, X. S. Zhou, A. Krishnan, "The efficacy of computer detection of kidney in PET/CT images and kidney SUV statistics in PET images," In *Radiological Society of North America Scientific Assembly and Annual Meeting* (RSNA), 2006.

X. Huang, D. Metaxas, L. G. Menon, P. Mayer-Kuckuk, J. R. Bertino, and D. Banerjee, "Recovering 3D Tumor Locations from 2D Bioluminescence Images and Registration with CT Images," In *Proc. of SPIE, Biomedical Optics Conference: Multimodal Biomedical Imaging*, Vol. 6081, 2006.

J. Huang, X. Huang, D. Metaxas, and D. Banerjee, "3D Tumor Shape Reconstruction from 2D Bioluminescence Images," In *Proc. of the IEEE International Symposium on Biomedical Imaging: From Nano to Macro* (ISBI), pp. 606-609, 2006.

H. Guan, T. Kubota, X. Huang, X. S. Zhou, M. Turk, "Automatic Hot Spot Detection and Segmentation in Whole Body FDG-PET Images," In *Proc. of the IEEE International Conf. on Image Processing (ICIP)*, pp. 85-88, 2006.

K. Okada, X. Huang, X. Zhou, A. Krishnan, "Robust Click-Point Linking for Longitudinal Follow-Up Studies," In *Proc. of the 3rd International Workshop on Medical Imaging and Augmented Reality* (MIAR), pp. 252-260, 2006.

X. Huang, Z. Qian, R. Huang, and D. Metaxas, "Deformable-model based Textured Object Segmentation," In *Proc. of the 4th International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition* (EMMCVPR), LNCS-3757, pp. 119-135, 2005.

Z. Qian, X. Huang, D. Metaxas, T. Chen, L. Axel, "Robust Segmentation of 4D Cardiac MRI-tagged Images via Spatio-temporal Propagation," In *Proc. Of SPIE, Medical Imaging: Physiology, Function and Structure from Medical Images*, Vol. 5746, pp. 580-591, 2005.

X. Huang, Y. Sun, D. Metaxas, F. Sauer, and C. Xu, "Hybrid Image Registration based on Configurational Matching of Scale-Invariant Salient Region Features," In *Proc. of the 2nd IEEE Workshop on Image and Video Registration (IVR)*, 2004.

X. Huang, S. Zhang, Y. Wang, D. Metaxas, and D. Samaras, "A Hierarchical Framework for High Resolution Facial Expression Tracking," In *Proc. of the 3rd IEEE Workshop on Articulated and Nonrigid Motion (ANM)*, 2004.

D. Metaxas, T. Chen, X. Huang, and L. Axel, "Cardiac Segmentation from MRI-Tagged and CT Images," In *Proc. of the 8th WSEAS International Conf. on Computers, special session on Imaging and Image Processing of Dynamic Processes in biology and medicine*, 2004.

C. Xu, X. Huang, A. Krishnan, and S. Samant, "An Automated Image-based Method for Multi-Leaf Collimator Positioning Verification in Intensity Modulated Radiation Therapy," In *Proc. of the International Conf. on Diagnostic Imaging and Analysis (ICDIA)*, 2002.

Patents

X. Huang, S. Wan, C. Zhou, "Diagnostic System and Method for Biological Tissue Analysis," Patent issued as USP 10019656 in July 2018.

X. Huang, A. Krishnan, K. Okada, X. Zhou, "Robust Click-Point Linking with Geometric Configuration Context: Interactive Localized Registration Approach," Patent issued as USP 7,903,857 on Mar. 8, 2011. Also filed in Germany and China.

X. Huang, X. Zhou, A. Jerebko, A. Krishnan, H. Guan, T. Kubota, V. Potesil, "System and Method for Whole Body Landmark Detection, Segmentation and Change Quantification in Digital Images," Patent issued as USP 7,876,938 on Jan. 25, 2011.

