

Zhangyang (Atlas) Wang

CONTACT	Email: atlaswang@tamu.edu	Web: atlaswang.com
RESEARCH INTERESTS	<ul style="list-style-type: none">• <i>Machine Learning & Data Analytics</i>: deep learning, sparse and low-rank modeling, pattern classification, dimensionality reduction, clustering, quantization.• <i>Computer Vision & Image Processing</i>: visual recognition, object detection, image and video restoration & enhancement, image compression, image hashing.• <i>Cognitive Science & Biomedical Informatics</i>: brain-inspired vision model; computer vision and machine learning applications in personalized healthcare.	
EDUCATION	University of Illinois at Urbana-Champaign (UIUC) Ph.D., Electrical and Computer Engineering (ECE), 2016 <ul style="list-style-type: none">• Thesis Topic: <i>Task-Specific and Interpretable Feature Learning</i>• Advisor: Professor Thomas S. Huang University of Science and Technology of China (USTC) B.E., Electronic Engineering and Information Science (EEIS), 2012	
PROFESSIONAL EXPERIENCE	Assistant Professor Department of Computer Science and Engineering, Texas A&M University (TAMU), College Station, TX	Starting from Aug 2017
	Research Scientist Department of Industrial and Systems Engineering, University of Washington (UW), Seattle, WA	Feb 2017 to Jul 2017
	Research Fellow Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL	Aug 2016 to Dec 2016
	Visiting Researcher Department of Electrical and Computer Engineering, University of Minnesota (UMN), Minneapolis, MN	Jul 2016 to Aug 2016
	Research Assistant Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL Supervisor: Prof. Thomas S. Huang	Aug 2012 to Jul 2016
	Research Intern Cloud Computing and Storing (CCS) group, Microsoft Research, Redmond, WA Supervisors: Dr. Jin Li, Dr. Lei Zhang, Dr. Yuxiao Hu	May 2015 to Aug 2015
	Research Intern Imagination Lab, Adobe Research, San Jose, CA Supervisors: Dr. Hailin Jin, Dr. Jianchao Yang, et. al.	May 2014 to Aug 2014
	Research Intern US Army Research Laboratory, Adelphi, MD Supervisor: Dr. Nasser Nasrabadi	May 2013 to Aug 2013
	Research Mentor P.U.R.E research program, University of Illinois at Urbana-Champaign, Urbana, IL	Aug 2012 to May 2013
	Research Assistant Multimedia Computing and Communication Lab, University of Science and Technology of China, Hefei, China Supervisors: Prof. Houqiang Li, Prof. Qing Ling, Prof. Chang Wen Chen, et. al.	Aug 2010 to Jul 2012

SELECTED
HONORS

Research Awards

- Amazon Catalyst Innovation Award Finalist, UW Feb 2017
- Dissertation Completion Fellowship, UIUC Graduate College¹ May 2016
- Thomas and Margaret Huang Award for Graduate Research², UIUC Apr 2016
- AAAI 2016 Best Presentation Award Finalist Jan 2016
- Baidu Research Fellowship³ Nov 2015
- Cognitive Science/Artificial Intelligence Award, UIUC May 2015
- Fall 2012 P.U.R.E. Symposium Audience Favorite Award, UIUC Dec 2012
- Outstanding Undergraduate Research Program Scholarship, USTC Oct 2011
- Honorable Winner of Mathematical Contest in Modeling (MCM) Apr 2011

Merit-based Scholarships

- Chinese Government Award for Outstanding Graduates Abroad Mar 2016
- Outstanding Graduate Scholarship, Anhui Province, P.R.China Apr 2012
- Outstanding Student Scholarship, USTC 2008, 2009, 2010, 2011

Travel Awards

- CVPR 2016 Doctoral Consortium Apr 2016
- AAAI Scholarship Dec 2015
- ACM MM 2015 Travel Award Aug 2015
- CVPR 2015 Google Travel Award Jun 2015

