

# Yuwei Lin

Computational Science Initiative  
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## PROFESSIONAL EXPERIENCE

- 2024 – Senior Computational Scientist, Brookhaven National Laboratory, Upton, NY, USA
- 2019 – Research Associate Professor, Stony Brook University, Stony Brook, NY, USA
- 2020 – 2023 Computational Scientist, Brookhaven National Laboratory, Upton, NY, USA
- 2018 – 2020 Associate Computational Scientist, Brookhaven National Laboratory, Upton, NY, USA
- 2016 – 2018 Assistant Computational Scientist, Brookhaven National Laboratory, Upton, NY, USA

## EDUCATION

- 2011 – 2016 PhD in Computer Science and Engineering, University of South Carolina, SC, USA.
- 2007 – 2010 PhD Student in Computer Science, Chongqing University, China.
- 2004 – 2007 M.Eng. Chongqing University, Chongqing, China
- 2000 – 2004 B.S. Sichuan University, Chengdu, Sichuan, China

## PUBLICATIONS

### Book Chapter

- **Y. Lin**, M. Topsakal, J. Timoshenko, D. Lu, S. Yoo, A. I. Frenkel. “Machine-Learning Assisted Structure Determination of Metallic Nanoparticles: A Benchmark.” *Handbook on Big Data and Machine Learning in the Physical Sciences*, World Scientific Publishers, 2020.

### Peer Reviewed Papers

- H. Wang, Y. Deng, S. Yoo, **Y. Lin\***. “Exploring Robust Features for Adversarial Robustness.” *Accepted by IEEE Transactions on Cybernetics*. (\*corresponding author).
- Z. Lin, X. Zhang, P. Nandi, **Y. Lin**, L. Wang, Y. Chu, T. Paape, Y. Yang, X. Xiao, Q. Liu. “Correlative single-cell x-ray tomography and x-ray fluorescence imaging.” *Accepted by Communications Biology*.
- Y. Wei, A. Chen, **Y. Lin**, T. Wei, B. Qiao. “Allosteric Regulation in SARS-CoV-2 Spike Protein.” *Physical Chemistry Chemical Physics*, 26, 6582–6589, 2024. (Featured as 2024 PCCP HOT Articles)
- X. Yu, L. Wu, **Y. Lin**, *et al.* “Ultrafast Bragg Coherent Diffraction Imaging of Epitaxial Thin Films using Deep Complex-valued Neural Networks.” *npj Computational Materials*, 10, 24, 2024.
- J. Kwon, S. Kim, **Y. Lin\***, S. Yoo\*, J. Cha\*. “AesFA: An Aesthetic Feature-Aware Neural Style Transfer”. *AAAI Conference on Artificial Intelligence (AAAI)*. Vancouver, Canada. Feb. 2024. (\*corresponding authors).
- H. Sun, L. Fu, J. Li, Q. Guo, Z. Meng, T. Zhang, **Y. Lin\***, H. Yu\*. “Defense Against Adversarial Cloud Attack on Remote Sensing Salient Object Detection.” *Winter Conference on Applications of Computer Vision (WACV)*. Waikoloa, Hawaii, Jan. 2024. (\*corresponding authors).
- H. Sun, J. Ma, Q. Guo, Q. Zou, S. Song, **Y. Lin\***, H. Yu\*. “Coarse-to-fine Task-driven Inpainting for Geoscience Images.” *IEEE Transactions on Circuits and Systems for Video Technology*, 33(12), 2023. (\*corresponding authors).
- H. Wang, S. Sreejith, **Y. Lin**, N. Ramachandra, A. Slosar, S. Yoo “Neural Network Based Point Spread Function Deconvolution for Astronomical Applications.” *The Open Journal of Astrophysics*. Aug. 2023.

