

Ming-Ching Chang

mchang2@albany.edu
<http://www.albany.edu/faculty/mchang2/>

(518) 437-4947
1215 Western Ave, UAB-424A
Albany, NY 12222, USA

Education

- 9/2001-9/2008 **Ph.D.**, Laboratory for Engineering Man/Machine Systems (LEMS), Division of Engineering, Brown University, USA. GPA: 3.93/4.0.
Thesis: *The Medial Scaffold for 3D Shape Modeling and Recognition*.
- 9/1996-6/1998 **Master of Science**, Dept. of Computer Science and Information Engineering (CSIE), National Taiwan University (NTU), Taiwan. GPA: 90.17/100 (3.89/4.0).
Thesis: *Fast Search Algorithms for IC Printed Mark Quality Inspection*.
- 9/1992-6/1996 **Bachelor of Science in Engineering**, Dept. of Civil Engineering, National Taiwan University.

Affiliation / Experience

- 9/2022-present **Associate Professor** (with Tenure), Department of Computer Science, College of Engineering and Applied Sciences (CEAS), **University at Albany, State University of New York (SUNY)**.
- 7/2021-present **Affiliated Researcher**, Center for GIS, RCHSS, **Academic Sinica**, Taiwan.
- 5/2021-present **Visiting Scholar** and Consultant, **Inventec Inc.**
- 2/2021-7/2021 **Visiting Assistant Professor**, Department of Computer Science, **National Central University**, supported by Ministry of Technology, Taiwan.
- 7/2018-9/2022 **Assistant Professor**, Department of Computer Science, College of Engineering and Applied Sciences (CEAS), **University at Albany, State University of New York (SUNY)**.
- 9/2016-7/2018 **Assistant Professor**, Department of Electrical and Computer Engineering, College of Engineering and Applied Sciences (CEAS), **University at Albany, State University of New York (SUNY)**.
- 11/2013-9/2016 **Lead Computer Scientist**, Computer Vision Lab.
- 11/2008-11/2013 **Computer Scientist**, Computer Vision Lab.
Software Science and Analytics, **GE Global Research Center**.
Developed person-centric video analytic technologies for surveillance and situational awareness. Developed medical imaging modules for healthcare applications.
Software architect for private and open-source development.
- 9/2012-9/2016 **Adjunct Professor**, Dept. of Computer Science, College of Engineering and Applied Sciences (CEAS), University at Albany, State University of New York (SUNY).
- 2001-9/2008 **Research Assistant**
Laboratory for Engineering Man/Machine Systems (LEMS), Division of Engineering, **Brown University**, USA.
The S.H.A.P.E. Lab. (<http://www.lems.brown.edu/shape/>)
Developed representation, reconstruction, modeling, registration, and recognition for 3D shapes for industrial, medical, and archaeological applications. Developing general efficient mesh data structure/algorithms for point clouds, polygonal meshes, and geodesic computation.
Teaching Assistant for Imaging Understanding and Medical Image Analysis.

- 8/1999-6/2001 **Teaching Assistant**
Computer Center of College of Management, **National Taiwan University**.
Maintained network infrastructure and Unix-base servers / PCs.
Attended troubleshooting for faculty, staff and students, and web service.
- 7/1998-7/1999 **Mandatory Military Service**, Air force logistics, Taiwan.
Maintained computer networks and office support.
- 9/1996-6/1998 **Research Assistant**,
Mechanical Industry Research Labs. (MIRL), **Industrial Tech. Research Inst. (ITRI)**, Taiwan.
Developed the visual inspection algorithms for chip fabrication: chip mark inspection, leadframe inspection, pin inspection, and die bounding. Improved the search ability, accuracy & efficiency of image-based matching algorithms and applied to field tests.
- 6/1997-6/1998 **R&D Engineer**, UTechZone Co., Ltd.
Developed industrial vision systems for image-based hardness-analysis, Ball Grid Array (BGA) inspection, and pattern identification.

Research Programs/Grants (All amounts are list in USD\$)

1. **PI**, *Secure Artificial Intelligence with Fully Homomorphic Encryption for Deep Neural Networks* (\$10K), University at Albany Faculty Research Awards Program. 2013-2024
2. **Co-I**, *Artificial Intelligence Institute for Secure and Trustworthy Cyber-Systems* (\$20K), **UAlbany** Seed Fund. 2022
3. **Co-I**, *Center for Integrated Sensors, Screening, and Security (CIS3)* (\$20K), **UAlbany** Seed Fund. 2022
4. **Co-PI**, *AI Cup Challenge on Drone Object Detection and Counting* (~\$130K), National Yang Ming Chiao Tung University, **Ministry of Education**, Taiwan. 2021-2023
5. **Co-PI**, *AI Cup Challenge on Chinese Scene Text Detection and Recognition* (~\$130K), National Central University, **Ministry of Education**, Taiwan. 2020-2022
6. **PI**, *Semantic Information Defender* (UAlbany sub-contract \$339K), Kitware Inc. 2020-2024
Defense Advanced Research Projects Agency (DARPA)
SemaFor Program (PI: Arslan Basharat) (total \$13M).
7. **PI**, *Yard Locomotive Detection System Development* (\$50K), **GE Global Research**. 2020
8. **PI**, *Yard Locomotive Detection System Development* (\$200K), **GE Global Research**. 2019
9. **PI**, *Video Analytical Open Framework for Smart Transportation* (\$10K) 2019-2022
University at Albany Faculty Research Awards Program.
10. **PI**, *Yard Locomotive Vision System Development* (\$10K), **GE Global Research**. 2018
11. **Co-PI**, *A General, Intelligent, Bio-inspired Computing Framework for Sensor Networks* (\$25K, PI: Tolga Soyata), **SUNY Center-Scale Proposal Program**. 2018
12. **PI**, *Data and Algorithms for Technical Assessment of DIVA* (SUNY sub-contract \$75K), **Kitware Inc.** IARPA DIVA Program (PI: Anthony Hoogs). 2018-2019
13. **PI**, *Develop Deep Learning Capability and Explanability* (\$25K), **GE Global Research** 2017
14. University at Albany – SUNY Startup Funding. 2016-2021
15. **Co-PI**, *Multi-modality Portable Systems for Pressure Ulcer Prevention and Care* (total \$2.75M, 2015-2016 portion \$500K, PI: Peter Tu), **GE Global Research**, **Department of Veterans Affairs (VA)**, Innovation Initiative (VAi2). 2015-2016
16. **Co-PI**, *Image Analysis Platform Development for EOE Fiber Ctg Imaging* (\$100K, PI: Alberto Santamaria-Pang), **GE Global Research** and **GE Aviation**. 2015-2016
17. **Co-Investigator**, *Social Interaction Analysis at a Distance* (\$800K, PI: Peter Tu) 2013-2016
GE Global Research, **Defense Advanced Research Projects Agency (DARPA)**, affiliated with the Strategic Social Interaction Modules (SSIM) program.
18. **Co-PI**, *Practitioner Centric Video Analytics* (\$475K, PI: Peter Tu), **GE Global Research**, **National Institute of Justice (NIJ)** 2013-IJ-CX-K010. 2013-2015

19. **Co-PI**, *Advanced Behavior Recognition in Crowded Environments – Continuation* (\$250K, PI: Peter Tu), GE Global Research, **National Institute of Justice (NIJ)** 2011-IJ-CX-K004. 2011-2013
20. **Co-PI**, *Advanced Behavior Recognition in Crowded Environments* (\$500K, PI: Xiaoming Liu) GE Global Research, **National Institute of Justice (NIJ)** 2009-SQ-B9-K013. 2010-2011
21. GE Technical Career Path (TCP) Grant (\$7,000) 2013
GE Global Research Growth Council Grant (\$10,000) 2010
Developed a video content analysis prototype demonstration system.

Awards and Honors

1. National Science and Tech. Council (NSTC) grant for visiting science and technology personnel 2023
2. Ministry of Science and Tech. (MOST) grant for short-term international visiting scholars, Yuan Ze University, Taiwan. 2022
3. Ministry of Science and Tech. (MOST) grant for short-term international visiting scholars, National Central University, Taiwan. 2021
4. **Best Paper Award**, National Conference on Web Intelligence and Applications (NCWIA), Taiwan 2021
5. Best Paper Finalists, IPPR Computer Vision, Graphics, and Image Processing (CVGIP), Taiwan 2020
6. Winner Teams Top-3 Finalist, AI City Challenge CVPR 2019 Workshop 2019
7. **Honorary Mention Award**, IEEE Smart World NVIDIA AI City Challenge 2017
8. NVIDIA GPU Grant Award 2017
9. **GE Belief – Stay Lean and Go Fast Management Award** 2015
10. GE Above and Beyond – Gold Award for Stay Lean to Go Fast (\$2500) 2015
11. GE Above and Beyond – Bronze Award for Stay Lean to Go Fast (\$100) 2015
12. GE Above and Beyond – Bronze Award for Empower and Inspire Each Other (\$100) 2015
13. GE Above and Beyond – Bronze Award for External Focus Award (\$250) 2015
14. GE Above and Beyond – Bronze Award for Expertise (\$250) 2013
15. GE Above and Beyond – Bronze Award for Imagination & Courage (\$250) 2012
16. GE Above and Beyond – Patent Award on Expertise (\$275) 2012
17. GE Above and Beyond – Patent Award on Expertise (\$275) 2012
18. **Best Student Paper Award**, IEEE Workshop on the Applications of Computer Vision (WACV) 2012
19. **Best Paper Award – Runner-Up**, IEEE Advanced Video and Signal-Based Surveillance (AVSS) 2011
20. GE Above and Beyond – Patent Award on Expertise (\$275) 2011
21. GE Above and Beyond – Patent Award on Expertise (\$275) 2011
22. GE Above and Beyond – Patent Award on Expertise (\$275) 2011
23. GE Above and Beyond – Patent Award on Expertise (\$275) 2011
24. GE Above and Beyond – Silver Award for Expertise (\$500) 2011
25. GE Above and Beyond – Level 3 Award for Innovation (\$100) 2010

