Chenfanfu Jiang

Department of Mathematics University of California, Los Angeless cffjiang@ucla.edu

- 1 Bio
- 2 Education
- **3** Academic Positions
- 4 Awards and Honors
- 5 Patents
- 6 Funding
- 1 **Bio**

1	7 Invited Talks	3
1	8 Teaching	4
1	9 Service	5
2	10 Supervision	7
2	11 Publications	9
2	12 Selected Publicity	17

Chenfanfu Jiang is an Associate Professor of Mathematics and the director of the Artificial Intelligence and Visual Computing (AIVC) Lab at the University of California, Los Angeles (UCLA). He has co-authored over 130 papers in disciplines spanning computer graphics, computer vision, computational physics, embodied artificial intelligence, and robotics, including over 50 in ACM SIGGRAPH/SIGGRAPH Asia/Transactions on Graphics. He has developed well-known algorithms such as the Affine Particle-In-Cell (APIC) method for fluid dynamics, the Moving Least Squares Material Point Method (MLS-MPM) for versatile materials, and the Incremental Potential Contact (IPC) method for contact mechanics. His research has received funding from the NSF, the DOE, and industrial partners including Toyota, Amazon, Style3D, Sony, Adobe, and Snap. His awards include the UCLA Engineering Outstanding Doctoral Student Award (2015), the NSF CISE CRII Award (2018), the NSF CAREER Award (2020), the Amazon Science Award (2023), the Sony Faculty Innovation Award (2023), the Style3D Faculty Research Award (2024), and Best Paper Awards at the Symposium on Computer Animation (SCA), Motion in Games (MIG), and the International Conference on Robotics and Automation (ICRA). He received his Ph.D. in Computer Science from UCLA in 2015, co-advised by Professors Demetri Terzopoulos and Joseph Teran. He was an Assistant Professor of Computer and Information Science at the University of Pennsylvania from 2017 to 2021.

2 Education

• Ph.D. Computer Science, University of California, Los Angeles,	2012 - 2015
"The Material Point Method for the Physics-based Simulation of Solids and Fluids"	
Advisors: Demetri Terzopoulos and Joseph Teran	
Thesis committee: Stanley Osher and Song-Chun Zhu	
UCLA HSSEAS Edward K. Rice Outstanding Doctoral Student Award	
• M.S. Computer Science, University of California, Los Angeles	2010-2012
"Simulation of Elastic Solids with Efficient Self-Collision Handling"	
Advisors: Demetri Terzopoulos and Joseph Teran	
• B.S. Physics, Special Class for the Gifted Young, University of Science and Technology of China	2006-2010
"Relativistic Correction of $(v/c)^2$ to the Collective Thomson Scattering for High-Temperature High	-Density
Plasma"	

3 Academic Positions

• Associate Professor at UCLA Mathematics (step III)	07/2022- Present
Director of UCLA Artificial Intelligence and Visual Computing (AIVC) Laboratory	
• Assistant Professor at UCLA Mathematics	07/2021-06/2022
• Assistant Professor at UPenn Computer and Information Science	07/2017-06/2021
Affiliated to the SIG Center for Computer Graphics	
Affiliated to the General Robotics, Automation, Sensing and Perception (GRASP) Lab	

	Affiliated to the Penn Institute for Computational Science (PICS) as Workshop Chair	
	Affiliated to Applied Mathematics and Computational Science (AMCS)	
•	Postdoctoral Scholar at UCLA Mathematics and Computer Science	7/2015-6/2017

4 Awards and Honors

• Finalist for IROS 2024 RoboCup Best Paper Award	2024
• Style3D Faculty Research Award	2024
• Amazon Science Hub Award	2023
• Sony Faculty Innovation Award	2023
• Best Paper Award in Mechanisms and Design, IEEE ICRA Conference	2021
• NSF CAREER Award	2020
• Third place winner in the Computer Graphics Forum Cover Image Contest	2020
• Best Paper Award, ACM Symposium on Computer Animation (SCA)	2019
• NSF CISE CRII Award	2018
• Best Paper Award, Motion In Games (MIG)	2017
• Sole Nomination from UCLA CS for Chancellor's Award for Postdoctoral Research	2017
• Sole Nomination from UCLA for CGS/ProQuest Distinguished Dissertation Award	2016
• Edward K. Rice UCLA Engineering Outstanding Doctoral Student Award	2015
• Best Paper Award, ACM Symposium on Computer Animation (SCA)	2013
• Honor Graduate Certificate, University of Science and Technology of China	2010
• Distinguished Undergraduate Student Researcher, Chinese Academy of Science	2009
• Excellent Student Scholarship, University of Science and Technology of China	2006-2009

5 Patents

- Computerized rendering of objects having anisotropic elastoplasticity for codimensional frictional contact, US20200082589A1, Filed 2018-05-17, Published 2020-03-12
- Computerized rendering of animated objects using polynomial particle-in-cell method, WO2019074856A1, Filed 2018-10-08, Published 2019-04-18

6 Funding

• Unrestricted Gift from Snap	2024
• Toyota Research Institute (TRI) University Research Grant	2024-2026
Robust, Accurate, and Interactive Solutions for Contact-Rich Multi-Physics Robotic Simulations)
• Unrestricted Gift from Style3D	2024
• Sony Faculty Innovation Award	2023-2024
Topologically Flexible Material Point Methods for Scalable Multiphysics	
• Amazon Science Hub for Humanity and Artificial Intelligence Award	2023-2024
Differentiable Physics Augmented Neural Radiance Fields for Real-to-Sim & Manufacture-Ready	y 3D Garment
Reconstruction	
• Unrestricted Gift from Tezoi Technology	2023
• UC Multicampus Research Programs and Initiatives Award	2023-2025
High-Performance Numerical Solvers for Scalable and Flexible Simulation on Modern Hardware	
Co-PIs: Craig Schroeder (UCR), Joseph Teran (UCD)	
• NSF CAREER Award	2020-2025
Simulation of Geometrically Flexible Materials with Applications to Computer Graphics and Co Science	mputational
• NSF ASCENT	2020-2024

Programmable Photonic Computation Accelerators (PPCA)	
P1: Liang Feng (UPenn), Co-P1(s): Shays Fainman (UCSD)	2020
• Team Grants for Interdisciplinary Activities (TGIA), University of Pennsylvania	2020
Numerical Modeling of Soft Interactions for Robots	
Co-PI: Cynthia Sung (UPenn)	2010 2022
• Contract on Exascale Computing Project from US Department of Energy (DOE)	2019-2022
High-performance computing model of powder-scale melting and solidification simulations	2010
• Team Grants for Interdisciplinary Activities (TGIA), University of Pennsylvania	2019
A software model of hiatal hernias	
Co-PI: Kristoffel Dumon (UPenn)	
• NSF CCF-1813624	2018-2022
Large-scale adaptive Material Point Methods for complex materials in multiphysics simulation	
Co-P1: Eftychios Sifakis (UW-Madison)	
• Unrestricted Gift from Adobe	2018-2023
• NSF CISE CRII Award (IIS-1755544)	2018-2020
Robust algorithms modeling frictional contact with industrial, medical and computer graphics appl	ications
• Penn Provost's Undergraduate Research Mentoring (PURM) Award	2018
• Unrestricted Gift from Awowd	2017
• Equipment and software donations from NVidia and SideFX	2017-2019
Invited Talks	
• Invited talk at Demetri Terzopoulos's Computer Animation Lectures	02/05/2024
Physics-Based Animation of Solids and Fluids	
• UCLA CS Faculty Research Talk	01/23/2024
Scientific Visual Computing in Computer Graphics	
• University of Maryland CS Seminar	10/12/2023
Differentiable Material Point Method's Recent Connections to Real World	
• International Symposium on Computer Engineering and Intelligent Communications	08/18/2023
Mathematical Principles behind Snow	
• USTC Mathematics Summer School	07/10/2023
Variational Contact	
• UCLA Mathematics Colloquium	11/10/2022
Energetically Consistent Inelasticity	
• UCLA Bruin Family Weekend Faculty Presentation	10/28/2022
Scientific Visual Computing	
• UC Riverside Computer Science and Engineering Department Colloquium	10/07/2022
Incremental Potential Elastodynamics with Contact	
• Invited talk at Demetri Terzopoulos's CS 174C	05/16/2022
Simulating Granular Media as Continuum Solids	, ,
• Colorado State University Applied Math/Inverse Problems Seminar	03/10/2022
Incremental Potential Elastodynamics with Contact: Robust Optimization-based Solvers and Smoo	oth Refor-
mulations	5
• The first workshop on SEAI: Simulation Technology for Embodied AI, ICCV	10/16/2021
Frictional Contact with Guarantees and Smoothness	, ,
• UCSD Pixel Cafe	10/08/2021
Incremental Potential Elastodynamics with Contact: Robust Optimization-based Solvers and Smoo	oth Refor-
mulations	U U
• Siemens Next Generation Simulation Talks	09/13/2021
Robust Optimization-based Solvers and Smooth Reformulations	

