

Yin Yang (Updated Feb, 2024)

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RESEARCH INTERESTS	I am broadly interested in Visual Computing, especially in solving computational problems of <i>Computer Graphics, Deep Learning, 3D Vision, Embodied AI, and Robotics</i> . My recent research interests include <i>Simulation-in-the-loop Machine Learning, Generative AI for 3D/4D Contents, Differentiable Simulation</i> .	
EDUCATION	The University of Texas at Dallas , Richardson, TX, USA Ph.D., Computer Science, Jun 2013 Dissertation: <i>Physics-based Subspace Deformation - Theory and Applications</i> Jiangnan University , Wuxi, Jiangsu, China B.E., Computer Science, May 2004	
ACADEMIC EXPERIENCE	Associate Professor Kahlert School of Computing University of Utah, Salty Lake City, UT, USA	Jul 2022 – present
	Associate Professor School of Computing Clemson University, Clemson, SC, USA	Jan 2020 – Jun 2022
	Associate Director AI Research Institute for Science and Engineering Clemson University, Clemson, SC, USA	Aug 2020 – Jun 2022
	Research Associate Professor Department of Computer Science The University of New Mexico, Albuquerque, NM, USA	Jan 2020 – Jun 2022
	Associate Professor Department of Electrical and Computer Engineering The University of New Mexico, Albuquerque, NM, USA	Jul 2019 – Dec 2019
	Assistant Professor Department of Electrical and Computer Engineering The University of New Mexico, Albuquerque, NM, USA	Aug 2013 – Mar 2019
	Teaching Assistant Department of Computer Science The University of Texas (Dallas), Richardson, TX, USA	Aug 2007 – Jul 2010 & Aug 2012 – Jun 2013
	Research Intern Internet Graphics Group Microsoft Research Asia, Beijing, China	Mar 2012 – Jun 2012
	Research Assistant Department of Computer Science The University of Texas (Dallas), Richardson, TX, USA	Sep 2010 – Feb 2012

Department of Radiation Oncology
UT Southwestern Medical Center, Dallas, TX, USA

Research Assistant

Aug 2005 - Jun 2007

University of New Brunswick, Fredericton, NB, Canada

PUBLICATIONS

Over 100 peer-reviewed publications covering Graphics, ML, Robotics, Fabrication, HCI, Differentiable Computation, Visualization, Architecture, 3D Reconstruction, and Medicine.

Published/Accepted Peer Referred Journal Articles

1. Shanglian Zhou, Hao Xu, Guohui Zhang, Tianwei Ma, **Yin Yang**, “DCOR: Dynamic Channel-Wise Outlier Removal to De-Noise LiDAR Data Corrupted by Snow”, *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2024.
2. Zhengdong Wang, **Yin Yang**, Huamin Wang, “Stable Discrete Bending by Analytic Eigensystem and Adaptive Orthotropic Geometric Stiffness”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2023.
3. Ziyin Qu, Minchen Li, **Yin Yang**, Chenfanfu Jiang, Fernando de Goes, “Power Plastics: A Hybrid Lagrangian/Eulerian Solver for Mesoscale Inelastic Flows”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2023.
4. Yu Fang*, Minchen Li* (equal contributors), Yadi Cao, Xuan Li, Joshua Wolper, **Yin Yang**, Chenfanfu Jiang, “Augmented Incremental Potential Contact for Sticky Interactions”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2023.
5. Lei Lan, Minchen Li, Chenfanfu Jiang, Huamin Wang, **Yin Yang**, “Second-order Stencil Descent for Interior-point Hyperelasticity”, *ACM Transactions on Graphics (SIGGRAPH)*, 2023.
6. Tianyi Xie, Minchen Li, **Yin Yang**, Chenfanfu Jiang, “A Contact Proxy Splitting Method for Lagrangian Solid-Fluid Coupling”, *ACM Transactions on Graphics (SIGGRAPH)*, 2023.
7. Shanglian Zhou, Hao Xu, Guohui Zhang, Tianwei Ma, **Yin Yang**, “Deep learning-based Pedestrian Trajectory Prediction and Risk Assessment at Signalized Intersections using Trajectory Data Captured through Roadside LiDAR”, *Journal of Intelligent Transportation Systems*, 2023.
8. Yuxing Qiu, Samuel Reeve, Minchen Li, **Yin Yang**, Stuart Slattery, Chenfanfu Jiang, “A Sparse Distributed Gigascale Resolution Material Point Method”, *ACM Transactions on Graphics (SIGGRAPH)*, 2023.
9. Fei Ding, **Yin Yang**, Hongxin Hu, Venkat Krovi, Feng Luo, “Dual-Level Knowledge Distillation via Knowledge Alignment and Correlation”, *IEEE Transactions on Neural Networks and Learning Systems (TTNLS)*, 2022.
10. Shanglian Zhou, Hao Xum, Guohui Zhang, Tianwei Ma, **Yin Yang**. “Leveraging Deep Convolutional Neural Networks Pre-Trained on Autonomous Driving Data for Vehicle Detection From Roadside LiDAR Data”, *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2022.