Media Coverage

- “Atlas Wang recognized by Chinese government, Baidu, and Illinois”, *UIUC ECE Department Headline News*, highlighting my research accomplishments, July 2016.
- “Photoshop gets Shazam for fonts artificial intelligence tool”, *BBC News*, May 2016.
- “Adobe Photoshop unveils artificial intelligence tool to identify fonts from 20,000 typefaces”, *International Business Times*, May 2016.
- “How Adobe Sparks Innovation by Paying People to Fail”, *Fortune*, April 2016.
- “Wang develops font recognition system for Adobe”, *UIUC ECE Department Headline News*, highlighting my fruitful collaboration with Adobe, December 2015.
- More media coverage sources available upon requests: YouTube, Twitter, Nvidia Blog, Adobe Blog, UIUC Alumni Magazine, CNET.com, Business Spectator, etc.

Software Products

- DeepFont, an *Adobe Photoshop*[®] built-in feature, as one of its leading contributors. Please refer to the [official Photoshop manual](#).
- *Microsoft Prajna*[®] Distributed Machine Learning ToolBox, as one of its co-contributors.

JOURNAL
PUBLICATIONS

1. X. Wang, B. Fan, S. Chang, **Z. Wang**, X. Liu, D. Tao, and T. Huang, “Greedy Batch-based Minimum-cost Flows for Tracking Multiple Objects”, *IEEE Transactions on Image Processing (TIP)*, vol. 26, no. 10, pp. 4765-4776, Oct. 2017.
2. **Z. Wang**, Y. Yang, Z. Wang, S. Chang, J. Yang and T. Huang, “Learning Super-Resolution Jointly from External and Internal Examples”, *IEEE Transactions on Image Processing (TIP)*, vol. 24, no. 11, pp. 4359-4371, Nov. 2015.
3. **Z. Wang**, N. Nasrabadi, and T. Huang, “Semi-supervised Hyperspectral Classification using Task-driven Dictionary Learning with Regularization”, *IEEE Transactions on Geosciences and Remote Sensing (TGRS)*, vol. 56, pp. 1161-1173, Mar. 2015.

¹As the only recipient from the ECE department. In 2016, 29 Ph.D. students from 27 departments were selected for the prestigious fellowship, by UIUC graduate college.

²A university-level distinction that annually recognizes research in Human-Computer Interaction.

³A highly competitive fellowship program that provides two years of financial support for Ph.D. students in computer science. Awarded among a total of 10 recipients worldwide.

4. **Z. Wang**, H. Li, Q. Ling, and W. Li, “Robust Temporal-Spatial Decomposition and Its Applications in Video Processing”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 23, no. 3, Mar. 2013.
5. H. Li, Z. Lu, **Z. Wang**, and W. Li, “Detection of Blotch and Scratch in Video Based on Video Decomposition”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 23, no. 11, Nov. 2013.
6. Z. Yu, H. Li, **Z. Wang**, Z. Hu, and C. Chen, “Multi-level Video Frame Interpolation: Exploiting the Interactions”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 23, no. 7, Jul. 2013.

BOOKS &
CHAPTERS

1. Z. Wang, J. Yang, H. Zhang, **Z. Wang**, Y. Yang, D. Liu and T. Huang, “Sparse Coding and Its Applications in Computer Vision”, *World Scientific Books. ISBN: 978-981-4725-04-0*.⁴
2. **Z. Wang**, Y. Fu, and T. Huang, “Deep Learning through Sparse and Low-Rank Modeling”, *Elsevier*, preprint.
3. **Z. Wang**, et.al., Chapter “Deep Learning for Font Recognition and Retrieval”, in the book “Deep Semantic Recognition”, *CRC Press-Taylor & Francis*, preprint.