• MIT Summer Geometry Institute (SGI)	08/19/2021
Developments in Smooth Optimization Contact	
• School of Informatics at Xiamen University,	06/27/2021
Incremental Potential Elastodynamics with Contact	
• Invited talk at Marcus Roper's Math 272B	05/26/2021
Simulating Granular Media as Continuum Solids	
• Toronto Geometry Colloquium	04/14/2021
Continuum Rupture Discrete Particles	
• UCLA Applied Math Seminar	12/18/2020
Incremental Potential Elastodynamics with Contact: Robust Optimization-based Solvers and Sm mulations	ooth Refor-
• New Jersey Institute of Technology Computer Graphics	11/08/2020
Smooth Reformulations for Physics-Based Simulation: with Case Studies on Frictional Contact	and Fracture
• Advanced Innovation Center for Future Visual Entertainment in Beijing Film Academy	10/29/2020
Smooth Reformulations for Physics-Based Simulation: with Case Studies on Frictional Contact	and Fracture
• MIT Graphics Seminar	10/07/2020
Smooth Reformulations for Physics-Based Simulation: with Case Studies on Frictional Contact	and Fracture
• RealTime Conference (RTC)	06/08/2020
Photorealistic and efficient simulation of natural phenomena	
• USC Information Sciences Institute (ISI) AI Seminar	02/14/2020
Recreating Nature with High-fidelity Physics-based Visual Computing	
• Workshop Graphyz on physics and graphics, Inria	10/24/2019
MPM simulation for viscoplastic flows: pluridisciplinary modeling of snow avalanches	
• ACM SIGGRAPH / Eurographics Symposium on Computer Animation	07/27/2019
The power of constitutive modeling in physics-based animation: elasticity, inelasticity, and dame	ige mechanics
• The Tristate Workshop on Imaging and Graphics (TWIG)	04/07/2018
Elastoplasticity simulation in computer graphics	
• Rutgers University CS department colloquium	03/09/2018
Elastoplasticity simulation in computer graphics	
• Penn Presbyterian Medical Center	11/01/2017
Scientific computing for animation, visual effects, virutal injury and surgery	
• PICS Conference Emergent Phenomena: Patterns, Function and Beyond	10/05/2017
Elastoplasticity simulation in computer graphics	
• Cisco Research	09/20/2017
Scientific computing for animation and visual effects	
• GAMES: Graphics And Mixed Environment Seminar	08/17/2017
Advances in Material Point Method for computer graphics	
• University of Pennsylvania Perelman School of Medicine	07/24/2017
Scientific computing: from computer graphics to virtual surgery	
• University of Pennsylvania Computer and Information Science Department Summer Session	07/06/2017
Creating realistic simulations for animations and VFX	10/10/0010
• University of Pennsylvania Computer and Information Science Department	12/13/2016
Hybria methods for computer graphics simulation of snow, sand, water, foam, lava and beyond	10/01/0015
• UULA Human Perception Lab	10/21/2015
Physics-based simulation of deformable solids and fluids	

8 Teaching

•	• Instructor, Math 285J, UCLA	Spring 2024
•	• Instructor, Math 151A, UCLA	Winter 2024

• Instructor, Math 269A, UCLA	Fall 2023
• Instructor, Math 269B, UCLA	Winter 2023
• Instructor, Math 269A, UCLA	Fall 2022
• Instructor, Math 285J, UCLA	Winter 2022
• Instructor, Math 151A, UCLA	Fall 2021
• Instructor, CIS 563: Physically Based Animation, UPenn	Fall 2020
• Instructor, CIS 700/006: Special Topics in Computer Graphics, UPenn	Fall 2020
• Instructor, EAS 205: Applications of Scientific Computing, UPenn	Spring 2020
• Instructor, CIS 563: Physically Based Animation, UPenn	Fall 2019
• SIGGRAPH Course instructor and organizer	Summer 2019
On Hybrid Lagrangian-Eulerian Simulation Methods: Practical Notes and High-Performance	e Aspects
• Instructor, EAS 205: Applications of Scientific Computing, UPenn	Spring 2019
• Instructor, CIS 563: Physically Based Animation, UPenn	Fall 2018
• Instructor, CIS 563: Physically Based Animation, UPenn	Spring 2018
• Instructor, CIS 700/004: Physics-Based Material Simulation, UPenn	Fall 2017
• SIGGRAPH Course instructor and organizer	Summer 2016
The Material Point Method for Physics Based Simulation: Modeling and Discretization	
• Teaching Assistant, Introduction to C++ Programming (PIC 10A), UCLA	Spring 2012
• Teaching Assistant, Introduction to C++ Programming (PIC 10A), UCLA	Winter 2012
• Assistant Lecturer, University of Science and Technology of China	2009-2010

9 Service

University (date in terms of academic year)

• PhD Qual Committee (ONLA), Department of Mathematics, UCLA	2024-2025
• Faculty Advisor for the Math of Computation Major, Department of Mathematics, UCLA	2024 - 2025
• Tenured Professors Elected Committee, Department of Mathematics, UCLA	2024-2025
• Computing Committee, Department of Mathematics, UCLA	2023-2024
• Undergraduate Advising, Department of Mathematics, UCLA	2023-2024
• Graduate Advisor, Department of Mathematics, UCLA	2023-2024
• Faculty Advisor for the Math of Computation Major, Department of Mathematics, UCLA	2023-2024
• PhD Qual Committee (ONLA), Department of Mathematics, UCLA	2023-2024
• Computing Committee, Department of Mathematics, UCLA	2022-2023
• PIC Committee, Department of Mathematics, UCLA	2022-2023
• Graduate Advisor, Department of Mathematics, UCLA	2022-2023
• Graduate Admission Committee, Department of Mathematics, UCLA	2022-2023
• Faculty Advisor for the Math of Computation Major, Department of Mathematics, UCLA	2022-2023
• PhD Qual Committee (ONLA), Department of Mathematics, UCLA	2022-2023
• Computing Committee, Department of Mathematics, UCLA	2021-2022
• PIC Committee, Department of Mathematics, UCLA	2021-2022
• Graduate Advisor, Department of Mathematics, UCLA	2021-2022
• PhD Qual Committee (ONLA), Department of Mathematics, UCLA	2021-2022
• ABET coordinator, Department of CIS, University of Pennsylvania	2020-2021
• Chair, Penn Institute for Computational Science (PICS) workshop series	2020-2021
• Chair, Penn Institute for Computational Science (PICS) workshop series	2019-2020
• Chair, Penn Institute for Computational Science (PICS) workshop series	2018-2019
• Chair, Penn Institute for Computational Science (PICS) workshop series	2017 - 2018