11. Lei Lan, Danny Kaufman, **Yin Yang**, Changxi Zheng, Minchen Li, Chenfanfu Jiang, “Affine Body Dynamics: Fast, Stable and Intersection-free Simulation of Stiff Materials”, *ACM Transactions on Graphics (SIGGRAPH)*, 2022.
12. Lei Lan, Guanqun Ma, Minchen Li, Chenfanfu Jiang, **Yin Yang**, “Penetration-free Projective Dynamics on the GPU”, *ACM Transactions on Graphics (SIGGRAPH)*, 2022.
13. Yunuo Chen, Minchen Li, Lei Lan, Hao Su, **Yin Yang**, Chenfanfu Jiang, “A Unified Newton Barrier Method for Multibody Dynamics”, *ACM Transactions on Graphics (SIGGRAPH)*, 2022.
14. Jiafeng Liu, Haoyang Shi, Siyuan Zhang, **Yin Yang**, Changyang Ma, Weiwei Xu, “Automatic Quantization for Physics-based Simulation”, *ACM Transactions on Graphics (SIGGRAPH)*, 2022.
15. Yadi Cao, Yunuo Chen, Minchen Li, **Yin Yang**, Xinxin Zhang, Mridul Aanjaneya, Chenfanfu Jiang, “An Efficient B-Spline Lagrangian-Eulerian Method for Compressible Flow, Shock Waves, and Fracturing Solids”, *ACM Transactions on Graphics (presented in SIGGRAPH)*, 2022.
16. Kai Zeng, Yaonan Wang, Jianxu Mao, Caiping Liu, Weixing Peng, and **Yin Yang**, “Deep Stereo Matching with Hysteresis Attention and Supervised Cost Volume Construction”, *IEEE Transactions on Image Processing (TIP)*, 2022.
17. Lixue Gong, Yiqun Zhang, Yunke Zhang, **Yin Yang**, Weiwei Xu, “Erroneous Pixel Prediction for Semantic Image Segmentation”, *Computational Visual Media*, 2021.
18. Lei Lan*, **Yang Yin*** (equal contribution), Danny Kaufman, Junfeng Yao, Minchen Li, Chenfanfu Jiang, “Medial IPC: Accelerated Incremental Potential Contact with Medial Elastics”, *ACM Transactions on Graphics (SIGGRAPH)*, 2021.
19. Siyuan Shen*, **Yang Yin*** (equal contribution), Tianjia Shao, He Wang, Chenfanfu Jiang, Lei Lan, Kun Zhou, “High-order Differentiable Autoencoder for Nonlinear Model Reduction”, *ACM Transactions on Graphics (SIGGRAPH)*, 2021.
20. Jiamin Xu, Xiuchao Wu, Zihan Zhu, Weiwei Xu, **Yin Yang**, Hujun Bao, Qixing Huang, “Scalable Image-based Indoor Scene Rendering with Reflections”, *ACM Transactions on Graphics (SIGGRAPH)*. 2021
21. Longhua Wu, Botao Wu, **Yin Yang**, and Huamin Wang, “A Safe and Fast Repulsion Method for GPU-based Cloth Self Collisions”, *ACM Transactions on Graphics (presented in SIGGRAPH)*, 2021.
22. Lifeng Zhu, Rubin Ren, Dapeng Chen, Aiguo Song, Jia Liu, Ning Ye, and **Yin Yang**, “Feel the inside: A Haptic Interface for Navigating Stress Distribution Inside Objects”, *The Visual Computer (CGI 2020)*, 2020.
23. Lei Lan, Ran Luo, Marco Fratarcangeli, Weiwei Xu, Huamin Wang, Xiaohu Guo, Junfeng Yao, and **Yin Yang**, “Medial Elastics: Efficient and Collision-ready Deformation via Medial Axis

- Transform”, *ACM Transactions on Graphics*, (presented in SIGGRAPH), 2020.
24. Xudong Feng, Jiafeng Liu, Huamin Wang, **Yin Yang**, Hujun Bao, Bernd Bickel, and Weiwei Xu, “Computational Design of Skinned Quad Robots”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2020.
 25. Youxiang Zhu, Weiming Sun, Xiangying Cao, Chunyan Wang, Dongyang Wu, **Yin Yang**, and Ning Ye, “Learning Cascade Attention for Fine-grained Image Classification”, *Neural Networks*, 2020.
 26. Ran Luo, Weiwei Xu, Tianjia Shao, Hongyi Xu, and **Yin Yang**, “Accelerated Complex Step Finite Difference for Expedient Deformable Simulation”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2019.
 27. Youxiang Zhu, Weiming Sun, Xiangying Cao, Chunyan Wang, Dongyang Wu, **Yin Yang**, and Ning Ye, “TA-CNN: Two-way Attention Models in Deep Convolutional Neural Network for Plant Recognition”, *Neurocomputing*, 2019.
 28. Ran Luo, Huamin Wang, Weiwei Xu, Kun Zhou, and **Yin Yang**, “NNWarp: DNN-based Non-linear Deformation”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2018.
 29. Tianjia Shao, **Yin Yang**, Yanlin Weng, Qiming Hou, and Kun Zhou, “H-CNN: Spatial Hashing Based CNN for 3D Shape Analysis”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2018.
 30. Hao Yu, Xiaofeng Chen, Zhenning Li, Guohui Zhang, Pan Liu, Jinfu Yang, and **Yin Yang**, “Taxi-based Mobility Demand Formulation and Prediction Using Conditional Generative Adversarial Network-Driven Learning Approaches”, *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2018
 31. Jiamin Xu, Weiwei Xu, **Yin Yang**, Zhigang Deng, and Hujun Bao, “Online Global Non-rigid Registration for 3D Object Reconstruction Using Consumer-level Depth Cameras”, *Computer Graphics Forum (CGF, PG special issue)*, 2018.
 32. Minmin Lin, Tianjia Shao, Youyi Zheng, Zhong Ren, Yanlin Weng, and **Yin Yang**, “Automatic Single-Image Mechanism Modeling using Deep Neural Network”, *Computer Graphics Forum (CGF, PG special issue)*, 2018.
 33. Xiaoyu Wang, **Yin Yang**, and Kang Zhang, “Customization and Generation of Floor Plans Based on Graph Transformations”, *Automation in Construction*, 2018.
 34. Xijian Fan, Xubing Yang, Qiaolin Ye, and **Yin Yang**, “A Discriminative Dynamic Framework for Facial Expression Recognition in Video Sequences”, *Journal of Visual Communication and Image Representation*, 2018.
 35. Yuming Zhang, Guohui Zhang, Rafael Fierro, and **Yin Yang**, “Force-Driven Traffic Simulation for Future CAV-Enabled Smart Transportation System”, *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2018.