D. Metaxas, D. Banerjee, and X. Huang, "System and Methods for Generating Three-dimensional Images

from Two-dimensional Bioluminescence Images and Visualizing Tumor Shapes and Locations,” Patent issued as USP 8,218,836 on Jul. 10, 2012.

C. Xu, X. Huang, Y. Sun, “Fast Parametric Non-rigid Image Registration Based on Feature Correspondences,” Patent issued as USP 7,596,283 on Sep. 29, 2009.

C. Xu, X. Huang, Y. Sun, C. Chefd’hotel, J. Guehring, F. Sauer, and S. Vogt, “Method and System for Hybrid Rigid Registration of 2D/3D Medical Images,” Patent issued as USP 7,409,108 on Aug. 5, 2008.

C. Xu, X. Huang, Y. Sun, and F. Sauer, “Method and System for Hybrid Rigid Registration based on Joint Correspondences between Scale-Invariant Salient Region Features,” Patent issued as USP 7,362,920 on Apr. 22, 2008.

C. HONORS AND AWARDS

- Undergraduate Program Leadership Award (for Data Sciences Program), The Pennsylvania State University, 2022
- MEDIA Best Paper Award Runner Up, Elsevier, 2021
- Outstanding Reviewer Award, by Computers in Biology and Medicine (CBM) journal, 2015
- P.C. Rossin Assistant Professorship, Lehigh University, 2009
- Minority Junior Faculty Award for Career Enhancement, Christian R. and Mary F. Lindback Foundation, 2007
- Outstanding Reviewer Award, at the IEEE International Conf. on Computer Vision (ICCV), 2007
- DIMACS Award for Student-initiated Research Projects, Rutgers University, 2002

D. RESEARCH FUNDING

Competitively Awarded Research Grants

- “SCH: AI-Enhanced Multimodal Sensor-on-a-chip for Alzheimer’s Disease Detection,” National Institutes of Health, (with F. Ma, S. Huang, J. Hu, and C. Zhang), \$1,176,289, 9/1/2022 - 5/31/2026.
- “GCR: Understanding Virus Evolution Through Deep Raman Spectroscopy,” National Science Foundation, (with M. Terrones, Y. Yeh, E. Ghedin, and S. Huang), \$2,500,000, 10/01/2019 - 9/30/2024.
- “Groundwork for a Synchrotron MicroCT Imaging Resource for Biology (SMIRB),” National Institutes of Health, (with K.C. Cheng and P.L. Riviere), \$2,629,811, 8/15/2019 - 7/31/2023.
- “Evaluation of Potential Technology Pathway to Image Rock Properties,” Department of Energy, via Leidos, Inc., (with Z. Karpyn and P. Shokouhi), \$299,676, 3/3/2020 - 12/31/2023.
- “Computer-based Stroke Analysis,” Contract from Houston Methodist Hospital, (with J.Z. Wang), \$39,457, 8/15/2022 - 8/14/2023.
- “Prototyping Patient-Centric Personal Health Libraries,” via NSF Center for Health Organization and Transformation (CHOT), (with P. Mitra and F. Ma), \$50,000, 6/1/2021 - 5/31/2022.
- “EAGER: Portable device for rapid and label-free identification of COVID-19 using an ultra-miniature handheld Raman spectrometer,” National Science Foundation, (with M. Terrones, Y.T. Yeh, S. Huang, J. Robinson), \$300,000, 6/1/2020-5/31/2022.
- “Generative Adversarial Networks for Automatic Whole Slide Imaging Dataset Expansion and Analysis,” National Institutes of Health, National Library of Medicine, \$120,000, 9/24/2018 - 9/23/2020.
- “Rapid identification and mutation detection of Coronavirus by 2D-enhanced Raman spectroscopy,” PSU Huck/MRSEC/MRI Coronavirus Research Seed grant, (with Y.-T. Yeh, J. A. Robinson, S. Huang, H. Lu, E. Ghedin, and M. Terrones), \$160,000, 3/19/2020 - 9/18/2020.
- “Computational Phenotyping: Creating a High Performance Computing Infrastructure,” PSU Institute for Computational and Data Sciences (ICDS) seed grant, (with J. Liechty, K. Cheng, V.G. Honavar, Y. Zheng), \$25,000, 5/1/2020-4/30/2021.
- “Toward Dynamic Patient-centric Personal Health Libraries,” PSU ICDS & College of IST joint seed grant, (with P. Mitra, V.G. Honavar, F. Ma, K. Cheng), \$70,000, 5/1/2020-4/30/2021.
- “Integrating High-Throughput Materials Simulations and Deep Machine Learning for Optimizing Microstructures of Advance Energy Storage Materials,” PSU ICDS seed grant, (with L.Q. Chen), \$25,000, 5/1/2020-4/30/2021.
- “Learning to Generate Floor plans for Mass Customization of Housing,” PSU College of IST seed grant, (with Z. Zhou), 5/15/2020 - 5/14/2021.
- “Development of a Mobile AI-based Rapid Stroke Screening Method for Emergency Rooms,” PSU College of IST seed grant, (with J.Z. Wang), 5/15/2019 - 5/14/2020.