Professional Roles

• Co-organizer, Workshop on Vision Meet Physics, CVPR	2025
• Technical Papers Committee, Symposium on Computer Animation (SCA)	2024
• Scientific committee, International Experts Summit on AI and ML	2024
• Technical Papers Committee, ACM SIGGRAPH Asia	2023
• Co-chair, ACM SIGGRAPH Symposium on Computer Animation (SCA) Conference	2023
• Technical Papers Committee, ACM SIGGRAPH Asia	2022
• Co-chair, 1st Workshop on Simulation Technology for Embodied AI at ICCV	2021
• Chair, Symposium on Computer Animation (SCA) Showcase Program	2021
• Technical Papers Committee, ACM SIGGRAPH	2020
• Technical Papers Committee, Eurographics	2020
• Chair, UPenn SIG Computer Graphics Colloquium Series	2020
• Co-chair, 5th Workshop on Vision Meets Cognition, CVPR	2019
• Technical Papers Committee, Symposium on Computer Animation (SCA)	2019
• Session Chair, Symposium on Computer Animation (SCA)	2019
• Co-chair, 2018 PICS Conference on Modern Computational Science	2018
• Co-chair, 4th Workshop on Vision Meets Cognition, CVPR	2018
• Organizer, The Tristate Workshop on Imaging and Graphics (TWIG)	2018
• Co-chair, 3rd Workshop on Vision Meets Cognition, CVPR	2017
• Technical Papers Committee, Symposium on Computer Animation (SCA)	2017
• Co-chair, 1st Workshop on Virtual Reality meets Physical Reality, SIGGRAPH Asia	2016
• Co-chair, 2nd Workshop on Physical and Social Scene Understanding, CogSci	2016

Refereeing

- ACM Transaction on Graphics (TOG)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- ACM SIGGRAPH
- ACM SIGGRAPH Asia
- Symposium on Computer Animation (SCA)
- Eurographics (EG)
- Pacific Graphics (PG)
- Computer Graphics Forum (CGF)
- Computer & Graphics
- Computer Animation and Virtual Worlds (CAVW)
- Computer Vision and Pattern Recognition (CVPR)
- International Conference on Machine Learning (ICML)
- International Conference on Learning Representations (ICLR)
- Association for the Advancement of Artificial Intelligence (AAAI)
- Computer Methods in Applied Mechanics and Engineering (CMAME)
- Computational Particle Mechanics (CPM)
- Additive Manufacturing
- Haptics Symposium
- IEEE Transactions on Biomedical Engineering
- CAAI Transactions on Intelligent Technology
- AIMS Inverse Problems and Imaging

Ρ

10 Supervision

Postdocs Supervised

• Ying Jiang, UCLA Mathematics	10/2024- Present
• Jiayin Lu, UCLA Mathematics	07/2024- Present
• Minchen Li, UCLA Mathematics	07/2021-06/2023
Next stop: Assistant Professor at CMU Computer Science	, ,
• Ming Gao, UPenn CIS	08/2018-06/2019
Next stop: Research scientist at Tencent America	
• Andre Pradhana Tampubolon UPenn CIS	06/2017-07/2018
Next ston: Research engineer at Dreamworks	00/2011 01/2010
now stop. nescaren engineer at Dreamworns	
hD Students Supervised	
• Junli Cao (co-advised with Demetri Terzopoulos), UCLA CS	2024- Present
• Yaowei Guo (co-advised with Demetri Terzopoulos), UCLA CS	2024- Present
• Mikkel Metzsch Jensen (co-advised with Johan Gaume). ETH Zurich D-BAUG	2024- Present
• Chang Yu (co-advised with Demetri Terzopoulos) UCLA CS	2023- Present
Meshu Fellowshin winner 2025	2020 1100010
• Tianyi Xie (co-advised with Demetri Terzopoulos) UCLA CS	2023- Present
• Zeshun Zong, UCLA Mathematics	2020 Present
• Yunuo Chen, UCLA Mathematics	2021 Present
• Xuan Li UCLA Mathematics	2021 - 1105011
Accurate and Efficient Multi-Material Simulations for Physics-Integrated Digital Twi	ns (Defended 2025/2/2)
• Zivin Ou UPenn Computer and Information Science	2010_ 2024
Advancing Discretization Methods for Fluid Simulation (Defended 2021/12/6)	2010 2024
• Vushan Han (co. advised with Joseph Teran) IICLA Mathematics	2023 2024
• Tushan Han (co-advised with Joseph Teran), OOLA Mathematics	Themestone (Defended
2002/ /5/21)	naraciers (Dejenueu
• Vizhou Chen (co-advised with Joseph Teran) UCLA Mathematics	2023_ 2024
Discortation: Novel Efficient Implicit Methods for Flastic Solids And Cloth (Defende	2020 2024
• Vadi Cao (ao advised with Demotri Terrepoules) UCLA Computer Science	u 2024/0/22) 2021-2024
• Taul Cao (co-advised with Demetri Terzopoulos), OCLA Computer Science	2021-2024
Disservation: Auvancing Physics-Basea Simulations: Integrating Conventional and M	achine-Learning Ap-
proaches for Emnancea Computational Efficiency (Defenaea 2024/4/11).	

 Yuxing Qiu (co-advised with Demetri Terzopoulos), UCLA Computer Science 2021-2024 Dissertation: Scalable and Efficient Material Point Method on Modern Platforms (Defended 2024/1/29).
Yu Fang, UPenn Computer and Information Science 2018-2023 Dissertation: Contact Modeling for Optimization Time Integration (Defended 2023/8/23).
Joshuah Wolper, UPenn Computer and Information Science 2017-2021 Dissertation: Material Point Methods for Simulating Material Fracture (Defended 2021/4/22).

Minchen Li, UPenn Computer and Information Science 2018-2020
Mode Fellowship winner 2020
ACM SIGGRAPH Outstanding Doctoral Dissertation Award winner 2021
Symposium of Computer Animation (SCA) Doctoral Dissertation Award winner 2021
Dissertation: Robust and Accurate Simulation of Elastodynamics and Contact (Defended 2020/11/16).

Master Students Supervised

•	• Tianyi Xie, UCLA CS	
	Dissertation: A Contact Proxy Splitting Method for Lar	ngrangian Solid-Fluid Coupling

2022-2023

• Jin Wu, UPenn AMCS	2021
Dissertation: Deep Learning Based Two-grid Preconditioner for Conjugate Gradient Solve	r
• Jiarui Yan, UPenn Computer and Information Science, CGGT	2020-2021
Dissertation: A Method Of Applying Graph Neural Network Into Nonlinear Deformation S	Simulation
• Yan Dong, UPenn Computer and Information Science, CGGT	2020-2021
Dissertation: Neural Projective Dynamics	
• Yue Li, UPenn Computer and Information Science, CGGT	2018-2020
Dissertation: Hybrid Eulerian-Lagrangian Topology Optimization	
• Bowen Yang, UPenn Computer and Information Science, CGGT	2018-2019
Dissertation: Efficient Staggered Grid Fluid Simulation Bounded on Sphere Surfaces	
• Ziyin Qu, UPenn Scientific Computing Master's	2017-2019
Undergraduate Students Supervised	
• Joy Liu, UCLA Math	10/2023-06/2024
• Boqian Li, HUST visiting undergraduate student	11/2023-05/2024
• Jianping Ye, UCLA Math summer REU program	06/2021-06/2022
• Sian Wen, UCLA Math summer REU program	06/2021-06/2022
• Mingxin Li, UCLA Math summer REU program	06/2021-08/2021
• Yuchuan Yang, UCLA Math summer REU program	06/2021-08/2021
• Haorong Wang, UPenn CIS undergraduate student, through TGIA grant	07/2020-09/2020