SELECTED
CONFERENCE
PUBLICATIONS

1. B. Li*, X. Peng, **Z. Wang**, J. Xu, and D. Feng, “AOD-Net: All-in-One Dehazing Network”, *In Proceedings of IEEE International Conference on Computer Vision (ICCV)*, 2017⁵.
2. D. Liu, Z. Wang, Y. Fan, X. Liu, **Z. Wang**, S. Chang, and T. Huang, “Robust Video Super-Resolution with Learned Temporal Dynamics”, *In Proceedings of IEEE International Conference on Computer Vision (ICCV)*, 2017.
3. B. Cheng*, **Z. Wang**, Z. Zhang, Z. Li, D. Liu, J. Yang, S. Huang, and T. Huang, “Robust Emotion Recognition from Low Quality and Low Bit Rate Video: A Deep Learning Approach”, *In Proceedings of the 7-th Conference on Affective Computing and Intelligent Interaction (ACII)*, 2017.
4. **Z. Wang**, J. Liu, S. Huang, X. Wang and S. Chang, “Transformed Anti-Sparse Learning for Unsupervised Hashing”, *In Proceedings of British Machine Vision Conference (BMVC)*, 2017.
5. **Z. Wang**, S. Huang, J. Zhou and T. Huang, “Doubly Sparsifying Network”, *In Proceedings of International Joint Conferences on Artificial Intelligence (IJCAI)*, 2017.
6. **Z. Wang**, S. Chang, Y. Yang, D. Liu and T. Huang, “Studying Very Low Resolution Recognition Using Deep Networks”, *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
7. **Z. Wang**, D. Liu, S. Chang, Q. Ling, Y. Yang and T. Huang, “ D^3 : Deep Dual-Domain Based Fast Restoration of JPEG-Compressed Images”, *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
8. **Z. Wang**, S. Chang, Y. Yang, Q. Ling, and T. Huang, “Learning A Deep ℓ_∞ Encoder for Hashing”, *In Proceedings of International Joint Conferences on Artificial Intelligence (IJCAI)*, 2016.

⁴Z. Wang is the sole author of: Chapter 8 “Hyper-Spectral Image Modeling”, as well as a major co-author of Chapter 3 “Image Super Resolution” and Chapter 6 “Clustering”.

⁵* denotes that the first author is a student or mentee (co-)advised by Z. Wang.

9. **Z. Wang**, S. Chang, J. Zhou, M. Wang and T. Huang, “Learning A Task-Specific Deep Architecture for Clustering”, *In Proceedings of SIAM Conference on Data Mining (SDM)*, 2016.
10. **Z. Wang**, Q. Ling, and T. Huang, “Learning Deep ℓ_0 Encoders”, *In Proceedings of the 30-th AAAI Conference on Artificial Intelligence (AAAI)*, 2016.
11. **Z. Wang**, J. Yang, H. Jin, E. Shechtman, A. Agarwala, J. Brandt, and T. Huang, “DeepFont: Recognize Your Font From An Image”, *In Proceedings of ACM International Conference on Multimedia (ACM MM)*, 2015. [Full Paper]
12. **Z. Wang**, Y. Yang, S. Chang, J. Li, S. Fong, and T. Huang, “A Joint Optimization Framework of Sparse Coding and Discriminative Clustering”, *In Proceedings of International Joint Conferences on Artificial Intelligence (IJCAI)*, 2015.
13. Y. Yang, **Z. Wang**, J. Yang, J. Han, and T. Huang, “Regularized ℓ_1 -Graph for Data Clustering”, *In Proceedings of British Machine Vision Conference (BMVC)*, 2014.

PREPRINTS

1. B. Li*, X. Peng, **Z. Wang**, J. Xu, and D. Feng, “An All-in-One Network for Dehazing and Beyond”, *arXiv:1707.06543*, 2017.