- “Mapping Reservoir Rock Composition of Conventional and Unconventional Deposits with Intelligent Imaging,” PSU College of EMS Energy Institute seed grant, (with Z. Karpyn), \$15,000, 5/15/2019 - 5/14/2020.
- “Medical Imaging and Analysis Enhancement via PCIe-based HPEC and 3D Holography,” Pennsylvania Infrastructure Technology Alliance (PITA), (with Accipiter Systems), \$40,000, 1/01/2018 - 3/31/2020.
- “Advanced Computational Methods for Anatomical and Functional Brain Data Analysis,” National Institutes of Health, National Library of Medicine, \$114,000, 9/21/2015 - 9/20/2018.
- “Endoplasmic Reticulum Stress and Hyperinsulinemia in Human Type 2 Diabetes and Equine Laminitis,” Lehigh University FIG grant, (with L. Cassimeris), \$30,000, 6/1/2016 - 6/1/2017.
- “Modeling and Analysis of Actin Filament Organization in Yeast,” National Institutes of Health, National Institute of General Medical Sciences, (with D. Vavylonis), \$1,357,748, 4/01/2012 - 12/31/2017.
- “A Secure, High Performance System Interconnect Architecture for Next Generation Data Centers,” Pennsylvania Infrastructure Technology Alliance, (with J. Li), \$36,075, 1/01/2015 - 6/30/2016.
- “Web-based Image Annotation and Retrieval; Computer-assisted Technologies for Medical Image Segmentation and Pattern Recognition,” National Institutes of Health, National Library of Medicine, \$275,000, 9/01/2010 - 8/31/2015.
- “III-CXT-Small: Collaborative Research: Structuring, Reasoning, and Querying in a Very Large Medical Image Database,” National Science Foundation, (with D. Lopresti), \$229,519, 9/01/2008 - 8/31/2011.
- “Computational Analysis and Modeling of Contractile Ring Assembly,” National Institutes of Health, National Institute of General Medical Sciences, (with D. Vavylonis), \$385,515, 9/01/2008 - 8/31/2011.
- “Technologies for Computer-Assisted Biomedical Image Segmentation and Content-based Image Retrieval through Web Browsers,” National Institutes of Health, National Library of Medicine, \$65,000, 9/15/2009 - 9/14/2010.
- “Network computing for biomedical image processing; cervigram segmentation,” National Institutes of Health, National Library of Medicine, \$55,000, 9/01/2008 - 08/31/2009.
- “Segmentation of Uterine Cervix Images by Support Vector Machine Methods,” National Institutes of Health, National Library of Medicine, \$24,900, 9/20/2007 - 9/19/2008.
- “A Physically-based Heart Model for Segmentation, Motion Analysis and Disease Classification,” Christian R. and Mary F. Lindback Foundation, \$20,000, 6/01/2007 - 5/31/2008.
- “Novel Methods and Applications for Chemical Image Analysis,” Air Products and Chemicals, Inc., (with R. Nagel, and A. Esmaili), \$80,000, 9/01/2007 - 12/31/2010.
- “Novel Methods and Applications for Chemical Image Analysis,” Pennsylvania Infrastructure Technology Alliance, (with R. Nagel), \$44,000, 3/01/2008 - 8/31/2009.