Student Advising

Advised Ph.D. Graduated:

- Hui Guo, Ph.D., CS (2021-2022), Thesis: *Exposing GAN-Generated Faces Using Deep Neural Network*.
- Ehab AlBadawy, Ph.D. ECE (2020-2022), Thesis: *AI-Synthesized Speech Generation and Detection*, first job after graduation: Meta Inc., Menlo Park, CA.
- Yi Wei, Ph.D., CS (2016-2021), Thesis: *Understanding Complex Human Activities in Videos*, first job after graduation: Samsung Research, Mountain View, CA.
- Shengkun Li, Ph.D. CS (2016-2020), Thesis: *Learning Graphs for Object Tracking and Counting*.

Current Ph.D. Students:

- Zhenfei Zhang, Ph.D. student, SUNY Albany (2021-present)
- Yuwei Chen, Ph.D. student, CS, SUNY Albany (2020-present)
- Rui Wang, Ph.D. candidate, CS, SUNY Albany (2019-present)

- Abhineet Pandey, MS/Ph.D. student, CS, SUNY Albany (2018-present)

Current MS Students (Selected):

- An Yu (2022-present)
- Srujan Vepuri (2022-present)
- Ragini Rani (2022-present)
- Nidhi Vadnere (2022-present)

Co-Advised PostDoc:

- Dawei Du, CS, Albany (2017-2019), first job after completion: Kitware Inc., Clifton Park, NY. Co-advised with Siwei Lyu.
- Longyin Wen, CS, Albany (2016-2017): first job after completion: JD AI Research, Mountain View, CA. Co-advised with Siwei Lyu.

Co-Advised or Ph.D. Committee Graduated:

- Su Hu, CS, SUNY Albany (2018-2019) and SUNY Buffalo (2019-2022), Co-advised with Siwei Lyu, first job after graduation: post doctoral researcher at CMU.
- Lipeng Ke, CS, SUNY Albany (2015-2019) and Ph.D. SUNY Buffalo (2019-2022), Co-advised with Siwei Lyu, first job after graduation: Amazon, Sunnyville, CA.
- Yuezun Li, Ph.D., CS, SUNY Albany (2015-2020), Co-advised with Siwei Lyu, Thesis: *Detecting and Protecting Against AI-Synthesized Faces*, first job after graduation: Assistant Professor, Ocean University of China.
- Wenbo Li, Ph.D., CS, SUNY Albany (2015-2019), Co-advised with Siwei Lyu, Thesis: *Pose Based Human Activity Recognition: Past, Present and Future*, first job after graduation: Samsung Research, Mountain View, CA.
- Yueming Yang, Ph.D., CS, SUNY Albany (2013-2016), Co-advised with Siwei Lyu, Thesis: *Efficient Large-Scale Photometric Reconstruction Using Divide-Conquer and Fusion*, first job after graduation: Assistant Professor, School of Mount Holyoke, MA.
- Xin Wang, Ph.D., CS, SUNY Albany (2014-2015), Co-advised with Siwei Lyu, Thesis: *Topic Analysis and Application Using Nonnegative Matrix Factorization (NMF)*, first job after graduation: CuraCloud Corporation, Seattle, WA.

Ph.D. Committee Graduated:

- Miley Yao, Ph.D., CS, SUNY Albany (2021-2022), Thesis: *High-Capacity and Interpretable Temporal Point Process Models for User Activity Sequence Modeling*, first job after graduation: Meta Inc., New York, NY.
- Mehrded Mizaei, Ph.D., CS, SUNY Albany (2020), Thesis: *Discriminative Factorization Models for Student Behavioral Pattern Detection and Classification*.
- Amanda Danko, Ph.D., CS, SUNY Albany (2014-2015), Thesis: *Bottom-Up Saliency Models Based on Natural Image Statistics*, first job after graduation: USAA Research.

Current Co-Advising Ph.D. Students or Committee:

- Sourav Dutta, Ph.D. Committee, SUNY Albany (2020-)
- Hadi Ghahremannezhad, Ph.D. NJIT (2021)

MS Student Graduated:

- Nenghui Song, MS, CS, SUNY Albany (2017-2018).
- Jianting Wen, M.S., CS, SUNY Albany (2011-2012).

GE Research Center Intern Mentoring

- Yelin Kim, GE Research Intern (2014), Ph.D. candidate in Computer Science, University of Michigan, Ann Arbor.
- Yimeng Zhang, GE Research Intern (2011), Ph.D. in Cornell University, graduated 2012. First job: Google Mountain View.
- Karthik Sankaranarayanan, GE Research Intern (2010), Ph.D. in Ohio State University, graduated 2011. First job: IBM Research, Bangalore, India.

UAlbany Independent Study, Interns, and Mentoring

- Joshua Cho, UAlbany Honor College Student (2022-present).
- Patrick Dai, high school intern (2021).
- Ellisa Khoja, MS, CS, SUNY Albany, Independent Study for Intern at Edwards Lifesciences LLC (2018).
- Debosmita Chakraborty, M.S., CS, SUNY Albany, Independent Study for Intern at Data Core Systems, Inc (2018).
- Rutuja Shah, MS, CS, SUNY Albany, Independent Study for Intern at Center for Technology in Government, UAlbany (2018).
- Sumit Chhabra, MS, CS, SUNY Albany, Independent Study for Intern at NIIT Technologies, Inc (2018).
- Nikolas N. Aguilar, visiting student, CS, SUNY Albany (4/2015-8/2015).

Referred Journal Publications

† Students or post-docs advised or co-advised by Ming-Ching Chang are denoted by superscript (†).

* indicates the corresponding author

1. C.-H. Tung, S.-Y. Chang, M.-C. Chang, J.-M. Carrillo, B. G Sumpter, C. Do, W.-R. Chen, “Inferring Colloidal Interaction from Scattering by Machine Learning”, *Elsevier Carbon Trends*, vol. 10, March 2023, 100252.
2. J.-W. Hsieh, C.-H. Chou, M.-C. Chang, P.-Y. Chen, S. Santra, C.-S. Huang, “Mean-Shift Based Differentiable Architecture Search”, *IEEE Trans. on Artificial Intelligence*, to appear, 2022.
3. C.-S. Wong, H.-M. Liao, R. T.-H. Tsai, M.-C. Chang, “Semi-supervised Learning for Topographic Map Analysis Over Time: a Study of Bridge Segmentation”, *Nature Scientific Report*, 12 (18997), 2022.
4. H. Guo[†], S. Hu, X. Wang, M.-C. Chang^{*}, S. Lyu, “Robust Attentive Deep Neural Network for Detecting GAN-Generated Faces”, *IEEE Access*, vol. 10, pp. 32574-32583, 2022.
5. L. Ke[†], M.-C. Chang^{*}, H. Qi, S. Lyu, “DetPoseNet: Improve Multi-Person Pose Estimation via Coarse-Pose Filtering”, *IEEE Transactions on Image Processing (TIP)*, vol. 31, pp. 2782-2795, 2022.
6. M.-C. Chang, C.-H. Tung, S.-Y. Chang, J. M. Carrillo, Y. Wang, B. Sumpter, G.-R. Huang, C. Do, W.-R. Chen^{*}, "A Machine Learning Inversion Approach for Determining Effective Interaction Potential from Scattering", *Communications Physics - Nature*, 2022.
7. W. Li[†], Y. Wei[†], S. Lyu, M.-C. Chang^{*}, “Simultaneous Multi-Person Tracking and Activity Recognition based on Cohesive Cluster Search”, *Computer Vision and Image Understanding (CVIU)*, Elsevier, vol. 214, 2022.
8. M.-C. Su, C.-T. Cheng, M.-C. Chang, Y.-Z. Hsieh^{*}, “A Video Analytic Student Concentration Monitoring System”, *IEEE Transactions on Consumer Electronics*, Vol. 67 (4), pp. 294-304, 2021.
9. P.-Y. Chen, M.-C. Chang, J.-W. Hsieh^{*}, Y.-S. Chen, “Parallel Residual Bi-Fusion Feature Pyramid Network for Accurate Single-Shot Object Detection”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 9099-9111, 2021.
10. Y. Li[†], M.-C. Chang, P. Sun, H. Qi, J. Dong, S. Lyu^{*}, “TransRPN: Towards the Transferable Adversarial Perturbations Using Region Proposal Networks and Beyond”, *Computer Vision and Image Understanding (CVIU)*, Elsevier, vol. 213, 2021.