- Beini Gu, UPenn CIS undergraduate student, through TGIA grant
- Enoch Solano-Sanchez, UPenn CIS undergraduate student, through TGIA grant
- Saranya Sampath, UPenn CIS undergraduate student, through TGIA grant
- Nicholas Magarino, UPenn CIS undergraduate student, through TGIA grant
- Sang Lee, UPenn CIS undergraduate student, through TGIA grant
- Shenqi Hu, UPenn CIS undergraduate student, through TGIA grant
- Thy Tran, UPenn CIS undergraduate student, through TGIA grant
- Jiecong Lu, UPenn CIS (DMD) undergraduate student
- Meggie Cheng, UPenn CIS (DMD) undergraduate student
- Yunuo Chen, University of Science and Technology of China visiting student
- Yi Gu, University of Michigan visiting student
- Chen Li, University of Science and Technology of China visiting student
- Liangzhen Fei, University of Science and Technology of China visiting student
- Mark Choi, UPenn CIS undergraduate student
- Xinyang Zhang, University of California, Los Angeles visiting student
- Xingjian Han, University of California, Berkeley visiting student
- Yuanming Hu, MIT EECS / Tsinghua University visiting student
- Hannah Bollar, UPenn CIS undergraduate student
- Yu Fang, Tsinghua University visiting undergraduate student
- Ziheng Ge, University of Science and Technology of China visiting student
- Duotun Wang, Beijing Institute of Technology undergraduate student
- Wenting Sun, UPenn CIS undergraduate student
- Jason Wang, UPenn CIS undergraduate student

Visiting Scholars/Professors/Graduate Students Hosted

•	Pingying Chen, visiting graduate student	04/2024- Present
•	Wenxin Du, visiting researcher	04/2024- Present
•	Siyu Ma, UCSD visiting graduate student	01/2024- Present

07/2020-09/2020

07/2019-09/2019

07/2019-09/2019

07/2019-09/2019

07/2019-09/2019

07/2019-09/2019

07/2019-09/2019

09/2018-06/2020

09/2019-06/2020 07/2019-09/2019

07/2018-09/2018

07/2018-09/2018

07/2018-09/2018

07/2018-09/2018

07/2018-09/2018

05/2018-03/2019

07/2017-09/2017

06/2017-12/2017

06/2017-01/2018

06/2017-12/2017

07/2017-09/2017

06/2017-09/2017

06/2017-09/2017

• Xiyang Tan, visiting researcher	04/2024-12/2024
• Alyang Tan, visiong researcher	04/2024-12/2024
• Ying Jiang, HKU visiting PhD student	01/2023- $09/2024$
• Yidong Zhao, KAIST visiting PhD student	10/2023-02/2024
• Johan Gaume, EPFL visiting professor	05/2022-05/2022
• Lars Blatny, EPFL visiting PhD student	05/2022-05/2022
• Xuan Li, State University of New York at Stony Brook	09/2019-08/2020
• Xinlei Wang, Zhejiang University	10/2018-01/2020
• Yuxing Qiu, University of California, Los Angeles	07/2019-01/2020
• Kang Li, Hubei University visiting Professor	09/2018-09/2019
• Johan Gaume, EPFL visiting professor	10/2018-11/2018
• Yupeng Jiang, University of Sydney	10/2018-02/2019
	, , ,

PhD Dissertation Defense Committee Served NOT as the Advisor

• Osman Akar, UCLA Math	2024
• Tianwei Wu, UPenn MSE	2024
• Yidong Zhao, KAIST Civil and Environmental Engineering	2024
• Yushan Han, UCLA Math	2024
• Yizhou Chen, UCLA Math	2024
• Wuyue Lu, UCLA CS	2024
• Jinyuan Liu, Dartmouth CS	2024
• Alexander Mayer, UCLA Math	2023
• Benjamin Jarman, UCLA Math	2023
• Xiao Zeng, UCLA CS	2022
• Feng Gao, UCLA CS	2022
• Nghia Truong, Utah CS	2019
• Tiantian Liu, UPenn CIS	2018
• Ming Gao, UW-Madison CS	2018

Master Student Thesis Committee Served NOT as the Advisor

• Avalon Vinella, UCLA CS	2024
• Tomoyori Iwao, UCLA CS	2022
• Xinling Yu, UPenn AMCS	2021
• Yaoyi Bai, UPenn CGGT	2018

11 Publications

Google Scholar

Papers (ACM SIGGRAPH/SIGGRAPH Asia/TOG Count: 51)

- 131. To appear, $\mathbf{SIGGRAPH},\,2025$
- 130. To appear, ${\bf SIGGRAPH},\,2025$
- 129. To appear, SIGGRAPH, 2025
- 128. To appear, $\mathbf{SIGGRAPH},$ 2025
- 127. To appear, $\mathbf{SIGGRAPH},$ 2025
- 126. Yuyang Li*, Wenxin Du*, Chang Yu* (equal contributions), Puhao Li, Zihang Zhao, Tengyu Liu, Chenfanfu Jiang†, Yixin Zhu†, Siyuan Huang†, Taccel: Scaling Up Vision-based Tactile Robotics via High-performance GPU Simulation, Arxiv, 2025