OTHER PUBLICATIONS

1. R. Timofte, ... , **Z. Wang**, ... , et. al. “NTIRE 2017 Challenge on Single Image Super-Resolution: Methods and Results”, *In Proceedings of IEEE CVPR New Trends in Image Restoration and Enhancement workshop and challenge on image super-resolution (CVPR NITRE)*, 2017. [Challenge Report]
2. Y. Fan, H. Shi, J. Yu, D. Liu, W. Han, H. Yu, **Z. Wang**, X. Wang, and T. Huang, “Balanced Two-Stage Residual Networks for Image Super-Resolution”, *In Proceedings of IEEE CVPR New Trends in Image Restoration and Enhancement workshop and challenge on image super-resolution (CVPR NITRE)*, 2017.
3. H. Yu, D. Liu, H. Shi, H. Yu, **Z. Wang**, X. Wang, B. Cross, M. Bramlet, and T. Huang, “Computed Tomography Super-Resolution Using Convolutional Neural Networks”, *In Proceedings of IEEE International Conference on Image Processing (ICIP)*, 2017.
4. S. Huang, J. Zhou, **Z. Wang**, Q. Ling and Y. Shen, “Biomedical Informatics with Optimization and Machine Learning”, *EURASIP Journal on Bioinformatics and Systems Biology (JBSB)*, 2017. [Editorial Paper]
5. **Z. Wang**, D. Liu, S. Chang, F. Dolcos, D. Beck, and T. Huang, “Image Aesthetics Assessment using Deep Chatterjee’s Machine”, *In Proceedings of International Joint Conference on Neural Networks (IJCNN)*, 2017.
6. J. Yu, Y. Jiang, **Z. Wang**, Z. Cao and T. Huang, “UnitBox: An Advanced Object Detection Network”, *In Proceedings of ACM International Conference on Multimedia (ACM MM)*, 2016.
7. Y. Yang, **Z. Wang**, Z. Wang, S. Chang, D. Liu, H. Shi, and T. Huang, “Epitomic Image Super-Resolution”, *In Proceedings of the 30-th AAAI Conference on Artificial Intelligence (AAAI)*, 2016. [Best Presentation Award Finalist]
8. **Z. Wang**, J. Yang, H. Jin, et. al., “DeepFont: A System for Font Recognition and Similarity”, *In ACM International Conference on Multimedia (ACM MM)*, 2015. [Tech Demo]

9. **Z. Wang**, Y. Yang, J. Yang and T. Huang, “Designing A Composite Dictionary Adaptively From Joint Examples”, *In Proceedings of IEEE Conference on Visual Communications and Image Processing (VCIP)*, 2015.
10. **Z. Wang**, Y. Yang, Z. Wang, S. Chang, W. Han, J. Yang, and T. Huang, “Self-Tuned Deep Super Resolution”, *In Proceedings of IEEE CVPR workshop on Deep Learning in Computer Vision (CVPR DeepVision)*, 2015.
11. **Z. Wang**, J. Yang, H. Jin, E. Shechtman, A. Agarwala, J. Brandt, and T. Huang, “Real-World Font Recognition using Deep Network and Domain Adaptation”, *International Conference on Learning Representations (ICLR)*, workshop, 2015.
12. **Z. Wang**, X. Liu, S. Chang, J. Zhou, G. Qi, and T. Huang, “Decentralized Recommender Systems”, *In Proceedings of SDM workshop on Machine Learning for Recommender Systems (SDM MLRec)*, 2015.
13. **Z. Wang**, Z. Wang, S. Chang, J. Yang and T. Huang, “A Joint Perspective Towards Image Super-Resolution: Unifying External and Self Examples”, *In Proceedings of IEEE Winter conference on Applications of Computer Vision (WACV)*, 2014.
14. Y. Yang, F. Liang, S. Yan. **Z. Wang**, and T. Huang, “Nonparametric Pairwise Similarity for Clustering”, *In Proceedings of Advances in Neural Information Processing Systems (NIPS)*, 2014.
15. Y. Yang, X. Chu, **Z. Wang**, and T. Huang, “On A Theory of Non-parametric Pairwise Similarity for Clustering: Connecting Clustering to Classification”, *NIPS workshop on Modern Nonparametric Methods in Machine Learning*, 2014.
16. Z. Wang, **Z. Wang**, P. Huang, M. Moll, D. Grady, N. Nasrabadi, T. Huang, L. Kayraki, and M. Johnson, “Active Planning, Sensing and Recognition Using a Resource-Constrained Discriminant POMDP”, *In Proceedings of IEEE CVPR workshop on Multi-Sensor Fusion (CVPR MSF)*, 2014.
17. Y. Yang, **Z. Wang**, J. Yang, and T. Huang, “Data Clustering by Laplacian Regularized ℓ_1 -Graph”, *In Proceedings of the 28-th AAAI Conference on Artificial Intelligence (AAAI)*, 2014.
18. Z. Yu, **Z. Wang**, H. Li, Q. Ling and W. Li, “Video Error Concealment via Total Variation Regularized Matrix Completion”, *In Proceedings of IEEE International Conference on Image Processing (ICIP)*, pp.1633-1636, 2012.
19. Z. Yu, **Z. Wang**, Z. Hu, Q. Ling and H. Li, “Video Frame Interpolation Using 3-D Total Variation Regularized Completion”, *In Proceedings of IEEE International Conference on Image Processing (ICIP)*, pp.857-860, 2012.
20. **Z. Wang**, H. Li, Q. Ling and W. Li, “Mixed Gaussian-Impulse Video Noise Removal via Temporal-Spatial Decomposition”, *In Proceedings of IEEE International Symposium on Circuits and Systems (ISCAS)*, pp.1851-1854, 2012.