Competitively Awarded Training Grants

- “Analysis of actin cytoskeleton structures using active contours,” Biosystems Dynamics Summer Institute (BDSI), Howard Hughes Medical Institute and Lehigh University, (with D. Vavylonis), \$30,000, 6/01/2010 - 8/01/2010.
- “Actin filament polymerization: modeling of elongation kinetics based on analysis of TIRFM images,” Biosystems Dynamics Summer Institute (BDSI), Howard Hughes Medical Institute and Lehigh University, (with D. Vavylonis), \$29,000, 6/01/2009 - 8/01/2009.

E. EDITORIAL REVIEW BOARD MEMBERSHIP FOR SCHOLARLY PUBLICATIONS

Editorial Review Board Membership for Journals

Associate Editor for Medical Image Analysis (MEDIA) journal, 2021 - present

Associate Editor for Computerized Medical Imaging and Graphics (CMIG) journal, 2021 - present

Computerized Medical Imaging and Graphics Journal Special Issue on “Learning with Imperfect Data for Medical Image Analysis,” Co-Editor, Jun. 2023 - present

Associate Editor for Computer Vision and Image Understanding (CVIU) journal, 2014-2023

Medical Image Analysis Journal Special Issue on “Explainable and Generalizable Deep Learning Methods for Medical Image Computing”, Co-Editor, May 2021 - Oct. 2022

Handling Editor for Computers in Biology and Medicine (CBM) journal, 2013-2018

Reviewer for Journals

IEEE Transactions on Pattern Analysis and Machine Intelligence

Medical Image Analysis
 IEEE Transactions on Medical Imaging
 Computer Vision and Image Understanding
 International Journal of Computer Vision
 IEEE Transactions on Biomedical Engineering
 IEEE Transactions on Visualization and Computer Graphics
 IEEE Transactions on Image Processing
 IEEE Transactions on Neural Networks and Learning Systems
 Computerized Medical Imaging and Graphics
 Frontiers
 Image and Vision Computing
 Pattern Recognition
 Signal Processing
 Machine Vision and Applications
 Graphical Models
 Computer-aided Design
 NeuroComputing
 NPJ Computational Materials
 The Visual Computer
 Cytometry
 International Journal of Biomedical Imaging
 Medical Physics
 Micron

F. SCHOLARLY PRESENTATIONS

Invited Talks

- “Generating Synthetic Images and Videos for Data Augmentation and Sharing in Medical Applications,” Invited talk at the CVPR Medical Computer Vision Workshop, Jun. 18, 2023.
- “Synthetic Data Augmentation for Improved Medical Image Classification and Segmentation,” Invited talk at Olympus Japan, Virtual, Mar. 9, 2023.
- “Synthetic Data Augmentation for Improved Medical Image Classification and Segmentation,” Keynote talk at the MICCAI Workshop on Medical Image Learning with Noisy and Limited Data, Sep. 21, 2022.
- “Deep Learning Models for Medical Image Synthesis and Segmentation,” at Stony Brook University, BMI Grand Rounds Seminar Series, Virtual, Oct. 20, 2021.
- “Deep Learning Models for Medical Image Synthesis and Segmentation,” at University of Houston, Virtual, Oct. 11, 2021.
- “Learning Biomarkers from Biomedical Image Data,” at Penn State College of Medicine, Dec. 1, 2020.
- “Knowledge Discovery Within Images,” at Penn State Data Science Community Seminar Series, Apr. 20, 2020.
- “Learning Biomarkers from Biomedical Image Data,” at Rutgers University, New Brunswick, NJ, Nov. 25, 2019.
- “Learning Biomarkers from Biomedical Image Data,” at George Mason University, Fairfax, VA, Oct. 24, 2019.
- “Generative Adversarial Networks for Image Synthesis and Segmentation,” at College of IST Data Science Seminar Series, Penn State University, University Park, PA, Oct. 2, 2018.
- “Knowledge Discovery Within Images,” at Millennium Cafe, Penn State University, University Park, PA, Sept. 25, 2018.
- “SegAN: Adversarial Network with Multi-scale L_1 Loss for Medical Image Segmentation,” at The National Library of Medicine, Bethesda, MD, Sept. 19, 2017.
- “StackGAN: Text to Photo-realistic Image Synthesis,” at The National Library of Medicine, Bethesda, MD, Jan. 10, 2017.
- “Cervical Cancer Screening based on Images and Multiple Integrated Data Sources,” at The National Library of Medicine, Bethesda, MD, Mar. 24, 2015.
- “Object Matching using Affine Invariants and Linear Programming,” at Zhejiang University, Hangzhou, China, Jul. 19, 2014.
- “3D Actin Network Centerline Extraction with Multiple Active Contours,” at Ohio State University, Columbus, OH, Feb. 2014.