11. L. Wen[†], D. Du[†], Z. Cai, Z. Lei, M.-C. Chang, H. Qi, J. Lim, M.-H. Yang, S. Lyu*, “UA-DETRAC: A New Benchmark and Protocol for Multi-Object Detection and Tracking”, *Computer Vision and Image Understanding (CVIU)*, Elsevier, 193, 2020.
12. M.-C. Chang, Y. Wei[†], W.-R. Chen, C. Do*, “Deep Learning Based Super-Resolution for Small-Angle Neutron Scattering Data: Attempt to Accelerate Experimental Workflow”, *MRS Communications*, 10 (1), 11-17, 2020.
13. M.-C. Chang, L. Ke[†], H. Qi, L. Wen[†], S. Lyu*, “Fast Online Video Pose Estimation by Dynamic Bayesian Modeling of Mode Transitions”, *IEEE Trans. On Cybernetics*, pp. 1-14, 2019. (Impact factor 8.803)
14. X. Wang[†], M.-C. Chang, S. Lyu*, “Efficient Algorithms for Graph Regularized PLSA”, *Pattern Recognition*, 2019. (Impact factor 3.3399)
15. M.-C. Chang*, T. Yu, J. Luo, K. Duan, P. Tu, Y. Zhao, N. Nagraj, V. Rajiv, M. Priebe, E. Wood, and M. Stachura, “Multi-Modal Sensor System for Pressure Ulcer Wound Assessment and Care”, *IEEE Transactions on Industrial Informatics*, special section on multisensor fusion and integration for intelligent systems, Vol. 14, Issue 3, Mar. 2018. (Impact factor 6.764)
16. L. Wen[†], Z. Lei, M.-C. Chang, H. Qi*, and S. Lyu, “Multi-Camera Multi-Target Tracking with Space-Time-View Hypergraph”, *International Journal of Computer Vision (IJCV) Special Issue*, Sep. 2016. (Impact factor 8.222)
17. F. M. Fennessy*, A. Fedorov, T. Penzkofer, K. W. Kim, M. S. Hirsch, M. G. Vangel, P. Masry, T. A. Flood, M.-C. Chang, C. M. Tempany, R. V. Mulkern, S. N. Gupta, “Quantitative pharmacokinetic analysis of prostate cancer DCE-MRI at 3T: Comparison of two arterial input functions on cancer detection with digitized whole mount histopathological validation”, Vol. 33, Issue 7, pp. 886-894, *Magnetic Resonance Imaging*, Elsevier, 2015.
18. *W. Huang and X. Li and Y. Chen and X. Li and M.-C. Chang *et al.*, “Variations of Dynamic Contrast-Enhanced Magnetic Resonance Imaging in Evaluation of Breast Cancer Therapy Response: A Multicenter Data Analysis Challenge”, *Translational Oncology*, Vol. 7, n. 1, pp. 153-166, Feb. 2014.
19. M.-C. Chang* and B. B. Kimia, “Measuring 3D Shape Similarity by Graph-Based Matching of the Medial Scaffolds”, *Computer Vision and Image Understanding (CVIU)*, Special Issue on 3D Imaging and Modeling (3DIM), Elsevier, Vol. 115, Issue 5, pp. 707-720, May. 2011.
20. M.-C. Chang*, F. F. Leymarie, and B. B. Kimia, “Surface Reconstruction from Point Clouds by Transforming the Medial Scaffold”, *Computer Vision and Image Understanding (CVIU)*, Elsevier, Vol. 113, Issue 11, pp. 1130-1146, Nov. 2009. (Top 5 downloaded computer science articles in ScienceDirect during April-June 2009.)
21. M.-C. Chang, C.-S. Fuh*, and H.-Y. Chen, “Fast Search Algorithms for Industrial Inspection”, *International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI)*, World Scientific, Vol. 15, No. 4, pp. 675-690, 2001.

Book / Book Chapter

- M.-C. Chang, “ObjectWindows Programming: Principle and Practice”, 700 pages in Chinese Language, InfoWide Publisher Co., Ltd., ISBN 957-726-104-3, March 1994.

Prestigious Peer-Reviewed Conference and Workshop Publications

* Peer-reviewed computer science conferences typically have higher impact than journals. All conference papers have been (or are about to be) presented as talks (not listed under talks) or posters.

1. S. Weng, Y. Wei[†], M.-C. Chang, B. Shi, “Instance Contour Adjustment via Structure-driven CNN”, *European Conference on Computer Vision (ECCV)*, Tel Aviv, Israel, 2022 (acceptance rate **28%**).

2. B.-S. Wang, J.-W. Hsieh, P.-Y. Chen, M.-C. Chang, L. Ke, S. Lyu, “LDW-Pooling: Learning Discrete Wavelet Pooling for Convolutional Networks”, *British Machine Vision Conference (BMVC)*, 2021 (acceptance rate **33.6%**).
3. Y.-H. Huang, J.-W. Hsieh, M.-C. Chang, L. Ke, S. Lyu, A. S. Santra, “Multi-Teacher Single-Student Visual Transformer with Multi-Level Attention for Face Spoofing Detection”, *British Machine Vision Conference (BMVC)*, 2021 (acceptance rate **33.6%**).
4. Y. Wei[†], P. Zhang, W. Li[†], Z. Gan, S. Lyu, M.-C. Chang, L. Zhang, J. Gao, “MagGAN: High-Resolution Face Attribute Editing with Mask-Guided Generative Adversarial Network”, *Asian Conference on Computer Vision (ACCV)*, 2020 (acceptance rate **28%**).
5. Y. Wei[†], W. Li[†], Y. Fan[†], L. Xu, M.-C. Chang, S. Lyu, “3D Single-Person Concurrent Activity Detection Using Stacked Relation Network”, *AAAI Conference on Artificial Intelligence (AAAI)*, New York, NY, USA, 2020. (Oral Presentation, acceptance rate **20.6%**)
6. Y. Li[†], L. Wen[†], M.-C. Chang and S. Lyu, “Graph-to-Graph Energy Minimization for Video Object Segmentation”, *International Conference on Advanced Video and Signal-based Surveillance (AVSS)*, Taipei, Taiwan, 2019. (Oral presentation, acceptance rate **16%**)
7. Y. Li[†], X. Bian, M.-C. Chang, S. Lyu, “Exploring the Vulnerability of Single Shot Module in Object Detectors via Imperceptible Background Patches”, *British Machine Vision Conference (BMVC)*, Cardiff, UK, 2019. (Acceptance rate **28%**)
8. L. Ke[†], M.-C. Chang, H. Qi, S. Lyu, “Multi-Scale Structure-Aware Network for Human Pose Estimation”, *European Conference on Computer Vision (ECCV)*, Munich, Germany, 2018. (Acceptance rate **31.8%**)
9. Y. Li[†], D. Tian, M.-C. Chang, X. Bian, S. Lyu, “Universal Adversarial Perturbation on Deep Proposal-based Models”, *British Machine Vision Conference (BMVC)*, Newcastle, UK, 2018. (Acceptance rate **29.9%**)
10. W. Li[†], L. Wen[†], M.-C. Chang, S. Lim, and S. Lyu, “Adaptive RNN Tree for Large-Scale Human Action Recognition”, *IEEE International Conference on Computer Vision (ICCV)*, Venice, Italy, 2017. (Acceptance rate **29%**)
11. X. Wang[†], M.-C. Chang, Y. Ying[†], and S. Lyu, “Co-regularized PLSA for Multi-Modal Learning”, *AAAI Conference on Artificial Intelligence (AAAI)*, Phoenix, AR, USA, 2016. (Acceptance rate **26%**)
12. M.-C. Chang, H. Qi, X. Wang[†], H. Cheng, and S. Lyu, “Fast Online Upper Body Pose Estimation from Video”, *British Machine Vision Conference (BMVC)*, Swansea, UK, 2015. (Acceptance rate **33%**)
13. Y. Kim, J. Chen, M.-C. Chang, E. M. Provost, X. Wang, and S. Lyu, “Joint Event Localization and Classification of Human Action Videos with Event Transitions”, *IEEE Automatic Face and Gesture Recognition (FG)*, Oral presentation, Ljubljana, Slovenia, 2015. (Acceptance rate **12%**)
14. Y. Zhang, X. Liu, M.-C. Chang, W. Ge, and T. Chen, “Spatio-Temporal Phrases for Activity Recognition”, in *Proceeding of European Conference on Computer Vision (ECCV)*, Firenze, Italy, Oct. 2012. (Acceptance rate **25%**)
15. Y. Zhang, W. Ge, M.-C. Chang, and X. Liu, “Group-Level Context Learning for Event Recognition”, *IEEE Workshop on Applications of Computer Vision (WACV)*, Oral presentation, **Best Student Paper Award** (top 2 out of 63 accepted papers), Breckenridge, Colorado, USA, Jan. 2012.
16. M.-C. Chang, N. Krahnstoeber, and W. Ge, “Probabilistic Group-Level Motion Analysis and Scenario Recognition”, *IEEE International Conference on Computer Vision (ICCV)*, Barcelona, Spain, Nov. 2011. (Acceptance rate **23.7%**)
17. N. Krahnstoeber, M.-C. Chang, and W. Ge, “Gaze and Body Pose Estimation from a Distance”, *IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)*, **Best Paper Award - Runner up** (top 2 out of 81 accepted papers), Klagenfurt, Austria, Aug. - Sep. 2011.