36. Yuming Zhang, Cong Chen, Qiong Wu, Qi Lu, Su Zhang, Guohui Zhang, and **Yin Yang**, “3D Pavement Surface Reconstruction and Cracking Recognition Based on Kinect Fusion Techniques”, *IEEE Transactions on Intelligent Transportation Systems (TITS)*, 2018.
37. Ran Luo, Weiwei Xu, Huamin Wang, Kun Zhou, **Yin Yang**, “Physics-based Quadratic Deformation Using Elastic Weighting”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2018.
38. Weiwei Xu, Haifeng Yang, Yin Yang, Yiduo Wang, Kun Zhou, “Stress-aware Large Scale Shape Editing using Domain-decomposed Multigrid Solver”, *Computer-Aided Geometric Design (GMP)*, 2018.
39. Yuming Zhang, Steven Garcia, Weiwei Xu, Tianjia Shao, **Yin Yang**, “Efficient Voxelization Using Projected Optimal Scanline”, *Graphical Models (GMOD)*, 2017.
40. Wang Lin, Kunjin He, Zhengming Chen, **Yin Yang**, “A Design Method for Orthopedic Plates Based on Surface Features”, *Journal of Mechanical Design*, 2017.
41. Zhao Haiming, Weiwei Xu, Kun Zhou, **Yin Yang**, Xiaogang Jin, Hongzhi Wu, “Stress-Constrained Thickness Optimization for Shell Object Fabrication”, *Computer Graphics Forum (CGF)*, 2017.
42. Huamin Wang and **Yin Yang**, “Descent Methods for Elastic Body Simulation on the GPU”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2016.
43. Mingliang Xu, Mingyuan Li, Weiwei Xu, Zhigang Deng, **Yin Yang**, Kun Zhou, “Interactive Mechanism Modeling from Multi-view Images”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2016.
44. Yuliang Rong, Tianjia Shao, Youyi Zheng, **Yin Yang**, Kun Zhou, “An Interactive Approach for Functional Prototype Recovery from a Single RGBD Image”, *Computational Visual Media (Oral presentation in Computational Visual Media Conference and CVM annual best paper of 2016)*, 2016.
45. Kele Xu, **Yin Yang**, Maureen Stone, Aurore Jaumard-Hakoun, Clemence Leboulenger, Gerard Dreyfus, Pierre Roussel, Bruce Denby, “Robust contour tracking in ultrasound tongue image sequences”, *Clinical Linguistics and Phonetics*, 2016.
46. Joubin Nasehi Tehrani, **Yin Yang**, Rene Werner, Wei Lu, Daniel Low, Xiaohu Guo, Jing Wang, “Sensitivity of Tumor Motion Simulation Accuracy to Lung Biomechanical Modeling Approaches and Parameters”, *Physics in Medicine & Biology*, 2015
47. **Yin Yang**, Dingzeyu Li, Weiwei Xu, Yuan Tian, Changxi Zheng, “Expediting Precomputation for Reduced Deformable Simulation”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2015.
48. Yuan Tian, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “Stable Haptic Interaction Based on Adaptive Hierarchical Shape Matching”, *Computational Visual Media (CVM)*, 2015.