SELECTED
PATENTS

1. “Font Recognition and Font Similarity Learning Using Deep Neural Network”, *US Patent Number: 9501724* (Granted, 11/2016).
2. “A Method for Converting Interleaved Format Video into Progressive Format Video”, *Chinese Patent Number: CN102665060 B* (Granted, 07/2013).
3. “A Denoising Method and Device of Video Sequences”, *Chinese Patent Number: CN102685370 B* (Granted, 04/2013)

SELECTED PRESENTATIONS	Invited Talks at University Labs	
	• ECE Department, UMN	Jul 2016
	• BIMCR, Peking University	Jun 2016
	• EEIS & Automation Departments, USTC	Jun 2016, Nov 2015
	• EECS Department, Northwestern University	May 2016
	• ISE Department, University of Washington	Apr 2016
	• CS Department, University of Texas at San Antonio	Dec 2015
	• ECE Department, UIUC	May 2015, Dec 2014, May 2013
	• Math Department, UCLA	Feb 2014
	• CS Department, UIUC	Apr 2013
	Invited Talks at Companies and Research Institutions	
	• Banner Alzheimer's Institute, Phoenix, AZ	Jul 2017
	• Hulu, Beijing, China	May 2016
	• Microsoft Research Asia, Beijing, China	Nov 2015
	• Baidu Institute of Deep Learning, Beijing, China	Nov 2015
	• VALSE webinar	Jun 2015
	• Adobe Research, San Jose, CA	Aug 2014, Jan 2013
	• US Army Research Office, Adelphi, MD	Aug 2013, Jan 2013
	Oral Presentations at Conferences and Workshops	
	• IEEE CVPR, Honolulu, HI	Jul 2017
	• IJCAI, New York, NY	Jul 2016
	• SPARE workshop (Invited Talk), USTC, Hefei	Jun 2016
	• Chinese R Conference (Invited Talk), Beijing, China	May 2016
	• SDM, Miami, FL	May 2016
• AAAI, Phoenix, AZ	Feb 2016	
• ACM MM, Brisbane, Australia	Oct 2015	
• IEEE CVPR DeepVision, Boston, MA	Jun 2015	
• IEEE WACV, Steamboat, CO.	Mar 2014	
STUDENTS & MENTEES	Ph.D. students	
	• <i>Zhenyu Wu</i> , CSE@TAMU	09/2017 -
	• <i>Jianghao Shen</i> , CSE@TAMU	09/2017 -
	• <i>Xiaohan Chen</i> , CSE@TAMU	09/2017 -
	• <i>Sicheng Wang</i> , CSE@TAMU	09/2017 -
	External Ph.D. (or equivalent level) mentees	
	• <i>Bowen Cheng</i> , ECE@UIUC [Co-advising with Prof. Thomas Huang]	09/2017 -
	• <i>Boyi Li</i> , HUST & MSRA [Co-advising with Dr. Xiulian Peng and Dr. Ji-Zheng Xu]	09/2016 -
	• <i>Xiaofeng Zhang</i> , Automation@USTC [Co-advising with Prof. Qing Ling]	09/2016 -
	• <i>Ke Sun</i> , EEIS@USTC [Co-advising with Prof. Dong Liu]	05/2017 -
	M.S. students	
	• <i>Nitin Bansal</i> , CSE@TAMU	09/2017 -
	Undergraduates	
	• <i>Bowen Cheng</i> , ECE@UIUC	05/2016 - 05/2017
	• <i>Rusheng Liu</i> , Math@USTC	02/2017 - 05/2017
	• <i>Hanchao Deng</i> , ECE@UIUC	02/2013 - 05/2013
	• <i>Yiming Jiang</i> , CS@UIUC	08/2012 - 12/2012