- Y. Wei, A. Chen, **Y. Lin**, T. Wei, S. Zheng. “Graphic Contrastive Learning Analyses of Discontinuous Molecular Dynamics Simulations: Study of Ubiquitin Adsorption on a Graphene Surface.” *Applied Physics Letters*, 122, 253701 (Editor’s pick), 2023.
- X. Liu, **Y. Lin**, Q. Yang, H. Fan. “Transferable Adversarial Attack on 3D Object Tracking in Point Cloud”. International Conference on MultiMedia Modeling, Jan. 2023.
- H. Wang, S. Sreejith, **Y. Lin**, N. S.Ramachandra, A. Slosar, S. Yoo “Deconvolution of Astronomical Images with Deep Neural Networks.” *NuerIPS AI4Science workshop*, Dec. 2022.
- H. Wang, S. Sreejith, A. Slosar, **Y. Lin**, S. Yoo. “Galaxy Deblending using Residual Dense Neural network.” *Physical Review D*. 106, 063023, 2022.
- R. Lian, B. Huang, L. Wang, Q. Liu, **Y. Lin**, H. Ling. “End-to-end Orientation Estimation from Single Particle Cryo-EM Images.” *Acta Crystallographica Section D: Structural Biology*. D78, 2022.
- P. Liu, **Y. Lin**, Z. Meng, L. Lu, W. Deng, J. T. Zhou, Y. Yang. “Point Adversarial Self Mining: A Simple Method for Facial Expression Recognition in the Wild.” *IEEE Transactions on Cybernetics*. 52(12), 2022.
- H. Wang, Y. Deng, S. Yoo, **Y. Lin\***. “AGKD-BML: Defense Against Adversarial Attack by Attention Guided Knowledge Distillation and Bi-directional Metric Learning.” *IEEE International Conference on Computer Vision (ICCV)*, 2021. (\*corresponding author)
- H. Fan, H. Miththanathaya, Harshit, S. Rajan, X. Liu, Z. Zou, **Y. Lin**, H. Ling. “Transparent Object Tracking Benchmark.” *IEEE International Conference on Computer Vision (ICCV)*, 2021.
- H. Sun, **Y. Lin**, Q. Zou, S. Song, J. Fang, H. Yu, “Convolutional Neural Networks Based Remote Sensing Scene Classification under Clear and Cloudy Environments.” *ICCV Workshop on Learning to Understand Aerial Images*, 2021.
- H. Fan, F. Yang, P. Chu, L. Yuan, **Y. Lin**, H. Ling. “TracKlinic: Diagnosis of Challenge Factors in Visual Tracking.” *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa, Hawaii, 2021.
- Z. Zhang, Q. Zou, **Y. Lin**, L. Chen, S. Wang. “Improved Deep Hashing with Soft Pairwise Similarity for Multi-label Image Retrieval.” *IEEE Transactions on Multimedia*. vol. 22 (2), 2020.
- H. Li, **Y. Lin**, K. Mueller, W. Xu. “Interpreting Galaxy Deblender GAN from the Discriminator’s Perspective.” *International Symposium on Visual Computing*, Oct. 2020.
- L. Pouchard, **Y. Lin**, H. Van Dam. “Replicating Machine Learning Experiments in Materials Science.” *Advances in Parallel Computing*. Vol. 36, IOS Press, 2020.
- S. Song, H. Yu, Z. Miao, Q. Zhang, **Y. Lin**, S. Wang. “Domain Adaptation for Convolutional Neural Networks based Remote Sensing Scene Classification.” *IEEE Geoscience and Remote Sensing Letters*, 16(8), 2019.
- S. Ha, **Y. Lin**, X. Huang, H. Yan, W. Xu. “An End-to-end Deep Convolutional Neural Network for a Multi-scale Image Matching and Localization Problem.” *CVPR Workshop on Image Matching: Local Features & Beyond*, Long Beach, CA, 2019.
- X. Li, **Y. Lin**, Q. Liu, S. McSweeney, S. Yoo. “Picking Particles in Cryo-EM Micrographs without Knowing the Particle Size.” *New York Scientific Data Summit (NYSDS)*, New York city, NY, 2019.
- **Y. Lin**, J. Chen, Y. Cao, Y. Zhou, L. Zhang, Y. Y. Tang, S. Wang. “Cross-Domain Recognition by Identifying Joint Subspaces of Source Domain and Target Domain”. *IEEE Transactions on Cybernetics* 47(4), 2017.
- **Y. Lin**, Y. Tong, Y. Cao, Y. Zhou, S. Wang. “Visual-Attention Based Background Modeling for Detecting Infrequently Moving Objects”. *IEEE Transaction on Circuits and Systems for Video Technology* 27(6), 2017.
- J. Timoshenko, D. Lu, **Y. Lin**, A. I. Frenkel. “Supervised Machine-Learning-Based Determination of Three-Dimensional Structure of Metallic Nanoparticles.” *The Journal of Physical Chemistry Letters*, 8(20), 2017.
- K. Zheng, X. Fan, **Y. Lin**, H. Guo, H. Yu, D. Guo, S. Wang. “Learning View-Invariant Features for Person Identification in Temporally Synchronized Videos Taken by Wearable Cameras”. *IEEE International Conference on Computer Vision (ICCV)*, Venice, Italy, 2017.
- **Y. Lin**, D. Zakharov, R. Megret, S. Yoo, E. Stach. “Near Real Time ETEM Streaming Video Analysis.” *New York Scientific Data Summit (NYSDS)*, New York city, NY, 2017.
- J. Rodman, **Y. Lin**, D. Sprouster, L. Ecker, S. Yoo. “Automated Synchrotron X-Ray Diffraction of Irradiated Materials.” *New York Scientific Data Summit (NYSDS)*, New York city, NY, 2017.
- H. Yu, Y. Zhou, J. Simmons, C. Przybyla, **Y. Lin**, X. Fan, Y. Mi, S. Wang. “Groupwise Tracking of Crowded