49. Ran Luo, Lifeng Zhu, Weiwei Xu, Patrick Kelley, Vanessa Svihla, **Yin Yang**, “Interactive Design and Simulation of Tubular Supporting Structure”, *Graphical Models (GMOD)*, 2015.
50. Yue Xie, Weiwei Xu, **Yin Yang**, Xiaohu Guo, Kun Zhou, “Agile Structural Analysis for Fabrication-Aware Shape Editing”, *Computer-Aided Geometric Design (GMP)*, 2015.
51. Ziyang Tang, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “Distributed Haptic Interactions with Physically-Based 3D Deformable Models over Lossy Networks”, *IEEE Transactions on Haptics (TOH)*, 2013.
52. **Yin Yang**, Weiwei Xu, Xiaohu Guo, Kun Zhou, Baining Guo, “Boundary-Aware Multi-Domain Subspace Deformation”, *IEEE Transactions of Visualization and Computer Graphics (TVCG)*, 2013.
53. **Yin Yang**, Xiaohu Guo, Jennell Vick, Luis Torres, Thomas Campbell, “Physics-Based Deformable Tongue Visualization”, *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2013.
54. **Yin Yang**, Zichun Zhong, Xiaohu Guo, Jing Wang, John Anderson, Timothy Solberg, Weihua Mao, “A Novel Markerless Technique to Evaluate Daily Lung Tumor Motion Based on Conventional Cone-Beam CT Projection Data”, *International Journal of Radiation Oncology Biology Physics*, 2012.
55. **Yin Yang**, Meng Gong, Brigitte Leblon, Ying Hei Chui, “Linear Window Correlation: New Image Processing Based Approach to Strain Distribution Analysis of Wood”, *Canadian Journal of Forest Research*, 2011.
56. **Yin Yang**, Guodong Rong, Luis Torres, Xiaohu Guo, “Real-Time Hybrid Solid Simulation: Spectral Unification of Deformable and Rigid Materials”, *Computer Animation and Virtual Worlds*, 2010.
57. **Yin Yang**, Meng Gong, Ying Hei Chui, “New Image Analysis Algorithm for Calculating Percentage Wood Failure”. *Holzforschung*, 2008.
58. Kunjin He, Zhengmin Chen, **Yin Yang**, “Algorithms of Stack Sequence Based on Operator and Its Implementation”, *Computer Engineering and Design*, 2006.

Published/Accepted Peer Referred Conference Proceedings/Courses/Posters/Demos

59. Xuan Li, Yu Fang, Lei Lan, Huamin Wang, **Yin Yang**, Minchen Li, Chenfanfu Jiang, “Subspace-Preconditioned GPU Projective Dynamics with Contact for Cloth Simulation”, *SIGGRAPH Asia* conference track, 2023.
60. Yunuo Chen, Tianyi Xie, Cem Yuksel, Danny Kaufman, **Yin Yang**, Chenfanfu Jiang, Minchen Li, “Multi-Layer Thick Shells”, *SIGGRAPH* conference track, 2023.
61. Hui Ying, Tianjia Shao, He Wang, **Yin Yang**, Kun Zhou, “Adaptive Local Basis Functions for Shape Completion”, *SIGGRAPH* conference track, 2023.

62. Xuan Li, Yadi Cao, Minchen Li, **Yin Yang**, Craig Schroeder, Chenfanfu Jiang, “PlasticityNet: Learning to Simulate Metal, Sand, and Snow for Optimization Time Integration”, *NeurIPS*, 2022.
63. Fei Ding, **Yin Yang**, Feng Luo, “Clustering by Directly Disentangling Latent Space”, *ICIP*, 2022.
64. Siyuan Shen, Tianjia Shao, Kun Zhou, Chenfanfu Jiang, Feng Luo, **Yin Yang**, “HoD-Net: High-order Differentiable Deep Neural Networks and its Applications”, *AAAI*, 2022.
65. Jiawei Lu, He Wang, Tianjia Shao, **Yin Yang**, Kun Zhou, “Pose Guided Image Generation from Misaligned Sources via Residual Flow Based Correction”, *AAAI*, 2022.
66. Chi Wang, Yunke Zhang, Miaomiao Cui, Peiran Ren, **Yin Yang**, Xuansong Xie, Xian-Sheng Hua, Hujun Bao, Weiwei Xu, “Active Boundary Loss for Semantic Segmentation”, *AAAI*, 2022.
67. Hui Ying, He Wang, Tianjia Shao, **Yin Yang**, Kun Zhou, “Unsupervised Image Generation with Infinite Generative Adversarial Networks”, *ICCV*, 2021.
68. Zheng Dong, Ke Xu, **Yin Yang**, Hujun Bao, Weiwei Xu, Rynson W.H. Lau, “Location-aware Single Image Reflection Removal”, *ICCV*, 2021.
69. Lijuan Liu, **Yin Yang**, Yi Yuan, Tianjia Shao, He Wang, and Kun Zhou, “In-game Residential Home Planning via Visual Context-aware Global Relation Learning”, *AAAI*, 2021.
70. Hang Zhao, Qijin She, Chenyang Zhu, **Yin Yang**, and Kai Xu, “Online 3D Bin Packing with Constrained Deep Reinforcement Learning”, *AAAI*, 2021.
71. Afroza Shirin, Edl Schamiloglu, Cornel Sultan, **Yin Yang**, James Benford, Rafael Fierro, “Modeling and Stability of a Laser Beam-Driven Sail”, *American Control Conference (ACC)*. 2021.
72. Edl Schamiloglu, Afroza Shirin, Rafael Fierro, **Yin Yang**, and Francesco Sorrentino, “Control and Stability of Laser/Microwave-Propelled Sails”, High Power Laser Ablation Conference, Santa Fe, NM, Apr 2020.
73. Nishant Vishwamitra, Ruijia Roger Hu, Feng Luo, Long Cheng, Matthew Costello, **Yin Yang**, “On Analyzing COVID-19-related Hate Speech Using BERT Attention”, *IEEE International Conference on Machine Learning and Applications* 2020.
74. Marco Fratarcangeli, Huamin Wang, and **Yin Yang**, “Parallel Iterative Solvers for Real-time Elastic Deformations”. *SIGGRAPH Asia Courses*, 2018.
75. Ran Luo, Qiang Fang (equal contribution), Jianguo Wei, Weiwei Xu, **Yin Yang**, “Acoustic VR of Human Tongue: Real-time Speech-driven Visual Tongue System”, *IEEE Virtual Reality (VR)*, Los Angeles, CA, Mar 2017.