18. M.-C. Chang and B. B. Kimia, “Regularizing 3D Medial Axis Using Medial Scaffold Transforms”, *IEEE Computer Vision and Pattern Recognition (CVPR)*, Anchorage, Alaska, USA, pp. 1-8, Jun. 2008. (Acceptance rate **32%**)

Additional Peer-Reviewed Conference and Workshop Publications

1. F. Akhyar, L. Novamizanti, M. Azka I., I. H. P.ratama, S. R. Firmansyach, M.-C. Chang, C.-Y. Lin, “Observation of Attention Mechanism Baseline for PCB Surface Inspection System”, *IEEE Asia Pacific Conference on Wireless and Mobile (APWiMob)*, 2022.
2. E. AlBadawy[†], C. Sun, S. Robinson, T. Davison, M.-C. Chang, S. Lyu, “Exposing AI-Synthesized Human Voices Using Neural Vocoder Artifacts”, *IEEE International Workshop on Information Forensics and Security (WIFS)*, 2022
3. Y. Chen[†] and M.-C. Chang, “Toward Multimodal Semantic Consistency Analysis of Long Form Articles”, *IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022.
4. C.-F. Hsu, M.-C. Chang, W.-C. Chen, “A Robust Collaborative Learning Framework Using Data Digests and Synonyms to Represent Absent Clients”, *IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022.
5. C.-F. Hsu, J.-L. Huang, F.-H. Liu, M.-C. Chang, W.-C. Chen, “FedTrust: Towards Building Secure Robust and Trustworthy Moderators for Federated Learning”, *IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022.
6. F. Akhyar, L. Novamizanti, T. Putra, E. N. Furqon, M.-C. Chang, C.-Y. Lin, “Lightning YOLOv4 for a Surface Defect Detection System for Sawn Lumber”, *IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022.
7. H. Guo[†], S. Hu, M.-C. Chang, S. Lyu, “Open-Eye: An Open Platform to Study Human Performance on Identifying AI-Synthesized Faces”, Demo Paper, *IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022.
8. M. Naphade, S. Wang, D. Anastasiu, Z. Tang, M.-C. Chang, Y. Yao, L. Zheng, M. Rahman, A. Venkatachalapathy, A. Sharma, Q. Feng, V. Ablavsky, S. Sclaroff, P. Chakraborty, A. Li, S. Li, R. Chellappa, “The 6th AI City Challenge”, *CVPR Workshop on AI City Challenge*, New Orleans, LA, 2022.
9. S. Hu[†], C.-H. Liu, J. Dutta, M.-C. Chang, S. Lyu, N. Ramakrishnan, “PseudoProp: Robust Pseudo-Label Generation for Semi-Supervised Object Detection in Autonomous Driving Systems”, *CVPR Workshop on Autonomous Driving (WAD)*, New Orleans, LA, 2022.
10. E. AlBadawy[†], A. Gibiansky, Q. He, J. Wu, M.-C. Chang, S. Lyu, “VocBench: A Neural Vocoder Benchmark for Speech Synthesis”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Singapore, 2022.
11. H. Guo[†], S. Hu[†], X. Wang[†], M.-C. Chang, S. Lyu, “Eyes Tell All: Irregular Pupil Shapes Reveal GAN-generated Faces”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Singapore, 2022.
12. Z. Zhang[†], M.-C. Chang, T. Bui, “Improving Class Activation Map for Weakly Supervised Object Localization”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Singapore, 2022.
13. M. Huang, S. Jia, M.-C. Chang, S. Lyu, “Text-Image De-contextualization Detection Using Vision-Language Models”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Singapore, 2022.
14. S.-F. Wu, M.-C. Chang, S. Lyu, C.-S. Wong, A. Pandey[†], P.-C. Su, “FlagDetSeg: Multi-Nation Flag Detection and Segmentation in the Wild”, *IEEE Advanced Video and Signal-based Surveillance (AVSS)*, 2021.

15. G. Zhao, A. Pandey[†], M.-C. Chang, S. Lyu, “A Video Analytic System for Rail Crossing Point Protection”, *IEEE Advanced Video and Signal-based Surveillance (AVSS)*, 2021.
16. P.-Y. Chen, M.-C. Chang, J.-W. Hsieh, Y.-S. Chen, B.-S. Wang, C.-H. Chou, B.-C. Lin, “Effective LightWeight Feature Fusion Feature Pyramid Network for Extremely Small Object Detection”, *IPPR Conference on Computer Vision, Graphics, and Image Processing (CVGIP)*, Taiwan, 2021.
17. P.-Y. Chen, J.-W. Hsieh, Y.-S. Chen, M.-C. Chang, Z.-W. Chen, “Edge Cloud Collaborative Computing for Drone-Based Vehicle Flow Estimation in 5th Generation Wireless Systems”, *National Conference on Web Intelligence and Applications (NCWIA)*, **Best Paper Award**, Taiwan, 2021.
18. M. Naphade, S. Wang, D. Anastasiu, Z. Tang, M.-C. Chang, X. Yang, Y. Yao, L. Zheng, P. Chakraborty, A. Sharma, Q. Feng, V. Ablavsky, S. Sclaroff, “The 5th AI City Challenge”, *CVPR Workshop on AI City Challenge*, 2021.
19. Y.-L. Li, Z.-Y. Chin, M.-C. Chang and C.-K. Chiang, “Multi-Camera Tracking by Candidate Intersection Ratio Tracklet Matching”, *CVPR Workshop on AI City Challenge*, 2021.
20. X. Hu and M.-C. Chang and Y. Chen[†] and *et al.*, “The 2020 Low-Power Computer Vision Challenge”, *IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS)*, 2021.
21. M.-C. Chang, J.-W. Hsieh, C.-M. Tsai, Z.-Y. Lin, “Multi-Pass YOLOv3 for Scooter License Plate Detection and Recognition”, *IPPR Conference on Computer Vision, Graphics, and Image Processing (CVGIP)*, Taiwan, 2020, **Best Paper Finalist**.
22. Y. Wei[†], W. Li[†], M.-C. Chang, H. Jin, S. Lyu, “Explainable and Efficient Sequential Correlation Network for 2D Single Person Concurrent Activity Detection”, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, USA, 2020.
23. M.-C. Chang, G. Zhao, A. K. Pandey[†], A. Pulver[†], P. Tu, “Railcar Detection, Identification and Tracking for Rail Yard Management”, *IEEE International Conference on Image Processing (ICIP)*, Abu Dhabi, United Arab Emirates, 2020.
24. P.-Y. Chen, J.-W. Hsieh, M. Gochoo, M.-C. Chang, C.-Y. Wang, Y.-S. Chen, H.-Y. M. Liao, “Drone-based Vehicle Flow Estimation and its Application to Traffic Conflict Hotspot Detection at Intersections”, *IEEE International Conference on Image Processing (ICIP)*, Abu Dhabi, United Arab Emirates, 2020.
25. C.-M. Tsai, J.-W. Hsieh, M.-C. Chang, Y.-C. Lin, “Driver License Field Detection using Real-Time Deep Networks”, *International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems (IEA/AIE)*, Kitakyushu, Japan, 2020.
26. M.-C. Chang, C.-K. Chiang, C.-M. Tsai, Y.-K. Chang, H.-L. Chiang, Y.-A. Wang, S.-Y. Chang, Y.-L. Li, M.-S. Tsai, H.-Y. Tseng, “AI City Challenge 2020 – Computer Vision for Smart Transportation”, *IEEE CVPR Workshop on the AI City Challenge*, Seattle, WA, USA, 2020.
27. M. Naphade, S. Wang, D. Anastasiu, Z. Tang, M.-C. Chang, X. Yang, L. Zheng, A. Sharma, R. Chellappa, P. Chakraborty, “The 4th AI City Challenge”, *IEEE CVPR Workshop on the AI City Challenge*, Seattle, WA, USA, 2020.
28. R. Wang[†], M.-C. Chang and M. Radigan, “Modeling Latent Comorbidity for Health Risk Prediction Using Graph Convolutional Network”, *FLAIR-33*, Miami, FL, USA, 2020.
29. Y. Zhao, P. Tu, and M.-C. Chang, “Occupancy Sensing and Activity Recognition with Camera and Wireless Sensors”, *Workshop on Data: Acquisition to Analysis, SenSys*, New York, NY, USA, 2019.
30. M.-C. Chang, J. Wei, Z.-A. Zhu, Y.-M. Chen, C.-S. Hu, M.-X. Jiang, C.-K. Chiang, “AI City Challenge 2019 – City-Scale Video Analytics for Smart Transportation”, *IEEE CVPR Workshop on the AI City Challenge*, Long Beach, CA, USA, 2019.