- “A Data-driven Image Interpretation System for Making Diagnosis Decisions in Cervical Screenings,” at Tsinghua University, Beijing, China, March 2013.
- “A Parallel Cellular Automata on the GPU for Interactive Brain Tumor Segmentation,” High Performance Computing Day at Lehigh University, Apr. 2011.
- “Deformable Object Models for Segmentation and Matching,” at Drexel University, Philadelphia, PA, Feb. 2011.
- “Nonrigid Shape Registration and Object Matching,” at University of Pennsylvania, Philadelphia, PA, Dec. 2010.
- “Analysis of Actin Cytoskeleton using Active Contour and Active Surface Models,” at Janelia Farm/HHMI Conference on “What Can Computer Vision Do for Neuroscience and Vice Versa?”, Ashburn, VA, Nov. 2010.
- “Markup SVG - A Content Aware Image Abstraction for Online Image Annotation,” at Tsinghua University, Beijing, China, Sept. 2010.
- “Deformable Shape and Appearance Models for Segmentation and Registration,” at Siemens Corporate Technology, Beijing, China, Sept. 2010.
- “Object Models for Boundary Extraction with Application to Medical Image Analysis,” at Temple University, Philadelphia, PA, Sept. 2009.
- “Deformable Shape and Appearance Models for Segmentation and Registration,” at Tsinghua University, Beijing, China, Jun. 2009.
- “Computational Analysis of Cellular Images,” COT (Center for Optical Technologies) Workshop on Advanced Biophotonic Imaging Technologies at Lehigh University, Oct. 2008.
- “Extracting Quantitative Information from Pictorial Input,” Applied Statistical Sciences Roundtable Seminar at Air Products and Chemicals, Inc., Sept. 2008.
- “High Performance Computing in Biomedical Image Analysis and Visualization,” High Performance Computing Day at Lehigh University, Apr. 2008.
- “Free-form Deformable Shape and Appearance Models,” at Boston University, Boston, MA, Sept. 2007.
- “Free-form Deformable Shape and Appearance Models,” at City College and the Graduate Center, City University of New York, New York, NY, May 2007.
- “CISL: Cervical Image Segmentation by Learning from Ground Truth Database,” at National Library of Medicine, Bethesda, MD, Mar. 2007.
- “Using Implicit Shape Representation for Registration and Segmentation,” at Stevens Institute of Technology, Hoboken, NJ, Nov. 2006.
- “Free Form Deformable Models,” at Univ. of North Carolina - Chapel Hill, Chapel Hill, NC, Apr. 2006.
- “Free Form Deformable Models,” at Lehigh University, Bethlehem, PA, Mar. 2006.
- “Integrating Shape and Appearance for Deformable Modeling and Segmentation,” at Siemens Corporate Research, Princeton, NJ, Feb. 2005.
- “Integrating Shape and Appearance for Deformable Modeling and Segmentation,” at Siemens Medical Solutions, Malvern, PA, Mar. 2005.
- “Hybrid Image Registration using Salient Region Features,” at Siemens Corporate Research, Princeton, NJ, Jul. 2004.