Similar-Appearance Targets from Low-Continuity Image Sequences”. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, 2016.

- **Y. Lin**, K. E. El-Deen, Y. Zhou, X. Fan, H. Yu, H. Qian, S. Wang. “Co-interest Person Detection from Multiple Wearable Camera Videos”. *IEEE International Conference on Computer Vision (ICCV)*, Santiago, Chile, 2015.
- **Y. Lin**, J. Chen, Y. Cao, Y. Zhou, L. Zhang, S. Wang. “Cross-Domain Recognition by Identifying Compact Joint Subspaces”. *International Conference on Image Processing (ICIP)*, Quebec City, Canada, 2015. (**Best 10% Paper Award**)
- X. Fan, K. Zheng, **Y. Lin**, S. Wang. “Combining Local Appearance and Holistic View: Dual-Source Deep Neural Networks for Human Pose Estimation”. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Boston, MA, 2015.
- J. Chen, Y. Y. Tang, P. Chen, B. Fang, Z. Shang, **Y. Lin**. “NNMap: A Method to Construct A Good Embedding for Nearest Neighbor Classification”. *Neurocomputing*, 152, 2015.
- K. Zheng\*, **Y. Lin**\*, Y. Zhou, D. Salvi, X. Fan, D. Guo, Z. Meng, S. Wang. “Video-based Action Detection using Multiple Wearable Cameras”. *ECCV workshop on ChaLearn Looking at People*, 2014. (\* Co-first author)
- J. Chen, Y. Y. Tang, P. Chen, B. Fang, **Y. Lin**, Z. Shang. “Multi-label Learning with Fuzzy Hypergraph Regularization for Protein Subcellular Location Prediction”. *IEEE Transactions on NanoBioscience*, 13(4), 2014. (**Front cover paper**)
- J. Chen, Y. Y. Tang, P. Chen, B. Fang, Z. Shang, **Y. Lin**. “Similarity Measure Learning in Closed-Form Solution for Image Classification”. *The Scientific World Journal*, 2014.
- J. Chen, Y. Y. Tang, P. Chen, **Y. Lin**. “Dual Fuzzy Hypergraph Regularized Multi-label Learning for Protein Subcellular Location Prediction”. *International Conference on Pattern Recognition (ICPR)*, 2014.
- Y. Zhou, L. Ju, Y. Cao, J. Waggoner, **Y. Lin**, J. Simmons, S. Wang. “Edge-Weighted Centroid Voronoi Tessellation with Propagation of Consistency Constraint for 3D Grain Segmentation in Microscopic Superalloy Images”. *CVPR Workshop on Perception Beyond the Visible Spectrum (PBVS)*, 2014.
- C. Qu, D. Zhang, **Y. Lin**, S. Wang. “Distant Human Interaction Recognition with Kinect”. *Journal of Computers*, vol 9, 2014.
- **Y. Lin**, Y. Y. Tang, B. Fang, Z. Shang, Y. Huang, S. Wang. “A Visual-Attention Model Using Earth Mover’s Distance based Saliency Measurement and Nonlinear Feature Combination”. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 35(2), 2013.
- Y. Cao, D. Barrett, A. Barbu, S. Narayanaswamy, H. Yu, A. Michaux, **Y. Lin**, S. Dickinson, J. Siskind, S. Wang. “Recognize Human Activities from Partially Observed Videos”. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Portland, Oregon, 2013.
- W. Yang, Y. Y. Tang, B. Fang, Z. Shang, **Y. Lin**. “Visual Saliency Detection with Center Shift”. *Neurocomputing*, 103(1), 2013.
- **Y. Lin**, B. Fang, Y. Tang. “A Computational Model for Saliency Maps by Using Local Entropy”. *AAAI Conference on Artificial Intelligence (AAAI)*, Atlanta, GA, USA, 2010.