31. M. Naphade, Z. Tang, M.-C. Chang, D. Anastasiu, A. Sharma, R. Chellappa, S. Wang, P. Chakraborty, T. Huang, J.-N. Hwang, S. Lyu, “The 2019 AI City Challenge”, *IEEE CVPR Workshop on the AI City Challenge*, Long Beach, CA, USA, 2019.
32. S. Lyu, M.-C. Chang, D. Du[†], W. Li[†], Y. Wei[†], M. D. Coco, P. Carcagni, *et al.*, “UA-DETRAC 2018: Report of AVSS2018 & IWT4S Challenge on Advanced Traffic Monitoring”, *IEEE Advanced Video and Signal-based Surveillance (AVSS) Workshop*, Auckland, New Zealand, 2018.
33. Y. Li[†], M.-C. Chang, S. Lyu, “In Ictu Oculi: Exposing AI Created Fake Videos by Detecting Eye Blinking”, *IEEE International Workshop on Information Forensics and Security (WIFS)*, Hongkong, China, 2018.
34. Y. Li[†], X. Bian, M.-C. Chang, L. Wen[†], S. Lyu, “Pixel Offset Regression (POR) for Single-shot Instance Segmentation”, *IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)*, Auckland, New Zealand, 2018.
35. L. Ke[†], M.-C. Chang, H. Qi, S. Lyu, “Multi-scale Supervised Network for Human Pose Estimation”, *IEEE International Conference on Image Processing (ICIP)*, Athens, Greece, 2018.
36. Y. Wei[†], M.-C. Chang, Y. Ying, S. N. Lim, S. Lyu, “Explain Black-box Image Classifications Using Superpixel-based Interpretation”, *International Conference on Pattern Recognition (ICPR)*, Beijing, China, 2018.
37. M. Naphade, M.-C. Chang, Anuj Sharma, David C. Anastasiu, Vamsi Jagarlamudi, Pranamesh Chakraborty, Tingting Huang, Shuo Wang, Ming-Yu Liu, R. Chellapa, J.-N. Hwang, S. Lyu, “The NVIDIA AI City Challenge 2018”, *IEEE CVPR Workshop on the NVIDIA AI City Challenge*, Salt Lake City, UT, USA, 2018.
38. M.-C. Chang, Y. Wei[†], N. Song[†], S. Lyu, “Video Analytics in Smart Transportation for the AIC’18 Challenge”, *IEEE CVPR Workshop on the NVIDIA AI City Challenge*, Salt Lake City, UT, USA, 2018.
39. M.-C. Chang, Y. Yao, L. Guan, Y. Tong, and P. Tu, “Cloud Tracking for Solar Irradiance Prediction”, *IEEE International Conference on Image Processing (ICIP)*, Beijing, China, 2017.
40. M.-C. Chang, T. Yu, K. Duan, J. Luo, P. Tu, M. Priebe, E. Wood, M. Stachura, “In-Bed Patient Motion and Pose Analysis Using Depth Videos for Pressure Ulcer Prevention”, *IEEE International Conference on Image Processing (ICIP)*, Beijing, China, 2017.
41. S. Li[†], D. Du[†], L. Wen[†], M.-C. Chang, and S. Lyu, “Hybrid Structure Hypergraph for Online Deformable Object Tracking”, *IEEE International Conference on Image Processing (ICIP)*, Beijing, China, 2017.
42. M. Naphade, D. Anastasiu, A. Sharma, V. Jagarlamudi, H. Jeon, K. Liu, M.-C. Chang, S. Lyu, and Z. Gao, “The NVIDIA AI City Challenge”, *IEEE Smart World Congress*, San Jose, CA, USA, 2017.
43. Y. Wei[†], N. Song[†], L. Ke[†], M.-C. Chang, and S. Lyu, “Street Object Detection / Tracking for AI City Traffic Analysis”, *IEEE Smart World Congress*, San Jose, CA, USA, 2017.
44. S. Lyu, M.-C. Chang, D. Du[†], L. Wen[†], H. Qi, Y. Li[†], Y. Wei[†], L. Ke[†], T. Hu, M. Del Coco, P. Caragni, *et al.*, “UA-DETRAC 2017: Report of AVSS2017 & IWT4S Challenge on Advanced Traffic Monitoring”, *IEEE Advanced Video and Signal-based Surveillance (AVSS)*, Lecce, Italy, 2017.
45. P. Tu, M.-C. Chang, and T. Gao, “Crowd Analytics via One Shot Learning and Agent Based Inference”, *IEEE GlobalSIP Symposium on Signal Processing for Understanding Crowd Dynamics*, Washington DC, USA, 2016.
46. Y. Yang[†], M.-C. Chang, L. Wen[†], P. Tu, H. Qi, S. Lyu, “Efficient Large-scale Photometric Reconstruction Using Divide-Recon-Fuse 3D Structure from Motion”, *IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)*, Colorado Springs, Colorado, USA, 2016.
47. (Challenge Organizers) and Y. Li[†], D. Du[†], L. Wen[†], L. Ke[†], M.-C. Chang, H. Qi, and S. Lyu, “The Visual Object Tracking VOT2015 Challenge Results”, (as participating team), *IEEE International Conference on Computer Vision (ICCV) Workshop*, Araucano Park, Las Condes, Chile, 2015.

48. (Challenge Organizers) and Y. Li[†], D. Du[†], L. Wen[†], L. Ke[†], M.-C. Chang, H. Qi, and S. Lyu, “The Thermal Infrared Visual Object Tracking VOT-TIR2015 Challenge results”, (as participating team), *IEEE International Conference on Computer Vision (ICCV) Workshop*, Araucano Park, Las Condes, Chile, 2015.
49. Y. Yang[†], M.-C. Chang, P. Tu, and S. Lyu, “Seeing as it Happens: Real time 3D Video Event Visualization”, *IEEE International Conference on Image Processing (ICIP)*, Quebec City, Quebec, Canada, 2015.
50. J. Chen, M.-C. Chang, T.-P. Tian, T. Yu, and P. Tu, “Bridging Computer Vision and Social Science: A Multi-Camera Vision System for Social Interaction Training Analysis”, *IEEE International Conference on Image Processing (ICIP)*, Quebec City, Quebec, Canada, 2015.
51. P. Tu, A. Logan-Terry, J. Chen, G. Rubin, M.-C. Chang, J. Hockett, T. Yu, T.-P. Tian, “Cross-Culture Training Analysis via Social Science and Computer Vision Methods”, *International Conference on Applied Human Factors and Ergonomics (AHFE)*, Las Vegas, NV, USA, 2015.
52. A. Pulver[†], M.-C. Chang, and S. Lyu, “Shot Segmentation and Grouping for PTZ Camera Videos”, *Annual Symposium on Information Assurance (ASIA)*, New York State Cyber Security Conference (NYSCSC), Albany, NY, USA, 2015.
53. K. Sankaranarayanan, M.-C. Chang, and N. Krahnstoever, “Tracking Gaze Direction from Far-Field Surveillance Cameras”, *IEEE Workshop on Applications of Computer Vision (WACV)*, Kona, Hawaii, USA, Jan. 2011.
54. Y. Zhu, M.-C. Chang, and S. N. Gupta, “Automated Determination of Arterial Input Function for DCE-MRI of the Prostate”, *SPIE Medical Imaging (Image Processing, Proceedings of SPIE)*, Orlando, FL, USA, Feb. 2011.
55. M.-C. Chang, N. Krahnstoever, S. Lim, and T. Yu, “Group Level Activity Recognition in Crowded Environments across Multiple Cameras”, *Workshop on Activity Monitoring by Multi-Camera Surveillance Systems (AMMCSS) in conjunction with Advanced Video and Signal-Based Surveillance (AVSS)*, Boston, MA, USA, 2010.
56. F. F. Leymarie, M.-C. Chang, C. Imielinska, and B. B. Kimia, “A General Approach to Model Biomedical Data from 3D Unorganised Point Clouds with Medial Scaffolds”, *Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM)*, Leipzig, Germany, July 2010.
57. M.-C. Chang and X. Tao, “Subvoxel Segmentation and Representation of Brain Cortex using Fuzzy Clustering and Gradient Vector Diffusion”, *SPIE Medical Imaging (Image Processing, Proceedings of SPIE Volume 7623)*, San Diego, CA, USA, Feb. 2010.
58. X. Tao and M.-C. Chang, “A Skull Stripping Method Using Deformable Surface and Tissue Classification”, *SPIE Medical Imaging (Image Processing, Proceedings of SPIE Volume 7623)*, San Diego, CA, USA, Feb. 2010.
59. M.-C. Chang, N. H. Trinh, B. C. Fleming, and B. B. Kimia, “Reliable Fusion of Knee Bone Laser Scans to Establish Ground Truth for Cartilage Thickness Measurement”, *SPIE Medical Imaging (Image Processing, Proceedings of SPIE Volume 7623)*, San Diego, CA, USA, Feb. 2010.
60. M.-C. Chang and B. B. Kimia, “Measuring 3D Shape Similarity by Matching the Medial Scaffolds”, *3-D Digital Imaging and Modeling (3DIM) in conjunction with IEEE International Conference on Computer Vision (ICCV)*, Kyoto, Japan, pp. 1473-1480, Oct. 2009.
61. M.-C. Chang, F. F. Leymarie, and B. B. Kimia, “Surface Reconstruction from Point Clouds by Transforming the Medial Scaffold”, *IEEE 3-D Digital Imaging and Modeling (3DIM)*, Montreal, Canada, pp.13-20, 2007.
62. M.-C. Chang, F. F. Leymarie, and B. B. Kimia, “3D Shape Registration Using Regularized Medial Scaffolds”, oral presentation in *IEEE 3D Data Processing, Visualization and Transmission (3DPVT)*, Thessaloniki, Greece, pp. 987-994, 2004.
63. M.-C. Chang, H.-Y. Chen, and C.-S. Fuh, “Fast Search Algorithms for IC Printed Mark Quality Inspection”, *Proceedings of IAPR Workshop on Machine Vision Applications (MVA)*, Chiba, Japan, pp. 183-188, 1998.