76. Kunjin He, Lijun Zhang, Zeyu Zou, Lin Wang, **Yin Yang**, “An Adaptive Approach to Generate Blend Surface”, *International Conference on Information Technology and Industrial Automation*, Guangzhou, China, 2015.
77. Yuan Tian, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “Adaptive Hierarchical Shape Matching”, *Pacific Graphics* (short paper), Beijing, China, Oct 2015.
78. Kele Xu, **Yin Yang**, A. Jaumard-Hakoun, G. Dreyfus, P. Roussel, M. Stone, B. Denby, “Development of a 3D Tongue Motion Visualization Platform Based on Ultrasound Image Sequence”, *International Congress on Phonetic Sciences (ICPhS)*, Glasgow, Scotland, UK, Oct 2015.
79. Steven Garcia, Patrick Kelley, **Yin Yang**, “Fast Image Segmentation on Mobile Phone using Multi-level Graph Cut”, *Graphics Interface (GI)*, Halifax, Nova Scotia, Canada, Jun 2015.
80. Vanessa Svihla, Matthew Gines, **Yin Yang**, “Framing and Learning in Interactive Prototyping”, *FabLearn*, Stanford, Oct 2014.
81. Yuan Tian, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “Haptic Simulation of Needle-tissue Interaction Based on Shape Matching”, *IEEE International Symposium on Haptic, Audio and Visual Environments and Games (HAVE)*, Dallas, Texas, Oct 2014.
82. Yuan Tian, **Yin Yang**, Suraj Raghuraman, Xiaohu Guo, Balakrishnan Prabhakaran, “3D Immersive Cardiopulmonary Resuscitation (CPR) Trainer”, *ACM Multimedia (MM)*, Orlando, Nov 2014.
83. Kele Xu, **Yin Yang**, A. Jaumard-Hakoun, P. Roussel, G. Dreyfus, M. Adda-Decker, A. Amelot, L. Crevier. Buchman, P. Chawah, T. Fux, C. Pillot-Loiseau, S. K. Al Kork, M. Stone, B. Denby, “3D Tongue Motion Visualization Based on Ultrasound Image Sequences”, *Interspeech*, Singapore, Sep 2014.
84. Joubin Nasehi Tehrani, Jing Wang, Xiaohu Guo, **Yin Yang**, “3D Markerless Registration of Lung Based On Coherent Point Drift: Application in Image Guided Radiotherapy”, *Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, 2014 Oral Presentation.
85. Yuan Tian, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “Haptic-Enabled Interactive Rendering of Deformable Objects based on Shape Matching”, *IEEE International Symposium on Haptic Audio Visual Environments and Games (HAVE)*, Istanbul, Turkey, Oct 2013.
86. Yuan Tian, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “A Multigrid Approach for Bandwidth and Display Resolution Aware Streaming of 3D Deformations,” *ACM Multimedia (ACM MM)*, Barcelona, Spain, Oct 2013.
87. **Yin Yang** and Xiaohu Guo, “Tongue Visualization for Specified Speech Task”, *ACM SIGGRAPH poster*, Los Angeles, Aug 2012.
88. **Yin Yang** and Xiaohu Guo, “Physics-Based Multi-Domain Subspace Deformation with Component Mode Synthesis”, *IEEE Virtual Reality (VR)*, Orange County, Mar 2012, poster.

89. **Yin Yang**, Zichun Zhong, Guodong Rong, Xiaohu Guo, Jing Wang, Timothy Solberg, Weihua Mao, “Real-Time GPU-Aided Lung Tumor Tracking”, *Pacific-Rim Symposium on Image and Video Technology (PSIVT)*, Singapore, Nov 2010.
90. **Yin Yang**, Zichun Zhong, Xiaohu Guo, John Anderson, Timothy Solberg, Weihua Mao, “A Novel Markerless Technique To Evaluate Daily Lung Tumor Motion”, *Annual Meeting of the American Society for Radiation Oncology (ASTRO)*, San Diego, Oct 2010.
91. Ziyang Tang, **Yin Yang**, Xiaohu Guo, Balakrishnan Prabhakaran, “On Supporting Collaborative Haptic Interaction with Physically-Based 3D Deformations”, *IEEE International Symposium on Haptic Audio Visual Environments and Games (HAVE)*, Phoenix, US, Oct 2010.
92. **Yin Yang**, Guodong Rong, Luis Torres, Xiaohu Guo, “Spectral Simulation of Hybrid Bodies with Deformable and Rigid Materials”, *ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D)*, Washington DC, US, Feb 2010, poster.