## AWARDS

- Department of Energy (DOE) NNSA Joule Award, 2022.
- Department of Energy (DOE) NNSA Joule Award, 2020.
- 2017’s Top-10 Discoveries and Scientific Achievements at Brookhaven National Laboratory, 2017.
- Outstanding Graduate Researcher of the Department of Computer Science and Engineering, University of South Carolina, 2016.
- Best 10% Paper Award, International Conference on Image Processing, 2015.
- IEEE Signal Processing Society Travel Grant, 2015.

## GRANTS

- **co-PI**. “Improving the performance and suitability of Large Language Model (LLM) based agents for scientific research”. Brookhaven National Laboratory Directed Research and Development (LDRD) Type B. \$500K,

FY25–FY26.

- **PI.** “Developing and Integrating Foundation Models and Causal Inference for Plant Disease Detection, Surveillance, and Prediction”, Brookhaven National Laboratory Directed Research and Development (LDRD) Type A. \$1.5M, FY24–FY27.
- **co-PI.** “Biosecurity Research Environment for Invasive Fungal Diseases”, Brookhaven National Laboratory Directed Research and Development (LDRD) Type A. \$1.5M, FY24–FY27.
- **co-PI.** “Transformative Biohybrid Diiron Catalysts for C-H Bond Functionalization”, DOE BES Chemical and Materials Sciences to Advance Clean-Energy Technologies and Transform Manufacturing. \$3,200,000, FY23–FY25.
- **BNL PI.** “Toward Improving Adversarial Robustness of Deep Learning Models from the Geometric View”, SBU-BNL seed grant award. \$30,000, FY22–FY23.
- **co-PI.** “Machine Learning for Real-Time Video Authentication”, DOE NNSA, Defense Nuclear Nonproliferation Research and Development (DNN RD) projects. \$1,080,000, FY22–FY24.
- **co-PI.** “Eureka!”, Brookhaven National Laboratory Directed Research and Development (LDRD), Type A. \$1,250,000, FY22–FY24.
- **co-PI.** “Automated sorting of high repetition rate coherent diffraction data from XFELs”, DOE BES Data Science to Advance Chemical and Materials Sciences. \$800,000/year, FY22–FY24.
- **co-PI.** “Development of an Integrated Multi-Scale Bioimaging Capability”, Brookhaven National Laboratory Directed Research and Development (LDRD). \$1,500,000, FY21–FY24.
- **co-PI.** “Linking Experiments to Algorithms For Solving Single- Particle Cryo-EM Challenges”, Brookhaven National Laboratory Directed Research and Development (LDRD). \$360,000, FY20–FY21.
- **PI.** “Visualization toward White-Box Machine Learning for Image Registration in Multi-modal Imaging and Analysis”, Brookhaven National Laboratory Directed Research and Development (LDRD). \$1,000,000, FY18–FY20.
- **BNL PI.** “Characterizing Sub-Cellular Morphology Across Cancer Types”, Stony Brook University Brookhaven national lab seed grant award. \$42,663, FY18–FY19.
- **co-PI.** “Using Deep Learning Algorithm to Enhance Image-review Software for Surveillance Cameras”. DOE Safeguards Technology Development Program. \$300,000/year, FY18–FY23.
- **co-PI.** National Geospatial intelligence agency (NGA) project. \$600,000, FY18–FY19.
- **co-PI.** “Accelerating HEP Science: Inference and Machine Learning at Extreme Scales”, DOE SciDAC 4 Program. \$650,000/year, FY17–FY22.

## PROFESSIONAL PRESENTATIONS

### Invited Talks

- Long Island AI Conference, Panel Speaker. Long Island Association, Apr. 2024.
- “Automated Defense Against Adversarial Attacks and Forgeries”. AI@DOE Roundtable, Department of Energy, Virtual, Jan. 2022.
- “Towards Against the Adversarial Attacks and Forgeries”. Workshop of Mission-Critical Big Data Analytics (MCBDA), Prairie View A&M University, TX. June 2021.
- “Large Scale Data to Drive Scientific Discoveries and Failure Prediction”. INL-BNL Workshop: Let Us Collaborate – A Forum on Energy Research and Technology, Oct. 2020.
- “Machine Learning/Computer Vision Techniques used in Large Scale Scientific Data at BNL”. Workshop of Mission-Critical Big Data Analytics (MCBDA), Prairie View A&M University, TX. May 2018.

### Poster/Oral Presentations

- “Using Machine Learning To Track Objects Across Cameras”. Oral Presentation in Institute of Nuclear Materials Management (INMM) Annual Meeting, Virtual, Aug. 2021.