64. M.-C. Chang, H.-Y. Chen, and C.-S. Fuh, “IC Printed Mark Quality Inspection Algorithms”, *IPPR Conference on Computer Vision, Graphics, and Image Processing (CVGIP)*, Taichung, Taiwan, pp. 540-547, 1997.

Peer-Reviewed Short/Abstract Publications

1. Y. Chen[†] and M.-C. Chang, “On Multimodal Semantic Consistency Detection of News Articles with Image Caption Pairs”, *IEEE International Conference on Consumer Electronics (ICCE)*, Taipei, Taiwan, 2022.
2. Y. Zhao, M.-C. Chang, and P. Tu, “Deep Intelligent Network for Device-free People Tracking”, *Intentional Conference on Cyber-Physical Systems (ICCPS)*, Montreal, Canada, 2019.
3. Y. Yang, M.-C. Chang, S. Lyu, and P. Tu, “3D Video Visualization for Event Summarization”, *Greater New York Area Multimedia and Vision Meeting (GNYMVM)*, New York, NY, USA, 2014.
4. P. Tu, T.-P. Tian, M.-C. Chang, J. Chen, and T. Yu, “Social Interaction Analysis at a Distance”, *Greater New York Area Multimedia and Vision Meeting (GNYMVM)*, New York, NY, USA, 2014.
5. W. Huang, X. Li, X. Li, M.-C. Chang, M. Oborski, D. Malyarenko, M. Muzi, G. Jajamovich, A. Fedorov, Y. Chen, A. Tudorica, S. Gupta, C. Laymon, K. Marro, H. Dyvorne, J. Miller, T. Chenevert, T. Yankeeelov, J. Mountz, P. Kinahan, R. Kikinis, B. Taouli, F. Fennessy, J. Kalpathy-Cremer, “Variations in DCE-MRI Assessment of Breast Cancer Therapy Response: A Multicenter Data Analysis Challenge”, *ISMRM*, Milano, Italy, 2014.
6. M.-C. Chang, J. Chen, T.-P. Tian, P. Tu, T. Yu, “Social Interaction Analysis”, *NSF/FBI/DARPA Workshop on Frontiers in Video and Image Analysis*, Washington DC, USA, 2014.
7. M.-C. Chang, S. Gupta, L. Sacolick, C. Tempany-Afhald, F. Fennessy, E. Schmidt, “Improved T1 Mapping and DCE MRI Pharmacokinetic Quantification for Prostate at 3T by Incorporating B1 Inhomogeneity Correction”, *ISMRM*, Salt Lake City, UT, USA, 2013.
8. R. Mullick, S. Gupta, D. Shanbhag, M.-C. Chang, K. Rajamani, S. Joel, “Spatial Information Based DCE-MRI Data Reconstruction and Analysis Using PCA”, *ISMRM*, Salt Lake City, UT, USA, 2013.
9. M.-C. Chang, Y. Zhang, W. Ge, and X. Liu, “Group-level Scenario Recognition”, *Greater New York Area Multimedia and Vision Meeting (GNYMVM)*, New York, NY, USA, 2012.
10. Y. Zhu, M.-C. Chang, F. M. Fennessy, and S. N. Gupta, “Automatic Arterial Input Function Detection for Prostate Dynamic Contrast Enhanced MRI”, *ISMRM*, Montreal, Quebec, Canada, May 2011.

Thesis

1. M.-C. Chang, “The Medial Scaffold for 3D Shape Modeling and Recognition”, Ph.D. Dissertation, Division of Engineering, Brown University, Providence RI, Sept. 2008.
2. M.-C. Chang, “Fast Search Algorithms for IC Printed Mark Quality Inspection”, Masters Dissertation, Department of Computer Science and Information Engineering, National Taiwan University, Taipei, Taiwan, 1998.

Tech Reports and Preprints

1. M. Naphade, S. Wang, D. C. Anastasiu, Z. Tang, M.-C. Chang, Y. Yao, L. Zheng, M. S. Rahman, A. Venkatachalapathy, A. Sharma, Q. Feng, V. Ablavsky, S. Sclaroff, P. Chakraborty, A. Li, S. Li, R. Chellappa, “The 6th AI City Challenge”, *arXiv 2204.10380*, Jun. 2022.
2. S. Hu, C.-H. Liu, J. Dutta., M.-C. Chang, S. Lyu, N. Ramakrishnan, “PseudoProp: Robust Pseudo-Label Generation for Semi-Supervised Object Detection in Autonomous Driving Systems”, *arXiv 2203.05983*, Mar. 2022.
3. X. Wang, H. Guo[†], S. Hu, M.-C. Chang, S. Lyu, “GAN-generated Faces Detection: A Survey and New Perspectives”, *arXiv 2202.07145*, Feb. 2022.

4. H. Guo[†], S. Hu[†], X. Wang[†], M.-C. Chang, S. Lyu, “Robust Attentive Deep Neural Network for Exposing GAN-generated Faces”, *arXiv 2109.02167*, Sep. 2021.
5. H. Guo[†], S. Hu[†], X. Wang[†], M.-C. Chang, “Eyes Tell All: Irregular Pupil Shapes Reveal GAN-Generated Faces”, *arXiv 2109.00162*, Sep. 2021.
6. J.-W. Hsieh, M.-C. Chang, P.-Y. Chen, S. Santra, C.-H. Chou, C.-S. Huang, “MS-DARTS: Mean-Shift Based Differentiable Architecture Search”, *arXiv 2108.09996*, Aug. 2021.
7. P.-Y. Chen, M.-C. Chang, J.-W. Hsieh, Y.-Sh. Chen, “Parallel Residual Bi-Fusion Feature Pyramid Network for Accurate Single-Shot Object Detection”, *arXiv 2012.01724*, Dec. 2020.
8. M.-C. Chang, Y. Wei[†], W.-R. Chen, C. Do, “Accelerating Neutron Scattering Data Collection and Experiments Using AI Deep Super-Resolution Learning”, *arXiv 1904.08450*, Apr. 2019.
9. Y. Li[†], X. Bian, M.-C. Chang, S. Lyu, “Exploring the Vulnerability of Single Shot Module in Object Detectors via Imperceptible Background Patches”, *arXiv 1809.05966*, Nov. 2018.
10. W. Li[†], M.-C. Chang, S. Lyu, “Who did What at Where and When: Simultaneous Multi-Person Tracking and Activity Recognition”, *arXiv 1807.01253*, July 2018.
11. Y. Li[†], M.-C. Chang, S. Lyu, “In Ictu Oculi: Exposing AI Generated Fake Face Videos by Detecting Eye Blinking”, *arXiv 1806.02877*, June 2018.
12. L. Ke[†], M.-C. Chang, H. Qi, S. Lyu, “Multi-Scale Structure-Aware Network for Human Pose Estimation”, *arXiv 1803.09894*, Mar. 2018.
13. L. Wen[†], D. Du[†], Z. Cai, Z. Lei, M.-C. Chang, H. Qi, J. Lim, M.-H. Yang, S. Lyu, “DETRAC: A New Benchmark and Protocol for Multi-Object Tracking”, *arXiv 1511.04136*, Nov. 2015.

Patents

1. **US Patent US 2016/0321257 A1, 2016.** J. Chen, P. Tu, M.-C. Chang, Y. Kim, S. Lyu, “System and Methods for Analyzing Time Series Data Based on Event Transitions”, Nov. 3, 2016.
2. **US Patent US 8,750,566 B2.** L. Guan, P. Tu, Y. Yao, and M.-C. Chang, “Apparatus and Method for Spatially Relating Views of Sky Images Acquired at Spaced Apart Locations”, June 10, 2014.
3. **US Patent US 2013/0152997 A1.** Y. Yao, P. Tu, M.-C. Chang, L. Guan, and Y. Tong, “Apparatus and Method for Predicting Solar Irradiance Variation”, June 20, 2013.
4. **US Patent US 2013/0138505 A1.** P. Tu, M. Grabb, X. Liu, T. Yu, Y. Yao, D. Gao, and M.-C. Chang, “Analysis-to-Content Interface for Interactive Advertising”, May 30, 2013.
5. **US Patent US 2013/0138499 A1.** P. Tu, M. Grabb, X. Liu, T. Yu, Y. Yao, D. Gao, and M.-C. Chang, “Usage Measurement Techniques and System for Interactive Advertising”, May 30, 2013. China Patent in Filing.
6. **China Patent CN 102982753 A.** N. Krahnstoever, P. Tu, M.-C. Chang, and W. Ge, “Person Tracking and Interactive Advertising”, March 20, 2013.
7. **US Patent US 2013/0054377 A1.** N. Krahnstoever, P. Tu, M.-C. Chang, and W. Ge, “Person Tracking and Interactive Advertising”, Feb. 28, 2013.