Other Publications

93. Yadi Cao, Yidong Zhao, Minchen Li, **Yin Yang**, Jinhyun Choo, Demetri Terzopoulos, Chenfanfu Jiang, “Material Point Methods on Unstructured Tessellations: A Stable Kernel Approach With Continuous Gradient Reconstruction”, arXiv 2024.
94. Yutao Feng*, Xiang Feng* (equal contributors), Yintong Shang, Ying Jiang, Chang Yu, Zeshun Zong, Tianjia Shao, Hongzhi Wu, Kun Zhou, Chenfanfu Jiang, **Yin Yang**, “Gaussian Splashing: Dynamic Fluid Synthesis with Gaussian Splatting”, arXiv 2024.
95. Ying Jiang*, Chang Yu*, Tianyi Xie*, Xuan Li* (equal contributors), Yutao Feng, Huamin Wang, Minchen Li, Henry Lau, Feng Gao, **Yin Yang**, Chenfanfu Jiang, “VR-GS: A Physical Dynamics-Aware Interactive Gaussian Splatting System in Virtual Reality”, arXiv 2024.
96. Yutao Feng*, Yintong Shang* (equal contributors), Xuan Li, Tianjia Shao, Chenfanfu Jiang, **Yin Yang**, “PIE-NeRF: Physics-based Interactive Elastodynamics with NeRF”, arXiv 2023.
97. Tianyi Xie*, Zeshun Zong*, Yuxing Qiu*, Xuan Li* (equal contributors), Yutao Feng, **Yin Yang**, Chenfanfu Jiang, “PhysGaussian: Physics-Integrated 3D Gaussians for Generative Dynamics”, arXiv 2023.
98. **Yin Yang**, “Physics-based Subspace Deformation: Theory and Application”, Ph.D. dissertation, The University of Texas at Dallas, Jun 2013.
99. **Yin Yang**, Guodong Rong, Jianfen Ren, Luis Torres, Xiaohu Guo, “Spectral Hybrid Simulation of Deformable and Rigid Bodies”, Technique Report, UTDCS-19-09, Jul 2009.

PATENTS

- Guohui Zhang, **Yin Yang**, “A Cost-Effective Kinect-Based Approach for 3D Pavement Surface Reconstruction and Cracking Recognition”, STC Disclosure D2015-0077, filed May 2015.
- **Yin Yang**, “Accelerated precomputation of reduced deformable models” U.S. Patent 10,474,927, (issued) Nov. 12, 2019.

RESEARCH GRANTS	<i>Current Active Grants</i>	
	<i>SoftBank Inc, May 2024 – Apr 2026</i>	\$300,000
	Role: PI	
	Project Title: Tracking and Reconstruction of Cows	
	 <i>Roblox Inc, Jun 2023 – 2027</i>	\$27,000
	Role: PI	
	Project Title: A Server-Client Distributed Fluid Simulator (Industry gift)	
	 <i>Style3D Inc, May 2023 – Apr 2027</i>	\$300,000
	Role: PI	
	Project Title: Next-generation Cloth Simulation (Industry gift)	
	 <i>SoftBank Group, Dec 2022 – Nov 2023</i>	\$150,000
	Role: sole PI	
	Project Title: Understand Uncanny Valley in Human Animation	
	 <i>Clemson VIPR-GS, Sep 2022 – Aug 2024</i>	\$1,100,000
	Role: co-PI	
	Project Title: Spatial-AI Real-Time Mapping for Off-Road Ground Vehicles	
	 <i>National Science Foundation CHS, Oct 2022 – Sep 2024</i>	\$500,000
	Role: sole PI (original PI Kavan Ladislav)	
	Project Title: High Resolution Motion Capture	
	 <i>National Science Foundation III, Jul 2020 – Jun 2023</i>	\$250,000
	Role: PI (original PI Kavan Ladislav)	
	Project Title: Learning Active Physics-Based Models from Data	
	 <i>SoftBank Group, Jun 2021 – Aug 2022</i>	\$120,000
	Role: PI	
	Project Title: Cloth Simulation on Mobile GPU	
	 <i>Breakthrough Foundation, Feb 2020 – Mar 2022</i>	\$150,000
	Role: co-PI (with PI Edl Schamiloglu)	
	Project Title: Starshot LightSail Dynamic Stability	
	 <i>National Science Foundation RAPID, Jun 2020 – May 2021</i>	\$199,996
	Role: co-PI (with PI Matthew Costello)	
	Project Title: Exploring the New Wave of Cyber-Harassment Linked to COVID-19	
	 <i>National Science Foundation CHS, May 2019 – Apr 2024</i>	\$550,000
	Role: sole PI	
	Project Title: CAREER: Deep Learning Empowered Nonlinear Deformable Model	

Air Force Research Laboratory, Sep 2018 – Aug 2023 **\$6,700,000**
 Role: **co-PI** (with PI Rafael Fierro and other three lead co-PIs)
 Project Title: Agile Manufacturing for High Value, Low Volume Production

Apple Inc., Dec 2019 – Nov 2020 **\$20,000**
 Role: **sole PI**
 Project Title: Speech Dynamics

National Science Foundation CHS, Sep 2017 – Aug 2021 **\$432,707**
 Role: **sole PI**
 Project Title: Small: Towards Next-Generation Large-Scale Nonlinear Deformable Simulation

nVIDIA, Mar. 2018 – Feb. 2019 Titan XP GPU
 Role: **sole PI**
 Project Title: nVIDIA GPU grant