- 125. Siyu Ma*, Wenxin Du*, Chang Yu*, Ying Jiang*, Zeshun Zong, Tianyi Xie, Yunuo Chen, Yin Yang, Xuchen Han, Chenfanfu Jiang, GRIP: A General Robotic Incremental Potential Contact Simulation Dataset for Unified Deformable-Rigid Coupled Grasping, Arxiv, 2025
- 124. Chang Yu*, Wenxin Du*, Zeshun Zong, Alejandro Castro, Chenfanfu Jiang, Xuchen Han, A Convex Formulation of Material Points and Rigid Bodies with GPU-Accelerated Async-Coupling for Interactive Simulation, Arxiv, 2025
- 123. Shiguang Liu, Maolin Wu, Chenfanfu Jiang, Yisheng Zhang, An Incompressible Crack Model for Volume Preserving MPM Fracture, Proceedings of the ACM in Computer Graphics and Interactive Techniques (PACM-CGIT) special issue on Symposium on Interactive 3D Graphics and Games (I3D), 2025
- 122. Xuan Li, Qianli Ma, Tsung-Yi Lin, Yongxin Chen, Chenfanfu Jiang, Ming-Yu Liu, Donglai Xiang, Articulated Kinematics Distillation from Video Diffusion Models, CVPR, 2025
- 121. Yutao Feng^{*}, Xiang Feng^{*}, 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, CVPR, 2025
- 120. Xiang Feng^{*}, Chang Yu^{*}, Zoubin Bi^{*}, Yintong Shang, Feng Gao, Hongzhi Wu, Kun Zhou, Chenfanfu Jiang, Yin Yang, ARM: Appearance Reconstruction Model for Relightable 3D Generations, CVPR, 2025 *CVPR Highlight*
- 119. Siyuan Shen, Tianjia Shao, Kun Zhou, Chenfanfu Jiang, Yin Yang, EnliveningGS: Active Locomotion of 3DGS, CVPR, 2025
- 118. Tianyi Xie, Yiwei Zhao, Ying Jiang, Chenfanfu Jiang, PhysAnimator: Physics-Guided Generative Cartoon Animation, CVPR, 2025
- 117. Wenxin Du*, Chang Yu*, Siyu Ma, Ying Jiang, Zeshun Zong, Yin Yang, Joe Masterjohn, Alejandro Castro, Xuchen Han, Chenfanfu Jiang, Embedded IPC: Fast and Intersection-free Simulation in Reduced Subspace for Robot Manipulation, International Conference on Robotics and Automation (ICRA), 2025
- 116. Yaowei Guo, Jiazheng Xing, Xiaojun Hou, Shuo Xin, Juntao Jiang, Demetri Terzopoulos, Chenfanfu Jiang, Yong Liu, CFSum: A Transformer-Based Multi-Modal Video Summarization Framework With Coarse-Fine Fusion, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2025
- 115. Yunuo Chen, Junli Cao, Anil Kag, Vidit Goel, Sergei Korolev, Chenfanfu Jiang, Sergey Tulyakov, Jian Ren, Towards Physical Understanding in Video Generation: A 3D Point Regularization Approach, Arxiv, 2025
- 114. Xiyang Tan^{*}, Ying Jiang^{*}, Xuan Li^{*}, Zeshun Zong, Tianyi Xie, Yin Yang, Chenfanfu Jiang, PhysMotion: Physics-Grounded Dynamics From a Single Image, Arxiv, 2024
- 113. Hritik Bansal¹, Zongyu Lin¹, Tianyi Xie², Zeshun Zong², Michal Yarom³, Yonatan Bitton³ (equal contributions), Chenfanfu Jiang, Yizhou Sun, Kai-Wei Chang, Aditya Grover, VideoPhy: Evaluating Physical Commonsense In Video Generation, International Conference on Learning Representations (ICLR), 2025
- 112. Junli Cao, Vidit Goel, Chaoyang Wang, Anil Kag, Ju Hu, Sergei Korolev, Chenfanfu Jiang, Sergey Tulyakov, Jian Ren, Lightweight Predictive 3D Gaussian Splats, International Conference on Learning Representations (ICLR), 2025
- 111. Boqian Li*, Xuan Li*, Ying Jiang*, Tianyi Xie, Feng Gao, Huamin Wang, Yin Yang, Chenfanfu Jiang, GarmentDreamer: 3DGS Guided Garment Synthesis with Diverse Geometry and Texture Details, International Conference on 3D Vision (3DV), 2025
- 110. Yunuo Chen*, Tianyi Xie*, Zeshun Zong*, Xuan Li, Feng Gao, Yin Yang, Ying Nian Wu, Chenfanfu Jiang, Atlas3D: Physically Constrained Self-Supporting Text-to-3D for Simulation and Fabrication, Neural Information Processing Systems (NeurIPS), 2024
- 109. Chang Yu*, Xuan Li*, Lei Lan, Yin Yang, Chenfanfu Jiang, XPBI: Position-Based Dynamics with Smoothing Kernels Handles Continuum Inelasticity, ACM **SIGGRAPH** Asia, 2024
- 108. Chun Yuan, Kui Wu, Haoyang Shi, Lei Lan, Yuxing Qiu, Cem Yuksel, Huamin Wang, Chenfanfu Jiang, Yin Yang, Meta-Homogenization for Knitwear Simulation, ACM Transactions on Graphics (Proceedings of SIG-GRAPH Asia), 2024
- 107. Lei Lan, Zixuan Lu, Jingyi Long, Chun Yuan, Xuan Li, Xiaowei He, Huamin Wang, Chenfanfu Jiang, Yin Yang, Mil2: Efficient Cloth Simulation Using Non-distance Barriers and Subspace Reuse, ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia), 2024
- 106. Zeshun Zong, Chenfanfu Jiang, Xuchen Han, A Convex Formulation of Frictional Contact for the Material

Point Method and Rigid Bodies, International Conference on Intelligent Robots and Systems (IROS), 2024 Finalist for IROS 2024 RoboCup Best Paper Award

- 105. Yutao Feng, Yintong Shang, Xiang Feng, Lei Lan, Shandian Zhe, Tianjia Shao, Hongzhi Wu, Kun Zhou, Hao Su, Chenfanfu Jiang, Yin Yang, ElastoGen: 4D Generative Elastodynamics, Arxiv, 2024
- 104. 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, Computational Mechanics, 2024
- 103. Xuan Li, Minchen Li, Xuchen Han, Huamin Wang, Yin Yang, and Chenfanfu Jiang, A Dynamic Duo of Finite Elements and Material Points, ACM SIGGRAPH, 2024
- 102. Ying Jiang*, Chang Yu*, Tianyi Xie*, Xuan Li*, 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, ACM SIGGRAPH, 2024
- Zhexi Peng, Yin Yang, Tianjia Shao, Chenfanfu Jiang, Kun Zhou, X-SLAM: Scalable Dense SLAM for Taskaware Optimization using CSFD, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2024
- 100. Yidong Zhao, Minchen Li, Chenfanfu Jiang, Jinhyun Choo, Mapped material point method for large deformation problems with sharp gradients and its application to soil-structure interactions, International Journal for Numerical and Analytical Methods in Geomechanics, 2024
- 99. Jessica Weakly^{*}, Xuan Li^{*}, Tejas Agarwal, Minchen Li, Spencer Folk, Chenfanfu Jiang, and Cynthia Sung, Bistable Aerial Transformer (BAT): A Quadrotor Fixed-Wing Hybrid that Morphs Dynamically via Passive Soft Mechanism, Journal of Mechanisms and Robotics (JMR). 2024.
- 98. Tianyi Xie, Zeshun Zong, Yuxing Qiu, Xuan Li, Yutao Feng, Yin Yang, Chenfanfu Jiang, PhysGaussian: Physics-Integrated 3D Gaussians for Generative Dynamics, CVPR, 2024 CVPR Highlight
- 97. Yutao Feng, Yintong Shang, Xuan Li, Tianjia Shao, Chenfanfu Jiang, Yin Yang, PIE-NeRF: Physics-based Interactive Elastodynamics with NeRF, Computer Vision and Pattern Recognition (CVPR), 2024
- 96. Xuan Li, Yu Fang, Lei Lan, Huamin Wang, Yin Yang, Minchen Li, Chenfanfu Jiang, Subspace-Preconditioned GPU Projective Dynamics with Contact for Cloth Simulation, ACM SIGGRAPH Asia 2023
- 95. Zeshun Zong, Xuan Li, Minchen Li, Maurizio M. Chiaramonte, Wojciech Matusik, Eitan Grinspun, Kevin Carlberg, Chenfanfu Jiang, Peter Yichen Chen, Neural Stress Fields for Reduced-order Elastoplasticity and Fracture, ACM SIGGRAPH Asia 2023
- Ziyin Qu, Minchen Li, Yin Yang, Chenfanfu Jiang, Fernando de Goes, Power Plastics: A Hybrid Lagrangian/Eulerian Solver for Mesoscale Inelastic Flows, ACM SIGGRAPH Asia 2023
- Minchen Li, Zachary Ferguson, Teseo Schneider, Timothy Langlois, Denis Zorin, Daniele Panozzo, Chenfanfu Jiang, Danny M. Kaufman, Convergent Incremental Potential Contact, Arxiv, 2023
- Haozhe Su, Xuan Li, Tao Xue, Chenfanfu Jiang, Mridul Aanjaneya, A Generalized Constitutive Model for Versatile MPM Simulation and Inverse Learning with Differentiable Physics, Symposium on Computer Animation (SCA), 2023
- 91. Yu Fang, Minchen Li, Yadi Cao, Xuan Li, Joshuah Wolper, Yin Yang, Chenfanfu Jiang, Augmented Incremental Potential Contact for Sticky Interactions, IEEE TVCG, 2023
- Yunuo Chen, Tianyi Xie, Cem Yuksel, Danny Kaufman, Yin Yang, Chenfanfu Jiang, Minchen Li, Multi-Layer Thick Shells, ACM SIGGRAPH, 2023
- 89. Tianyi Xie, Minchen Li, Yin Yang, Chenfanfu Jiang, A Contact Proxy Splitting Method for Lagrangian Solid-Fluid Coupling, ACM Transactions On Graphics (SIGGRAPH), 2023
- 88. Lei Lan, Minchen Li, Chenfanfu Jiang, Huamin Wang, Yin Yang, Second-order Stencil Descent for Interiorpoint Hyperelasticity, ACM Transactions On Graphics (SIGGRAPH), 2023
- Yuxing Qiu, Samuel T. Reeve, Minchen Li, Yin Yang, Stuart R. Slattery, Chenfanfu Jiang, A Sparse Distributed Gigascale Resolution Material Point Method, ACM Transactions On Graphics (SIGGRAPH), 2023
- 86. Yadi Cao, Menglei Chai, Minchen Li, Chenfanfu Jiang, Efficient Learning of Mesh-Based Physical Simulation with BiStride-Multi-Scale(BSMS)-GNN, International Conference on Machine Learning (ICML), 2023
- 85. Xuan Li, Yi-Ling Qiao, Peter Yichen Chen, Krishna Murthy Jatavallabhula, Ming Lin, Chenfanfu Jiang, Chuang Gan, PAC-NeRF: Physics Augmented Continuum Neural Radiance Fields for Geometry-Agnostic