Patent Disclosures

1. **GE LC:0111** M.-C. Chang, J. Ping, E. Gros, A. Jain, P. Tu, “Image and Video Capture Architecture for Three-Dimensional Reconstruction”, Aug., 2017.
2. **GE Disclosure 314571-1 LC:0110** E. Gros, J. Ping, A. Jain, M.-C. Chang, P. Tu, “Three-Dimensional Modeling of an Object”, Aug. 2017.

3. **GE Disclosure** T. Yu, M.-C. Chang, J. Luo, D. Kun, B. Hathaway, P. Tu, V. Rajiv, N. Nagraj, “A Multi-modality Portable Scanner for Wound Assessment and Care”, Aug. 2016.
4. **GE Disclosure** T. Yu, M.-C. Chang, J. Luo, D. Kun, B. Hathaway, P. Tu, “A Deep Learning Based Health Care System for Patient Activity Monitoring”, Aug. 2016.
5. **GE Disclosure 69272** A. Can, M.-C. Chang, J. Luo, “Automated Defect Recognition Using Sparsity Based Normalcy Modeling”, Jan. 8, 2016.
6. **GE Disclosure 67929 285274.** M.-C. Chang, J. Chen, P. Tu, “A Live Video Analytic System for Affect Analysis in Public Space”, Jan. 1, 2015.
7. **GE Disclosure 58308 277205.** Y. Kim, J. Chen, M.-C. Chang, S. Lyu, P. Tu, “Joint Localization and Classification of Events for Time Series Data by Explicitly Modeling Event Transitions”, US patent in application, Jul. 2014.
8. **GE Disclosure 34920 256289.** G. Li, Y. Yao, M.-C. Chang, P. Tu, “Calibration-free Multiple Sky Imager Image Alignment and View Interpolation”, Oct. 2011.
9. **GE Disclosure 34176 254698.** X. Liu, M.-C. Chang, W. Ge, Y. Zhang, “Co-occurring patterns discovery from one-dimensional signals”, Aug. 2011.
10. **GE Disclosure 28430 251344.** N. Krahnstoever, M.-C. Chang, W. Ge, P. Tu, “Remote Estimation of Gaze for Interactive Advertising”, US and China patents in application, May 2011.
11. **GE Disclosure 29689 251009.** P. Tu, M. Grabb, N. Krahnstoever, X. Liu, T. Yu, Y. Yao, D. Gao, M.-C. Chang, “Usage Measurement Methods for Interactive Advertising”, May 2011.
12. **GE Disclosure 29681 251010.** M. Grabb, P. Tu, N. Krahnstoever, X. Liu, T. Yu, Y. Yao, D. Gao, M.-C. Chang, “Episodic Approaches to Interactive Advertising”, May 2011.
13. **GE Disclosure 29659 250984.** M. Grabb, P. Tu, N. Krahnstoever, X. Liu, T. Yu, Y. Yao, D. Gao, M.-C. Chang, “An analytics-to-content interface for interactive advertising applications”, May 2011.
14. **GE Disclosure 28509 250394.** L. Guan, Y. Yao, M.-C. Chang, P. Tu, M. Schmidt, M. Lynass, “Optimal Optical Sensor Positioning for Cloud-Sun Occlusion Prediction at Solar Energy Plant”, Feb. 2011.
15. **GE Disclosure 28431 249978.** Y. Yao, M.-C. Chang, Li. Guan, Y. Tong, P. Tu, “Cloud Tracking for Solar Irradiance Prediction”, Feb. 2011.

Public Talks, Poster Sessions, Demos

1. Invited talk, “Toward Secure, Robust, and Trustworthy Federated Learning”, UI-NYCU Joint AI Lab, National Yang Ming Chiao Tung University, Taiwan, 2022.
2. Invited talk, “Research Highlights in Image Inpainting, Federated Learning, and Image Forensics”, Academic Sinica, Taiwan, 2022.
3. Seminar, “Scene Text Detection/Recognition and the AICup 2021 Challenge”, AICup Challenge Seminar Workshops, Taiwan, 2021.
4. Invited talk, “AI Video Analytic Research in the SUNY Albany CVML Lab”, Academic Sinica, Taiwan, Dec. 2019.
5. Invited talk, “AI Video Analytics”, National Chung Cheng University, Taiwan, Nov. 2019.
6. Invited keynote speech, “AI Visual Intelligence Technologies for Building a Smarter World”, *IEEE International Conference on Universal Village, Special Session on Future Intelligent Manufacturing*, Massachusetts Institute of Technology, Boston, MA, Oct. 2018.
7. S. Lyu and M.-C. Chang, “DeepFake the Menace”, *Preparing for the Future of Disinformation Workshop*, MIT Media Lab, Boston, MA, Sep. 2018.

8. Invited talk, “Video Analytics for AI City Smart Transportation”, *Advanced Computer Vision Workshop* at CITI, Academia Sinica, Taiwan, 2017.
9. Invited seminar, “Video Analytics for Automatic Situational Awareness”, University of Electronic Science and Technology of China (UESTC), Chengdu, China, 2015.
10. Demo Presentation, J. Chen, M.-C. Chang, and P. Tu, “A Live Face Analysis System in Public Waiting Area”, *IEEE Automatic Face and Gesture Recognition (FG)* demo session, Ljubljana, Slovenia, 2015.
11. Invited seminar: “Emotion Detection Technologies and Their Application in Classroom and Lab Research”, (with Jixu Chen and Reza Feyzi), School of Education, University at Albany, State University of New York, Albany, New York, 2014.
12. Invited seminar: “Unconstrained Visual Social Interaction Analysis in Groups”, National Taiwan University, Taipei, Taiwan, 2014.
13. Invited seminar, “Advanced Video Surveillance and Group Scenario Recognition”, National Tsing Hua University, Hsinchu City, Taiwan, 2012.
14. Seminar, “From Computer Vision to Visual Intelligence”, Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan, 2010.
15. Poster Presentation & Demo, “Regularizing 3D Medial Axis Using Medial Scaffold Transforms”, IEEE Computer Vision and Pattern Recognition (CVPR), Anchorage, Alaska, USA, 2008.
16. Seminar, GE Global Research, Niskayuna, NY, USA, 2008.
17. Oral Presentation & Demo, “Surface Reconstruction from Point Clouds by Transforming the Medial Scaffold”, IEEE 3-D Digital Imaging and Modeling (3DIM), Montreal, Canada, 2007.
18. Seminar, “Surface Reconstruction and Medial Axis Computation from Unorganized Points”, Computer Vision Reading Group, LEMS, Engineering, Brown University, Providence, RI, USA, 2007.
19. Oral Presentation, “3D Shape Registration using Regularized Medial Scaffolds”, IEEE 3D Data Processing Visualization and Transmission (3DPVT), Thessaloniki, Greece, 2004.
20. Seminar on Recent Research on Medial Axis Based Shape Representations and Applications, Department of Computer Science and Information Engineering, National Taiwan University, Taipei, Taiwan, 2004.
21. Oral Presentation, “IC Print Mark Quality Inspection Algorithms”, IPPR Conference on Computer Vision, Graphics and Image Processing (CVGIP), Taichung, Taiwan, 1997.

Professional Service

Professional Appointments

1. **Chair, Steering Committee**, IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS), 2022-present.
2. **TPC Chair Lead**, IEEE Conference on Multimedia Information Processing and Retrieval (MIPR), 2022.
3. **Program Chair**, IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS), 2019.
4. **Area Chair**, IEEE International Conference on Multimedia & Expo. (ICME), 2021-2023. I was selected as one of the outstanding area chairs of ICME 2021.
5. **Area Chair, Session Chair**, IEEE International Conference on Image Processing (ICIP), 2017, 2019-2022.
6. **Co-Chair**, AI City Challenge Workshop in conjunction of the IEEE Computer Vision and Pattern Recognition (CVPR), 2018-2022 and on-going.
7. **Organization Committee**, Low-Power Computer Vision (LPCV) Workshop and Challenge in conjunction of the CVPR 2020 Workshop, ICCV 2021 Workshop, and on-going.
8. **Co-Chair**, International Workshop on the Traffic and Street Surveillance for Safety and Security (IWT4S), in conjunction with AVSS 2017-2019.
9. **Co-Chair**, Application Track, NVIDIA AI City Challenge in conjunction of the IEEE Smart World

Congress, San Jose, CA, USA, 2017.

10. **Publication and Associate Chair**, IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS), Lecce, Italy, 2017.
11. **Steering Committee**, IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS), 2017-present.