G. TEACHING AND RESEARCH ADVISING

Courses Taught

Instructor, College of Information Sciences and Technology, The Pennsylvania State University

- DS 305: Algorithmic Methods and Tools
Taught in Spring 2023
- DS 200: Introduction to Data Science
Taught in Fall 2022
- DS 397: Algorithmic Methods and Tools
Taught in Spring 2022
- IST 597: Machine Learning in Healthcare
Taught in Spring 2021
- DS 220: Data Management for Data Sciences
Taught in Fall 2020
- PSU 17: First-Year Seminar College of IST
Taught in Fall 2020, Fall 2021

- DS 330: Visual Analytics for Data Sciences
Taught in Fall 2019, Fall 2021
- IST 210: Organization of Data
Taught in Fall 2018, Fall 2019
- IST 597: Machine Learning Methods in Biomedical Image Informatics
Taught in Spring 2019

Instructor, Computer Science and Engineering Dept., Lehigh University

- CSE 261: Discrete Structures
Taught in Spring semesters 2012, 2013, 2014, 2016, 2017
- CSE 398/498: Deep Learning
Taught in Fall 2017
- CSE 313: Computer Graphics
Taught in Fall semesters 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015
- CSE 320/420: Biomedical Image Computing
Taught in Fall 2009, Spring 2012, Spring 2013, Fall 2014, Fall 2015
- CSE 319/419: Image Analysis and Graphics
Taught in Spring semesters 2007, 2008, 2009, 2010, 2011
- CSE 331: User Interface Systems and Techniques
Taught in Fall 2008

Advising – Research Direction

Doctoral Students

- Tian Shen, 2007-2011 (graduated with Ph.D. in May 2011; currently working as a Principal Research Scientist at SenseTime, Shanghai, China)
- Hongsheng Li, 2008-2012 (graduated with Ph.D. in September 2012; currently working as a tenured Associate Professor at the Chinese University of Hong Kong, Hong Kong)
- Edward Kim, 2008-2013 (graduated with Ph.D. in May 2013; currently working as a tenured Associate Professor at Drexel University, Philadelphia, PA)
- Yaoyao Zhu, 2007-2013 (graduated with Ph.D. in May 2013; currently working as a Senior Software Engineer at Checkpoint Systems, Boston, MA)
- Ting Xu, 2009-2016 (graduated with Ph.D. in August 2016; currently working as an Imaging Scientist at Konica Minolta Laboratory, San Mateo, CA)
- Tao Xu, 2013-2018 (graduated with Ph.D. in August 2018; currently working as an Applied Research Scientist at Cruise, San Francisco, CA)
- Yuan Xue, 2015-2021 (graduated with Ph.D. in May 2021; currently working as a tenure-track assistant professor at Ohio State University, Columbus, OH)
- Fengting Yang, 2021-2022 (co-advised with Z. Zhou; graduated with Ph.D. in May 2022; currently working as an Applied Research Scientist at Meta, Menlo Park, CA)
- Yanglan Ou, 2018-2023 (graduated with Ph.D. in May 2023)
- Rui Yu, 2021-2023 (co-advised with Z. Zhou and J. Carroll; graduated with Ph.D. in August 2023; currently working as a tenure-track assistant professor at University of Louisville, Louisville, KY)
- Amogh Adishesha, 2019-2023 (graduated with Ph.D. in August 2023; currently working as an Applied Scientist at captions.ai)
- Haomiao Ni, 2019 - present
- Jiachen Liu, 2021 - present
- Jiarong (Karen) Ye, 2020 - present
- Matthew Poska, 2021 - present
- Peng Jin, 2021 - present

Undergraduate Students

- Advised 18 undergrad students for their research projects, 2019-2023, at Penn State.
- Advised 12 undergraduate students for their senior capstone projects, 2021, at Penn State.
- Advised 34 undergrad students for their research projects, 2006-2017, at Lehigh.

Master's Students

- Advised three Master's theses, 2019-2021, at Penn State.