System Identification, International Conference on Learning Representations (ICLR), 2023 $Notable\ Top\ 25\%$

- Yidong Zhao, Chenfanfu Jiang, Jinhyun Choo, Circumventing Volumetric Locking in Explicit Material Point Methods: A Simple, Efficient, and General Approach, International Journal for Numerical Methods in Engineering (IJNME), 2023
- 83. Hangxin Liu, Zeyu Zhang, Ziyuan Jiao, Zhenliang Zhang, Minchen Li, Chenfanfu Jiang, Yixin Zhu, Song-Chun Zhu, Reconfigurable Data Glove for Reconstructing Physical and Virtual Grasps, Engineering, 2023
- Bertil Trottet, Ron Simenhois, Gregoire Bobillier, Bastian Bergfeld, Alec van Herwijnen, Chenfanfu Jiang, Johan Gaume, Transition from Sub-Rayleigh Anticrack to Supershear Crack Propagation in Snow Avalanches, Nature Physics, 2022
- 81. Yuxing Qiu, Feng Gao, Minchen Li, Govind Thattai, Yin Yang, Chenfanfu Jiang, TPA-Net: Generate A Dataset for Text to Physics-based Animation, Arxiv, 2022
- Yunuo Chen, Minchen Li, Wenlong Lu, Chuyuan Fu, Chenfanfu Jiang, Midas: A Multi-Joint Robotics Simulator with Intersection-Free Frictional Contact, Arxiv, 2022
- Zeshun Zong^{*}, Xuan Li^{*}, Jianping Ye, Sian Wen, Yin Yang, Danny M. Kaufman, Minchen Li, Chenfanfu Jiang, Topology Optimization with Frictional Self-Contact, Arxiv, Aug 9, 2022
- Yu Fang*, Jiancheng Liu*, Mingrui Zhang*, Jiasheng Zhang, Yidong Ma, Minchen Li, Yuanming Hu, Chenfanfu Jiang, Tiantian Liu, Complex Locomotion Skill Learning via Differentiable Physics, ArXiv, June 6, 2022
- 77. Xiyu Yi, Haichao Miao, Jacky Kai-yin Lo, Maher M. Elsheikh, Tek-Hyung Lee, Chenfanfu Jiang, Yuliang Zhang, Brent W. Segelke, K. Wesley Overton, Peer-Timo Bremer, Ted A. Laurence, Tailored approach to study Legionella infection using a lattice light sheet microscope (LLSM), Biomedical Optics Express, 2022
- 76. Xingyue Li, Betty Sovilla, Camille Ligneau, Chenfanfu Jiang, Johan Gaume, Different erosion and entrainment mechanisms in snow avalanches, Mechanics Research Communications, 2022
- Xuan Li, Yadi Cao, Minchen Li, Yin Yang, Craig Schroeder, Chenfanfu Jiang, PlasticityNet: Learning to Simulate Metal, Sand, and Snow for Optimization Time Integration, Neural Information Processing Systems (NeurIPS), 2022
- 74. Siyuan Shen, Tianjia Shao, Kun Zhou, Chenfanfu Jiang, Feng Luo, Yin Yang, HoD-Net: High-order Differentiable Deep Neural Networks and its Applications, AAAI Conference on Artificial Intelligence (AAAI), 2022
- 73. Lei Lan, Guanqun Ma, Yin Yang, Changxi Zheng, Minchen Li, Chenfanfu Jiang, Penetration-free Projective Dynamics on the GPU, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2022
- Lei Lan, Danny M. Kaufman, Minchen Li, Chenfanfu Jiang, Yin Yang, Affine Body Dynamics: Fast, Stable & Intersection-free Simulation of Stiff Materials, ACM Transactions on Graphics (Proceedings of SIG-GRAPH), 2022
- Yunuo Chen*, Minchen Li*, Lei Lan, Hao Su, Yin Yang, Chenfanfu Jiang, A Unified Newton Barrier Method for Multibody Dynamics, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2022
- 70. Xuan Li, Minchen Li, Chenfanfu Jiang, Energetically Consistent Inelasticity for Optimization Time Integration, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2022
- 69. Ziyin Qu, Minchen Li, Fernando de Goes, Chenfanfu Jiang, The Power Particle-In-Cell Method, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2022
- Yidong Zhao*, Jinhyun Choo*, Yupeng Jiang, Minchen Li, Chenfanfu Jiang, Kenichi Soga, A barrier method for frictional contact on embedded interfaces, Computer Methods in Applied Mechanics and Engineering, 2022
- 67. 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 Transaction on Graphics (TOG), 2022
- 66. Xuan Li*, Yu Fang* , Minchen Li, Chenfanfu Jiang, BFEMP: Interpenetration-Free MPM-FEM Coupling with Barrier Contact, Computer Methods in Applied Mechanics and Engineering, 2021
- 65. Libo Huang, Ziyin Qu, Xun Tan, Xinxin Zhang, Dominik L. Michels, Chenfanfu Jiang, Ships, Splashes, and Waves on a Vast Ocean, ACM Transactions on Graphics (Proceedings of **SIGGRAPH** Asia), 2021
- 64. Xuan Li^{*}, Jessica McWilliams^{*} (*equal contributions), Minchen Li, Cynthia Sung, Chenfanfu Jiang, Soft Hybrid Aerial Vehicle via Bistable Mechanism, International Conference on Robotics and Automation (ICRA),