Journal Referee:

1. ACM Trans. on Multimedia Computing, Communications, and Applications (TOMM): 2022.
2. ASME Journal of Computing and Information Science in Engineering (JCISE): 2010.
3. Elsevier Big Data Research (BDR): 2020.
4. Elsevier Computers and Electronics in Agriculture: 2022.
5. Elsevier Computers & Electrical Engineering: 2022.
6. Elsevier Computers & Mathematics with Applications: 2009.
7. Elsevier Expert Systems with Applications (ESWA): 2022.
8. Elsevier Image and Vision Computing (IVC): 2009.
9. Elsevier Journal of Sustainable Cities and Society: 2022.
10. Elsevier Measurement: 2022.
11. Elsevier Signal Processing: Image Communication: 2020.
12. Elsevier Sustainable Cities and Society: 2022.
13. Elsevier Transportation Research Part D: Transport and Environment: 2022.
14. Elsevier Visual Informatics: 2022.
15. IEEE Trans. on Circuits and Systems for Video Technology (TCSVT): 2021-2022.
16. IEEE Trans. on Cybernetics: 2021.
17. IEEE Trans. on Emerging Topics in Computational Intelligence (TETCI), 2022.
18. IEEE Trans. on Image Processing (TIP): 2009-2010.
19. IEEE Trans. on Intelligent Transportation Systems (ITS): 2020.
20. IEEE Trans. on Multimedia, 2011, 2020, 2022.
21. IEEE Trans. on Neural Networks and Learning Systems (TNNLS): 2022.
22. IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI): 2022.
23. IET Computer Vision, 2013.
24. Journal of Applied Analysis and Computation (JAAC), 2015.
25. Springer International Journal of Computer Vision (IJCV): 2009, 2016.
26. Springer Multimedia Tools and Applications (MTA): 2022.
27. Springer Machine Vision Applications (MVA): 2010-2011.
28. Springer The Visual Computer Journal (TVCJ): 2009, 2011-2013, 2021-2022.
29. Springer Numerical Algorithms (NUMA): 2022.
30. Springer Multimedia Tools and Applications (MTAP): 2021-2022.

Conference Technical Committee and Referee:

1. IEEE Conference on Computer Vision and Pattern Recognition (CVPR): 2011, 2013, 2016, 2019-2023.
2. IEEE International Conference on Computer Vision (ICCV), 2013, 2015, 2019, 2021.
3. European Conference on Computer Vision (ECCV): 2010-2012, 2014, 2016, 2020.
4. Conference on Neural Information Processing Systems (NeurIPS), 2021-2022.
5. International Conference on Machine Learning (ICML), 2022-2023.
6. International Conference on Learning Representations (ICLR), 2022-2023.
7. International Joint Conference on Artificial Intelligence (IJCAI): 2019-2023.
8. Association for the Advancement of Artificial Intelligence (AAAI), 2020-2022.
9. The British Machine Vision Conference (BMVC), 2021.
10. Int'l Conf. on Medical Image Computing & Computer Assisted Intervention (MICCAI), 2021-2022.
11. Asian Conference on Computer Vision (ACCV): 2022.
12. International Conference on Pattern Recognition (ICPR): 2022.
13. IEEE Conf. on Adv. Video and Signal-based Surveillance (AVSS), 2010-2011, 2014, 2018, 2019-2021.
14. IEEE International Conference on Robotics and Automation (ICRA), 2022.

15. International Conference on Machine Learning and Data Mining (MLDM), 2022.
16. International Conference on Computer Communication and the Internet (ICCCI), 2023.
17. International Conference on Image Processing and Vision Engineering (IMPROVE), 2021-2022.
18. International Conference on Computer Vision Theory and Applications (VISAPP), 2021.
19. International Workshop on Smart Sensor Networks, 2012.
20. International Conference on Biomedical Engineering and Biotechnology (iCBEB), 2013-16.
21. International Conference on Electronics, Communications and Network (CECNet), 2014-2015.
22. IEEE Int'l Conference on Computer Graphics, Vision and Information Security (CGVIS), 2015.
23. International Conference on Image Information Processing (ICIIP): 2013.

University, College, and Departmental Service Activities

- Search Committee, UAlbany Faculty Cluster Hire in Artificial Intelligence, 2023.
- Artificial Intelligence and Cybersecurity institute design team, 2021.
Role: Invited and appointed by the President as an expert to develop a schema for structure and organization of the institute, and its correction to the university as well as startup needs and long-term funding model at large.
- UAlbany Honor College scholarship committee, 2017-2020.
Role: review student applications and guide student development with constructive comments.
- CS graduate admission committee, 2017-2020, and chair of committee 2021.
- CS undergraduate curriculum committee, 2019.
- ECE curriculum committee, 2017.

Professional Organization Memberships

Senior Member, IEEE	2019-present
Full Member, Sigma Xi, the Scientific Research Society	2009-2011
Member, IEEE and IEEE Computer Society	2008-2011, 2016-
Student Member, Society for Industrial and Applied Mathematics (SIAM)	2003-2008
President, Brown Taiwanese Student Association	2002-2003
Member, Chinese Image Processing and Pattern Recognition Society (CIPPR), International Association for Pattern Recognition (IAPR) society.	1997-1998

Media Coverage

1. PBS NewsHour Interview on AI image generators, deep learning models and their impacts, 2022.
2. [GE Research Funds Rail Yard Project – Yard Locomotive Detection System Development](#), **SUNY Albany News**, 2020.
3. [‘Deep fake’ videos that can make anyone say anything worry U.S. intelligence agencies](#), **Fox News**, 2019.
4. [Exposing Fake Videos](#), **SUNY Albany News**, 2018.
5. [Deep into Deep Learning](#), **SUNY Albany News**, CEAS Faculty and Students Win Award in First IEEE AI City Challenge, **SUNY Albany News**, 2017.
6. *Breakthrough – More than Human: the Stories behind the Science – GE*. This six-part TV documentary series developed by GE and **National Geographic Channel** directed by Paul Giamatti focusing on scientific progress and innovation is aired Sunday 9pm Nov. 8, 2015, on the NatGeo Channel.
7. Engines of Inference: Peter Tu’s Tech Uses Computer Vision to Understand Emotions, Human Behavior, **GE Reports**, 2015.
8. *GE Scientists Develop Multi-Sensing Handheld Probe to Assess and Prevent Pressure Ulcers from Forming During Hospital Stays*,

[Yahoo Finance News](#), March 19, 2015, [BusinessWire](#).

9. *Public-Private Partnership Aims to Improve Use of Public Surveillance Cameras in Law Enforcement*, SUNY Albany News, Dec. 2014.
10. *Computers That See You, Read You and Even Tell You to Wash*, New York Times, Jan. 2, 2011.

Teaching

- **Artificial Intelligence** CSI-435/535: Fall 2017-2022.
- **Machine Learning** CSI-635: Spring 2022-2023.
- **Data Mining** CSI-431: Spring 2020, Fall 2022, Spring 2023.
- **Computer Graphics** CSI-502: Spring 2019.
- **Image Processing** CEN-360: Spring 2018.
- **Human Computer Interaction** CEN-470: Spring 2017.
- **Microprocessor Applications** CEN-353: Fall 2016.
- Guest Lecturer, **Topics in Artificial Intelligence System Security**, National Taiwan University, Department of Computer Science and Information Engineering, CSIE5437, Fall 2022.
- Lecturer, **2015 Summer Course, “Frontier R&Ds in Image/Video Processing and Industrial Computer Vision”**, University of Chinese Academy of Sciences (UCAS), Beijing, China, Graduate summer course (20 hours of lecture).
- Lecturer, **Spring 2013 CSI-635 Artificial Intelligence II – Computer Vision Course (Graduate Level)**. Design and teach a new course at SUNY Albany.

Honors and Certificate

2010, 2018 Human Research Curriculum Completion, Collaborative Institutional Training Initiative.
12/2009 Six Sigma Green-Belt Certificate, General Electric Company.

Professional Skills

- 25+ years of programming experience in C/C++ (VXL, OpenCV, PCL, Vtk/Itk, VLFeat, Caffe, OpenInventor, OpenGL, MFC/.NET/wxWindows/Qt, Boost); Python, Matlab/Maple; Java, Pascal, Fortran, Basic; Assembly, SIMD (SSE); Script languages (Unix shell), Web (Html), etc., on PC, Unix, Mac.
- Expert in object-oriented programming (OOP), rapid application development, C++ class libraries, Windows programming, design pattern, multi-programming, threading.
- Contributed to the development of high-quality C++ code in VXL / LEMSVXL computer vision library (<http://vxl.sourceforge.net>, <http://www.lems.brown.edu/vision/software/vxl>), including the UAlbany VXL library (uavxl), the Brown mesh library (brl/bmsh), 2D/3D medial axis and shock computation libraries, other geometry computation, registration (ICP), matching, visualization, animation, and GUI libraries.

Other Activities

11/2014-present Board Member, Treasurer (2016-), Taiwanese American Association (TAA) of Capital District of New York.
9/1994-9/1995 Leader, Service Section of the Fundamental Culture Service Club, National Taiwan University.
7/1994-8/1994 Captain, Summer College Students’ Social Service Team, National Taiwan University.