- Advised 3 other Master's students for research project or independent study, 2018-2021, at Penn State.
- Advised 11 Master's students for their independent study or Master's thesis, 2006-2017, at Lehigh

Doctoral Committee Member for Other Ph.D. Students

- Served or serving on the doctoral dissertation committees for 20 Ph.D. students at Penn State, 2018-2023.
- Served on the doctoral dissertation committees for 20 Ph.D. students at Lehigh University, Rutgers University, and Drexel University, 2006 - 2022.

Advising – Other than Research Direction

- Advising undergraduate students in the Applied Data Sciences Option of the Data Sciences program on choosing their application focus areas, in the College of IST at Penn State University, 2019-2022.
- Advisor for Computer Science majors from College of Arts & Sciences and College of Engineering: advised approximately 40 undergraduate students each year, at Lehigh University, 2012-2018.
- Advisor for First Year Students: advised approximately 10 freshmen engineering students each year, at Lehigh University, 2015-2018.
- Advisor for Lehigh Integrated Business and Engineering (IBE) students who choose the Computer Science concentration: advised approximately 5 IBE-CS students each year, 2016-2018.

H. SERVICE

University-level Service at Penn State University

- Member of the Graduate Council, 2021-2023
- Member of the Inter-College Data Sciences Task Force, 2020-present

Service in the College of IST at Penn State University

- Associate Dean for Undergraduate Studies, July 2023-present
- Member of the Undergraduate Advisory Committee, 2018-present
- Program Coordinator of Data Sciences Program in the College of IST, 2019-present
- Chair of the Human-Centered AI tenure-track faculty search committee, 2022-2023
- Member of the Fixed-term Faculty Promotion Committee, 2019-2023
- Chair of DS 220 Course Committee, 2020-2023
- Chair of the DS/AI tenure-track faculty search committee, 2021-2022
- Member of the Graduate Recruiting Committee, 2019-2021
- Member of the Institute for Computational and Data Sciences (ICDS) Coordination Committee, 2019-2021
- Advisory Committee Member of the Center for Immersive Experience, 2019-2021
- Coordinator of IST Distinguished Lecture Series, 2018-2021
- Member of a First-year PhD Qualifying Examination Committee, 2019, 2020, 2021
- Chair of AI tenure-track and AI/DS teaching faculty search committee, 2019-20
- Chair of IST 210 Course Committee, 2019-20
- Member of the ADUGS Search Committee, 2019-20
- Reviewer of IST seed grant proposals, 2019 & 20
- Presenter at IST Parents' Weekend Open House, Oct. 2019 & Oct. 2020
- Panelist and presenter at New Faculty's Orientation, Aug. 2019
- Member of a Finance Manager Staff Search Committee, 2019
- First-year PhD Qualifying Examination Committee, 2019 & 20
- Member of the DS Faculty Search Committee, for ICS co-hire with CoM and HHD, 2018-19
- Member of the Undergraduate Advisory Committee, 2018-19
- Member of the FAR Research Faculty Review Committee, 2018-19

Service at Lehigh University

- Chair of the CSE Publicity and Web Committee, 2017-18
- Member of the Lehigh Bioengineering Faculty Search committee, 2017-18
- Member of the CSE Graduate Admissions Committee, 2006-17

- Advisor for CS majors from Engineering College and Arts & Sciences College, 2012-15
- Advisor for IBE students with CS concentration, 2016-18
- Member of a CSE Faculty Search Committee, 2008-17
- Member of the University Graduate and Research Committee, 2013-16
- Gave short talks on Candidate's day and Engineering Open House day, 2008-16
- Chair of a CSE Department Faculty Search Committee, 2013-14, 2015-16
- Chair of the CSE Department Colloquium Committee, 2011-12
- Member of the CSE Publicity and Web Committee, 2008-11
- Member of the CSE Curriculum Development Committee, 2006-08
- Member of the CSE Community Committee, 2009-11
- Member of the CSE Computer Facilities Committee, 2008-09