2021

Awarded ICRA 2021 best paper in mechanisms and design

- 63. Xingyue Li, Betty Sovilla, Chenfanfu Jiang, Johan Gaume, Three-dimensional and real-scale modeling of flow regimes in dense snow avalanches, Landslides, 2021
- 62. Joshuah Wolper, Ming Gao, Martin Luthi, Valentin Heller, Andreas Vieli, Chenfanfu Jiang, Johan Gaume, A Glacier-Ocean Interaction Model for Tsunami Genesis Due to Iceberg Calving, Nature Communications Earth and Environment, 2021
- Yue Li*, Xuan Li*, Minchen Li*, Yixin Zhu, Bo Zhu, Chenfanfu Jiang, Lagrangian-Eulerian Multi-Density Topology Optimization With The Material Point Method, International Journal for Numerical Methods in Engineering (IJNME), 2021
- 60. Minchen Li, Danny M. Kaufman, Chenfanfu Jiang, Codimensional Incremental Potential Contact, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2021
- 59. Yu Fang^{*}, Minchen Li^{*}, Chenfanfu Jiang, Danny M. Kaufman, Guaranteed Globally Injective 3D Deformation Processing, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2021
- Zachary Ferguson, Minchen Li, Teseo Schneider, Francisca Gil-Ureta, Timothy Langlois, Chenfanfu Jiang, Denis Zorin, Danny M. Kaufman, Daniele Panozzo, Intersection-free Rigid Body Dynamics, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2021
- 57. Lei Lan*, Yin Yang* , Danny M. Kaufman, Junfeng Yao, Minchen Li, Chenfanfu Jiang, Medial IPC: Accelerated Incremental Potential Contact With Medial Elastics, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2021
- 56. Haozhe Su*, Tao Xue*, Chengguizi Han, Chenfanfu Jiang and Mridul Aanjaneya, A Unified Second-Order Accurate in Time MPM Formulation for Simulating Viscoelastic Liquids with Phase Change, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2021
- Siyuan Shen, Yin Yang, Tianjia Shao, He Wang, Chenfanfu Jiang, Lei Lan, and Kun Zhou, High-order Differentiable Autoencoder for Nonlinear Model Reduction, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2021
- 54. Zizhou Huang, Teseo Schneider, Minchen Li, Chenfanfu Jiang, Denis Zorin, Daniele Panozzo, A Large-Scale Benchmark for the Incompressible Navier-Stokes Equations, ArXiv, December 10, 2021
- 53. Tao Xue^{*}, Haozhe Su^{*} (^{*}equal contributions), Chengguizi Han, Chenfanfu Jiang, Mridul Aanjaneya, A Novel Discretization and Numerical Solver for Non-Fourier Diffusion, ACM Transactions on Graphics (Proceedings of **SIGGRAPH** Asia), 2020
- 52. Steven Gagniere, David Hyde, Alan Marquez-Razon, Chenfanfu Jiang, Ziheng Ge, Xuchen Han, Qi Guo, Joseph Teran, A Hybrid Lagrangian/Eulerian Collocated Advection and Projection Method for Fluid Simulation, Symposium on Computer Animation (SCA), 2020
- Joshuah Wolper, Yunuo Chen, Minchen Li, Yu Fang, Ziyin Qu, Jiecong Lu, Meggie Cheng, Chenfanfu Jiang, MPM: Animating Anisotropic Damage Mechanics, ACM Transactions on Graphics (Proceedings of SIG-GRAPH), 2020

ACM Transaction on Graphics Volume 39, Issue 4 (July 2020) Front Cover Image

- Minchen Li, Zachary Ferguson, Teseo Schneider, Timothy Langlois, Denis Zorin, Daniele Panozzo, Chenfanfu Jiang, Danny Kaufman, Incremental Potential Contact: Intersection- and Inversion-free, Large-Deformation Dynamics, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2020
- 49. Yu Fang^{*}, Ziyin Qu^{*} (*equal contributions), Minchen Li, Xinxin Zhang, Yixin Zhu, Mridul Aanjaneya, Chenfanfu Jiang, IQ-MPM: An Interface Quadrature Material Point Method for Non-sticky Strongly Two-way Coupled Nonlinear Solids and Fluids, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2020
- 48. Xinlei Wang^{*}, Minchen Li^{*} (*equal contribution), Yu Fang, Xinxin Zhang, Ming Gao, Min Tang, Danny M. Kaufman, Chenfanfu Jiang, Hierarchical Optimization Time Integration for CFL-rate MPM Stepping, ACM Transaction on Graphics (TOG), 2020
- Weizhen Huang, Julian Iseringhausen, Tom Kneiphof, Ziyin Qu, Chenfanfu Jiang, Matthias Hullin, Chemomechanical Simulation of Soap Film Flow on Spherical Bubbles, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2020
- 46. Xinlei Wang^{*}, Yuxing Qiu^{*} (*Equal contributions), Stuart Slattery, Yu Fang, Minchen Li, Song-Chun Zhu, Yixin Zhu, Min Tang, Dinesh Manocha, Chenfanfu Jiang, A Massively Parallel and Scalable Multi-GPU Ma-

terial Point Method, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2020

- 45. Xingyue Li, Betty Sovilla, Chenfanfu Jiang, Johan Gaume, The mechanical origin of snow avalanche dynamics and flow regime transitions, The Cryosphere, 2020
- 44. Yupeng Jiang, Minchen Li, Chenfanfu Jiang, Fernando Alonso-marroquin, A hybrid material-point spheropolygonelement method for solid and granular material interaction, International Journal for Numerical Methods in Engineering (IJNME), 2020
- 43. Johan Gaume, Alec van Herwijnen, Theodore Gast, Joseph Teran, Chenfanfu Jiang, Investigating the release and flow of snow avalanches at the slope-scale using a unified model based on the material point method, Cold Regions Science and Technology, 2019
- Monroe Kennedy, Karl Schmeckpeper, Dinesh Thakur, Chenfanfu Jiang, Vijay Kumar, Kostas Daniilidis, Autonomous Precision Pouring from Unknown Containers, IEEE Robotics and Automation Letters (RA-L), 2019
- 41. Joshuah Wolper, Yu Fang, Minchen Li, Jiecong Lu, Ming Gao, Chenfanfu Jiang, CD-MPM: Continuum Damage Material Point Methods for Dynamic Fracture Animation, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2019

Third place winner in the Computer Graphics Forum 2020 Cover Image Contest

- Yu Fang, Minchen Li, Ming Gao, Chenfanfu Jiang, Silly Rubber: An Implicit Material Point Method for Simulating Non-equilibrated Viscoelastic and Elastoplastic Solids, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2019
- Minchen Li, Ming Gao, Timothy Langlois, Chenfanfu Jiang, Danny M. Kaufman, Decomposed Optimization Time Integrator for Large-Step Elastodynamics, ACM Transactions on Graphics (Proceedings of SIG-GRAPH), 2019
- 38. Ziyin Qu^{*}, Xinxin Zhang^{*}, Ming Gao, Chenfanfu Jiang, Baoquan Chen, Efficient and Conservative Fluids Using Bidirectional Mapping, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2019
- 37. Bowen Yang*, William Corse*, Jiecong Lu, Joshuah Wolper, Chenfanfu Jiang, Real-Time Fluid Simulation on the Surface of a Sphere, Proceedings of the ACM in Computer Graphics and Interactive Techniques (PACMCGIT) special issue on Symposium on Interactive 3D Graphics and Games (I3D), 2019
- 36. Xuchen Han, Theodore Gast, Qi Guo, Stephanie Wang, Chenfanfu Jiang, Joseph Teran, A Hybrid Material Point Method for Frictional Contact with Diverse Materials, Proceedings of the ACM in Computer Graphics and Interactive Techniques (PACMCGIT) special issue on Symposium on Computer Animation (SCA), 2019
- 35. Stephanie Wang, Mengyuan Ding, Theodore F. Gast, Leyi Zhu, Steven Gagniere, Chenfanfu Jiang, Joseph Teran, Simulation and Visualization of Ductile Fracture with the Material Point Method, Proceedings of the ACM in Computer Graphics and Interactive Techniques (PACMCGIT) special issue on Symposium on Computer Animation (SCA), 2019