- “Replicating analysis in material sciences”.  
Oral Presentation in Parallel Computing Conference, Prague, Czech Republic, Sep. 2019.
- “Single-shot Particle Picking in Cryo-EM images”.  
Oral Presentation in New York Scientific Data Summit (NYSDDS), New York City, NY, Jun. 2019.
- “Structure Determination of Metallic Nanoparticles: A Machine Learning Benchmark”.  
Oral Presentation in New York Scientific Data Summit (NYSDDS), Upton, NY, Aug. 2018.
- “Near Real Time ETEM Streaming Video Analysis”.  
Poster Presentation in New York Scientific Data Summit (NYSDDS), New York city, NY, Aug. 2017.
- “Improved Background Subtraction for Detecting Objects with Infrequent Motions”.  
Poster Presentation in PI’s Meeting of DARPA Mind’s Eye Program, Monterey, CA, Nov. 8-9, 2012.
- “A Computational Model for Saliency Maps by Using Local Entropy”.  
Oral Presentation in the 24th AAAI Conference on Artificial Intelligence, Atlanta, GA, July 2010.

## POSTDOC/STUDENT SUPERVISION

### Postdoctoral advisor

Hong Wang, Brookhaven National Laboratory  
Xi Yu, Brookhaven National Laboratory

### Doctoral Student Co-advisor

Hong Wang, Stony Brook University

### PhD Committee Member

Heyi Li, Stony Brook University  
Bingyao Huang, Stony Brook University  
Jinlong Li, Cleveland State University  
Michael Viteritto, Montclair State University  
Sana Mirza, Montclair State University

### Mentor of SULI (DOE’s Science Undergraduate Laboratory Internship)

Nicholas Stapleton, University of California, Davis  
Ian McDiarmid-Sterling, Swarthmore College  
Shenghui Yu, Stony Brook University  
Jeremy Chu, Stony Brook University

## PROFESSIONAL SERVICES

### Conference/Workshop Organized

- Workshop of Efficient Learning for Facial Analysis, in conjunction with Winter Conference on Applications of Computer Vision (WACV), January, 2024.
- Multimodal and Multi-scale Bioimaging for Biomedical and Bioenergy Research, NSLS-II, CFN LBMS Users’ Meeting, April, 2023.
- Learning with Limited Data for Face Analysis. in conjunction with Asian Conference of Computer Vision (ACCV), Macau SAR, December 2022.
- New York Scientific Data Summit (NYSDDS), New York, October 2022.
- Workshop of Machine Learning in X-ray Imaging and Microscopy Applications - A Symposium with Hands-on Demonstrations, NSLS-II & CFN Users’ meeting, May 2020.

### Conference Area/Session Chair

Area Chair, ACM International Conference on Multimedia (MM), 2022, 2023.  
Session Chair, ACM International Conference on Multimedia (MM), Session of Scene Understanding and Expe-

rience, 2022.

## **Guest Editor**

Special Issue of the International Journal of Wavelets, Multiresolution and Information Processing.

## **Journal Reviewer**

IEEE Transaction on Pattern Analysis and Machine Intelligence  
Nature Communications  
IEEE Transactions on Image Processing  
Scientific Reports  
Pattern Recognition  
IEEE Transactions on Multimedia  
IEEE Transactions on Circuits and Systems for Video Technology  
IEEE Transactions on Intelligent Transportation Systems  
IEEE Transactions on Intelligent Vehicles  
PLOS ONE  
Remote Sensing  
Neurocomputing  
Image and Vision Computing  
IEEE Signal Processing Letters  
Computer Vision and Image Understanding  
Pattern Recognition Letters  
Visual Cognition  
Optical Engineering  
Journal of Electronic Imaging

## **Conference Program Committee Member**

IEEE International Conference on Computer Vision (ICCV), 2019, 2021, 2023  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018–2024  
Conference on Neural Information Processing Systems (NeurIPS), 2022–2024  
International Conference on Machine Learning (ICML), 2024  
The International Conference on Learning Representations (ICLR), 2022–2024  
SIAM International Conference on Data Mining (SDM), 2022  
European Conference on Computer Vision (ECCV), 2020, 2022  
ACM SigKDD Conference on Knowledge Discovery and Data Mining, 2019–2022  
AAAI Conference on Artificial Intelligence, 2017, 2019–2024  
International Joint Conference on Artificial Intelligence (IJCAI), 2020  
IEEE Winter Conference on Applications of Computer Vision (WACV) 2020–2024  
International Conference on Pattern Recognition (ICPR), 2018

## **Others**

INMM Annual Meeting. Student paper competition judging for the J.D. Williams Student Paper awards, 2021.