Professional Service in Research Community

- Associate Editor for the Medical Image Analysis journal, since 2021.
- Associate Editor for the Computerized Medical Imaging and Graphics journal, since 2021.
- Associate Editor for the Computer Vision and Image Understanding journal, 2014-2023.
- Area Chair for the 2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022-23.
- Invited Panelist at the Annual MICCAI Society WiM (Women in Miccai) Event, speaking about stories of success and challenges aimed for female scientists, September 2022.
- Program Co-Chair and co-organizer for the 2nd MICCAI Workshop on Data Augmentation, Labeling, and Imperfections (DALI), 2022.
- Area Chair for the 2022 Asian Conference on Computer Vision (ACCV), 2022.
- Area Chair for 25th International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2022.
- Area Chair and Session Chair for the 2022 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
- Area Chair for the 2022 AAAI Conference on Artificial Intelligence (AAAI), 2021.
- Program Co-Chair and co-organizer for the 1st MICCAI Workshop on Data Augmentation, Labeling, and Imperfections (DALI), 2021
- Area Chair for 24th International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2021.
- Program committee member and co-organizer for 6th IEEE International Workshop on Computer Vision for Microscopy Image Analysis (CVMI), 2021.
- Area Chair for 22nd International Conf. on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2019.
- Co-organizer for the Penn State Symposium on Artificial Intelligence, Data Sciences, and Informatics for Precision Health, 2018.
- Handling Editor for the Computers in Biology and Medicine Journal, 2013-2018.
- Panelist and reviewer for proposals submitted to: NIH study section on Small Business: Aging, Auditory, Vision and Low Vision Technologies (NV12) 2023; NIH study section on Imaging Technology Development (ITD) 2022; CRA/CCC Computing Innovation (CI) Fellows program 2021; NIH Imaging Technology Development (ITD) study section 2021; Biotechnology and Biological Sciences Research Council (BBSRC) UK 2019; National Medical Research Council (NMRC) Singapore TDEP panel 2015; NSF-IIS-Human Centered Computing 2010; NSF-IIS-Robust Intelligence 2009; NSF-IIS-Bio 2009; National Institute for Health Research (NIHR) UK NEAT program 2008.
- Regular reviewer for research journals including IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI), Medical Image Analysis (MedIA), IEEE Trans. on Medical Imaging (TMI), International Journal of Computer Vision (IJCV), Computer Vision and Image Understanding (CVIU), IEEE Trans. on Image Processing (TIP), and Computerized Medical Imaging and Graphics (CMIG), since 2005.
- Program committee member and reviewer for international conferences: IEEE/CVF Computer Society Conf. on Computer Vision and Pattern Recognition (CVPR), since 2006; International Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI), since 2007; International Conf. on Computer Vision (ICCV), since 2005; IEEE International Symposium on Biomedical Imaging (ISBI), since 2008; MICCAI workshop on High Performance Computing (HP-MICCAI), 2010-2014; IEEE International Conf. on Pattern Recognition (ICPR), 2010-2014; International Symposium on Computer-based Medical Systems (CBMS), 2010-2013; ACM Conference on Computer Graphics and

Interactive Techniques (SIGGRAPH), 2011-2014; SIGGRAPH-ASIA 2011-2012; International Conf. on Computer Vision Theory and Applications, 2008, 2010; European Conf. on Computer Vision (ECCV), 2010; Asian Conf. on Computer Vision (ACCV), 2010; International Symposium on Visual Computing (ISVC), 2009, 2011; IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), 2009; IEEE International Conf. on Advanced Video and Signal Based Surveillance (AVSS), 2008; Graphic Interface 2008; Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR) 2005.

- Session chair and program committee member for 6th International Conference on Functional Imaging and Modeling of the Heart (FIMH), 2011.
- Session chair and program committee member for International Workshop on High-Performance Medical Image Computing for Image-Assisted Clinical Intervention and Decision-Making, 2010.
- Co-chair and co-organizer for “Deformable Models: Theory and Applications,” A Special Track at International Symposium on Visual Computing (ISVC), 2009.