National Science Foundation MRI, Aug 2020 – Jul 2023 **\$651,000**
 Role: **Sensor Personal** (with PI Amy Apon)
 Project Title: Acquisition of Cyberinstrument for AI-Enabled Computational Science & Engineering

Past Grants

National Institutes of Health CTSA, Apr 2019 – Mar 2020 **\$25,000**
 Role: **co-PI** (with PI Thomas Howdieshell)
 Project Title: Development of a Novel Ultrasound Technology to Guide Cannulation of Central Veins

Swedish Foundation for International Cooperation in Research and Higher Education, Aug 2017 – Jul 2018 **150,000 SEK (~ \$18,000)**
 Role: **PI** (with Swedish PI Marco Fratarcangeli)
 Project Title: Parallel Algorithms for Interactive Simulations of 3D Soft Tissues

National Science Foundation REU, Jun 2015 – May 2016 **\$16,000**
 Role: **sole PI**
 Project Title: REU Supplementary Request

University of New Mexico OVPR Equipment Funding, May 2015 – Jul 2015 **\$43,177**
 Role: **sole PI**
 Project Title: Bridging Graphical Simulation and Digital Fabrication

National Science Foundation CRII, Mar 2015 – Feb 2017 **\$174,820**
 Role: **sole PI**
 Project Title: CHS: A Plug-and-Play Deformable Model Based on Extended Domain-Decomposition

UNM Tier 1 Interdisciplinary Summer Research Funding, Aug 2014 – Aug 2015 **\$49,908**
 Role: **co-PI** (with PI Vanessa Svihla)
 Project Title: Framing, Learning, Interactive Prototyping (FLIP)

University of New Mexico RAC Internal Award, Jan 2015 – Aug 2016 **\$8,778**
 Role: **sole PI**
 Project Title: Computer-Aided Cost-Effective 3D Reconstruction & Analysis of Roadway Pavement

Pending Grants

National Science Foundation HCC **\$600,000**
 Role: **PI**
 Project Title: HCC: Small: High-order Differentiable Physical Simulation and Its Applications

National Science Foundation HCC **\$600,000**
 Role: **PI**
 Project Title: HCC: Small: Smooth Approximation of Inequalities in Physical Simulation with Guaranteed Accuracy Bounds

National Science Foundation OAC **\$600,000**
 Role: **PI**
 Project Title: OAC Core: A High-quality and Cost-effective 4D Body Dataset for LGBT+ Group

SYNERGISTIC
 ACTIVITIES

Edutirak Broad

Conference Organization

- SCA Award Committee co-Chair
 Symposium on Computer Animation Aug 2023
- Conference Conference Program co-Chair
 Pacific Graphics Nov 2022
- Steering Committee
 IEEE International Smart Cities Conference, Oct 2015
- Publicity Chair
 IEEE International Symposium on Haptic, Audio & Visual Environments and Games Nov 2014
- Student Volunteer
 ACM Multimedia and Security Workshop Oct 2007

Technical Program Committee

- ACM SIGGRAPH 2024
- Int. Conference on Computer-Aided Design and Computer Graphics (CAD/CG) 2024
- Computer Graphics International (CGI) 2023
- Int. Conference on Computer-Aided Design and Computer Graphics (CAD/CG) 2023
- International conference on Computational Visual Media (CVM) 2023
- Conference on Computer Animation and Social Agents (CASA) 2022
- ACM SIGGRAPH Conference on Motion, Interaction and Games (MIG) 2022
- Conference on Computer Animation and Social Agents (CASA) 2021
- ACM Multimedia (MM) 2021
- Conference on Computer Animation and Social Agents (CASA) 2020
- ACM Multimedia (MM) 2020
- Conference on Computer Animation and Social Agents (CASA) 2019

- Int. Conference on Computer-Aided Design and Computer Graphics (CAD/CG) 2019
- ACM Multimedia (MM) 2019
- International Workshop on Spatial and Interactive Computing (IWISC) 2019
- Pacific Graphics (PG) 2018
- ACM SIGGRAPH / Eurographics Symposium on Computer Animation (SCA), 2018
- Conference on Computer Animation and Social Agents (CASA) 2018
- International Workshop on Spatial and Interactive Computing (IWISC) 2018
- Pacific Graphics (PG) 2017
- Conference on Computer Animation and Social Agents (CASA) 2017
- International Conference on Virtual Reality and Visualization (ICVRV) 2017
- Int. Conference on Computer-Aided Design and Computer Graphics (CAD/CG) 2017
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) 2017
- International Conference On Geometric Modeling and Processing (GMP) 2017
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) 2016
- International Conference On Geometric Modeling and Processing (GMP) 2016
- IEEE International Conference on Healthcare Informatics 2015
- IEEE International Symposium on Haptic, Audio & Visual Environments and Games 2014
- ACM Symposium on Virtual Reality Software and Technology (ACM VRST) 2014

External Reviewer

- NSF
- DOE

External Reviewer

I am a frequent reviewer of National Science Foundation since 2014. I am also an active reviewer for most reputable journals and conferences (over 20) in Computer Graphics/Animation/Modeling such as:

- ACM Transactions on Graphics
- IEEE Transactions on Visualization and Computer Graphics
- Computer Graphics Forum
- Computer Aided Design
- Graphics Models
- The Visual Computer
- Computer Animation & Virtual World

HONORS & AWARDS

- UNM ECE Outstanding Research Award
The University of New Mexico, Department of Electrical and Computer Engineering 2017
- CVM annual best paper award 2016
- UNM ECE Distinguished Teacher Award
The University of New Mexico, Department of Electrical and Computer Engineering 2016
- David Daniel Fellowship Award
The University of Texas (Dallas) 2013
- Best Poster, Honorable Mention
IEEE Virtual Reality Conference 2012
- Travel Grant
Pacific-Rim Symposium on Image and Video Technology 2010

TEACHING

- ECE/CS 412 Introduction to Computer Graphics
Raw Avg. IDEA Score: 4.1/5.0 Fall, 2013
- ECE 595 ST: Advanced Computer Graphics & Animation,
Raw Avg. IDEA Score: 4.8/5.0 Spring, 2014

- ECE/CS 412 Introduction to Computer Graphics
Raw Avg. IDEA Score: 4.3/5.0 Fall 2014
- ECE 595 ST: Advanced Computer Graphics & Animation
Raw Avg. IDEA Score: 5.0/5.0 Spring, 2015
- ECE 537 Foundations of Computing
Raw Avg. IDEA Score: N/A Fall, 2015
- ECE/CS 412 & ECE 595 Introduction to Computer Graphics
Raw Avg. IDEA Score: 3.67/5.0 Fall, 2015
- ECE 595 ST: Advanced Computer Animation,
Raw Avg. IDEA Score: 5.0/5.0 Spring, 2016
- ECE/CS 412 & ECE 512 Introduction to Computer Graphics
Raw Avg. IDEA Score: 3.92/5.0 Fall, 2016
- ECE 537 Foundations of Computing
Raw Avg. IDEA Score: 4.31/5.0 Fall, 2016
- ECE 595 ST: Advanced Computer Graphics & Animation,
Raw Avg. IDEA Score: 5.0/5.0 Spring, 2017
- ECE/CS 412 & ECE 512 Introduction to Computer Graphics
Raw Avg. IDEA Score: 4.4/5.0 Fall, 2017
- ECE 537 Foundations of Computing (online)
Raw Avg. IDEA Score: 4.0/5.0 Fall, 2017
- CS 6660 Physics-based Animation
Evaluation not yet available Spring, 2023
- CS 7933 Graphics Seminar
Evaluation not yet available Spring, 2023

INVITED TALKS
(SINCE 2023)

- Keynote speaker GI workshop 2023

UNIVERSITY
SERVICE

- U of Utah KSoC Web Development Committee Chair 2023 – 2024
- U of Utah SCI Faculty Search Committee 2023 – 2024
- U of Utah Informal RPT Committee 2023 – 2024
- U of Utah KSoC Web Development Committee 2022 – 2023
- U of Utah KSoC Graduate Committee 2022 – 2023
- U of Utah KSoC Faculty Hire Committee 2022 – 2023
- UNM ECE Search Committee 2018 – 2019
- UNM ECE Search Committee (CE search chair) 2017 – 2018
- SOE Global Engineering Scholar Program Committee 2016 – 2017
- UNM ECE Area Chair on Graphics, Vision and Image Processing 2014 – present
- UNM ECE ABET Assessment Committee 2015 – present
- UNM ECE Awards & Scholarship Committee 2014 – 2015
- UNM ECE IT Committee 2013 – 2014

GRADUATE
STUDENT ADVISED

Current Group Member

- Zixuan Lu (pre-qualify)
Ph.D. student, Utah, KSoC since 2024
- Chun Yuan (pre-qualify)
Ph.D. student, Utah, KSoC since 2024
- Ziheng Liu (pre-qualify)
Ph.D. student, Utah, KSoC since 2022
- Haoyang Shi (pre-qualify)
Ph.D. student, Utah, KSoC since 2022
- Yintong Shang (pre-qualify)
Ph.D. student, Utah, KSoC since 2022
- Yutao Feng Visiting Ph.D. student, Utah, KSoC since 2023

- Xuan Li (external co-advisee)
Ph.D. student, UCLA, since 2022
- Xiaodi Yuan (external co-advisee)
Ph.D. student, UCSD, since 2022
- Dr. Lei Lan
Postdoc Researcher, Utah, KSoC since 2019

Past Graduate Students (with information of the next stop after graduation)

- Ran Luo
UNM ECE Ph.D. graduated 2019 Research engineer at Apple Inc.
- Jorge Ramos Moukel
UNM ECE M.S graduated 2018 Software engineer at Apple Inc.
- Steven Garcia
UNM CS M.S. graduated 2018 Research staff at Sandia National Lab
- Yuming Zhang
UNM ECE Ph.D. 2018 Faculty at New Mexico State University
- Kele Xu
UNM Visiting Ph.D. from UPMC 2014 Faculty at National University of Defense Technology
- Sikai Xie
UNM ECE M.S. graduated 2015 Software engineer at Canfield Scientific Inc.
- Alejandro Hernandez
UNM ECE M.S. graduated 2014 Software engineer at Intel Inc.
- Sun Lin
CS M.S. graduated 2014 Software engineer at Facebook Inc.