TEACHING

- CSCE 689: Machine Learning Methods in Computer Vision (Fall 2017)

SERVICES

Journal Editorship

- *Guest Editor*, IEEE Transactions on Neural Networks and Learning Systems (TNNLS), Special Issue on Discriminative Learning for Model Optimization and Statistical Inference.
- *Guest Editor*, EURASIP Journal on Advances in Signal Processing (JASP) (previously *EURASIP Journal on Bioinformatics and Systems Biology (JBSB)*), Special Issue on Biomedical Informatics with Optimization and Machine Learning.
- *Associate Editor*, *Asia-Pacific Journal of Neural Networks and Its Applications*.

Conference Service

- *Area Chair*: ICIP 2017
- *Technical Program Committee*:
 - 2018: AAAI
 - 2017: CVPR, ACM MM, IJCAI, VCIP, IJCNN, PAKDD
 - 2016: ACM MM
- *Special Session Co-Chair*:
 - *VCIP 2017 Special Session*: “Regularization Techniques for High-Dimensional Visual Data Processing and Analysis”, St. Petersburg, FL, Dec 2017.
- *Tutorial Organizer*:
 - *CVPR 2017 Tutorial*: “Dealing with Reality: Low-Quality Visual Data Processing and Analytics”, Honolulu, Hawaii, Jun 2017.
 - *ECCV 2016 Tutorial*: “Deep Learning Meets Model Optimization and Statistical Inference”, Amsterdam, the Netherlands, Oct 2016.

Workshop Service

- *Organization Committee*: IJCAI BOOM workshop (2016, 2017).
- *Program Committee Co-Chair*: ICCV AMFG 2017.
- *Program Committee Member*: ACM MM 2015 MSR-Bing Image Retrieval Challenge.
- *Website Chair*: SDM MLRec 2016.

Journal Reviewer

- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Transactions on Cognitive and Developmental Systems (TCDS)
- IEEE Transactions on Big Data (TBD)
- IEEE Signal Processing Letters (SPL)
- IEEE Geoscience and Remote Sensing Letters (GRSL)
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)
- Pattern Recognition (PR), Elsevier
- Neurocomputing, Elsevier
- Pattern Recognition Letters (PRL), Elsevier
- Image and Vision Computing (IVC), Elsevier
- Journal of Biomedical Informatics (JBI), Elsevier
- Computer Methods and Programs in Biomedicine (CMPB), Elsevier
- Multimedia Tools and Applications (MTAP), Springer
- Machine Vision and Applications (MVA), Springer

- EURASIP Journal on Image and Video Processing (JIVP)
- EURASIP Journal on Advances in Signal Processing (JASP)
- EURASIP Journal on Bioinformatics and Systems Biology (JBSB)
- MDPI Remote Sensing
- MDPI Sensors

Conference Reviewer

- *2017*: CVPR, MICCAI, ACM MM, ICIP, IJCAI, IROS, IJCNN, PAKDD
- *2016*: NIPS, ACM MM, ICME, ICIP, AAAI, SDM
- *2015*: ACM MM, SDM, IJCAI, ICHI
- *2014*: ACM MM, ISCMI, ISCAS

Miscellaneous

- *IEEE Member*
- *External Proposal Reviewer*: US Army Research Office
- *External Ph.D. Thesis Reviewer*: University of Technology Sydney
- *Research Mentor*: UIUC P.U.R.E research program for undergraduates
- *Academic Mentor*: USTC Abroad Study Advisor-Advisee Program
- *Online Organization Member*: [VALSE](#)
- *Student Volunteer*: AAAI 2016