Awarded SCA 2019 best paper

- Hangxin Liu, Chi Zhang, Yixin Zhu, Chenfanfu Jiang, Song-Chun Zhu, Mirroring without Overimitation: Learning Functionally Equivalent Manipulation Actions, The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI), 2019
- 33. Ming Gao*, Xinlei Wang*, Kui Wu*, Andre Pradhana, Eftychios Sifakis, Cem Yuksel, Chenfanfu Jiang, GPU Optimization of Material Point Methods, ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia), 2018
- 32. Yuanming Hu, Yu Fang, Ziheng Ge, Ziyin Qu, Yixin Zhu, Andre Pradhana, Chenfanfu Jiang, A Moving Least Squares Material Point Method with Displacement Discontinuity and Two-Way Rigid Body Coupling, ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2018
- Ming Gao, Andre Pradhana, Xuchen Han, Qi Guo, Grant Kot, Eftychios Sifakis, Chenfanfu Jiang, Animating Fluid Sediment Mixture in Particle-Laden Flows, ACM Transactions on Graphics (Proceedings of SIG-GRAPH), 2018
- Johan Gaume, Theodore Gast, Joseph Teran, Alec van Herwijnen, Chenfanfu Jiang, Dynamic Anticrack Propogation In Snow, Nature Communications, volume 9, Article number: 3047, 2018
- 29. Yu Fang^{*}, Yuanming Hu^{*}, Shi-Min Hu, Chenfanfu Jiang, A Temporally Adaptive Material Point Method with Regional Time Stepping, Computer Graphics Forum special issue on ACM **SIGGRAPH**/ Eurographics Symposium on Computer Animation (SCA), 2018

- 28. Siyuan Qi, Yixin Zhu, Siyuan Huang, Chenfanfu Jiang, Song-Chun Zhu, Human-centric Indoor Scene Synthesis Using Stochastic Grammar, IEEE Computer Vision and Pattern Recognition (CVPR), 2018
- 27. Tomer Weiss, Alan Litteneker, Chenfanfu Jiang, Demetri Terzopoulos, Position-Based Real-Time Simulation of Large Crowds, Computers and Graphics, 2018
- 26. Duotun Wang^{*}, James Kubricht^{*}, Yixin Zhu^{*}, Wei Liang, Song-Chun Zhu, Chenfanfu Jiang, Hongjing Lu, Spatially Perturbed Collision Sounds Attenuate Perceived Causality in 3D Launching Events, IEEE Conference on Virtual Reality and 3D User Interfaces, 2018
- 25. Tomer Weiss, Alan Litteneker, Noah Duncan, Masaki Nakada, Chenfanfu Jiang, Lap-Fai Yu, Demetri Terzopoulos, Fast and Scalable Position-Based Layout Synthesis, IEEE Transactions on Visualization and Computer Graphics (TVCG), 2018
- 24. Chenfanfu Jiang^{*}, Siyuan Qi^{*}, Yixin Zhu^{*}, Siyuan Huang^{*} (*equal contributors), Jenny Lin, Lap-Fai Yu, Demetri Terzopoulos, Song-Chun Zhu, Configurable 3D Scene Synthesis and 2D Image Rendering with Per-Pixel Ground Truth using Stochastic Grammars, International Journal of Computer Vision (IJCV), 2018
- 23. Chenfanfu Jiang, Craig Schroeder, Joseph Teran, An Angular Momentum Conserving Affine Particle-in-Cell Method, Journal of Computational Physics, 338(1), pp. 137-164, 2017
- 22. Kwitae Chong, Chenfanfu Jiang, Daniel Ram, Anand Santhanam, Demetri Terzopoulos, Peyman Benharash, Eric Dutson, Joseph Teran, Jeff Eldredge, Visualization of Vascular Injuries in Extremity Trauma, Medical & Biological Engineering & Computing, doi:10.1007/s11517-017-1619-9, 2017
- Ming Gao, Andre Pradhana, Chenfanfu Jiang, Eftychios Sifakis, An Adaptive Generalized Interpolation Material Point Method for Simulating Elastoplastic Materials, ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia), 2017
- 20. Chuyuan Fu, Qi Guo, Theodore Gast, Chenfanfu Jiang, Joseph Teran, A Polynomial Particle-In-Cell Method, ACM Transactions on Graphics (Proceedings of **SIGGRAPH** Asia), 2017
- James Kubricht^{*}, Yixin Zhu^{*}, Chenfanfu Jiang^{*}, Demetri Terzopoulos, Song-Chun Zhu, Hongjing Lu, Consistent Probabilistic Simulation Underlying Human Judgment in Substance Dynamics, Proceedings of the 39th Annual Meeting of the Cognitive Science Society (Cogsci oral), 2017
- Tomer Weiss, Alan Litteneker, Chenfanfu Jiang, Demetri Terzopoulos, Position-Based Multi-Agent Dynamics for Real-Time Crowd Simulation, Motion in Games, 2017 *Awarded MIG 2017 best paper*
- 17. Chenfanfu Jiang, Theodore Gast, Joseph Teran, Anisotropic Elastoplasticity for Cloth, Knit and Hair Frictional Contact, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2017
- 16. Andre Pradhana, Theodore Gast, Gergely Klar, Chuyuan Fu, Joseph Teran, Chenfanfu Jiang, Ken Museth, Multispecies Simulation of Porous Sand and Water Mixtures, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2017
- 15. Gergely Klar, Theodore Gast, Andre Pradhana, Chuyuan Fu, Craig Schroeder, Chenfanfu Jiang, Joseph Teran, Drucker-Prager Elastoplasticity for Sand Animation, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2016
- 14. Jenny Lin, Xingwen Guo, Jingyu Shao, Chenfanfu Jiang, Yixin Zhu, Song-Chun Zhu, A Virtual Reality Platform for Dynamic Human-Scene Interaction, SIGGRAPH Asia Virtual Reality Meets Physical Reality Workshop, 2016
- James Kubricht*, Chenfanfu Jiang*, Yixin Zhu*, Song-Chun Zhu, Demetri Terzopoulos, Hongjing Lu, Probabilistic Simulation Predicts Human Performance on Viscous Fluid-Pouring Problem, Proceedings of the 38th Annual Meeting of the Cognitive Science Society (Cogsci oral), 2016
- 12. Yixin Zhu*, Chenfanfu Jiang* , Yibiao Zhao, Demetri Terzopoulos, Song-Chun Zhu, Inferring Forces and Learning Human Utilities From Videos, IEEE Computer Vision and Pattern Recognition (CVPR oral) 3823–3833, 2016
- 11. Theodore Gast, Chuyuan Fu, Chenfanfu Jiang, Joseph Teran, Implicit-shifted Symmetric QR Singular Value Decomposition of 3x3 Matrices, UCLA Mathematics Department Technical Report (CAM16-19), 2016
- Xiaowei Ding, Xin Geng, Chenfanfu Jiang, Feng Tian, Xingjian Yan, Hang Qi, Lei Zhang, Yongchang Zheng, Fast Automated Liver Delineation from Computational Tomography Angiography, Medical Image Understanding and Analysis Conference (MIUA), Proceedia Computer Science 90: 87-92, 2016
- 9. Xiaowei Ding, Jianing Pang, Zhou Ren, Mariana Diaz-Zamudio, Chenfanfu Jiang, Zhaoyang Fan, Daniel

Berman, Debiao Li, Demetri Terzopoulos, Piotr Slomka, Damini Dey, Automated Pericardial Fat Quantification From Coronary Magnetic Resonance Angiography: A Feasibility Study, Journal of Medical Imaging, 3(1), 014002, 2016

- 8. Chenfanfu Jiang, Craig Schroeder, Joseph Teran, Andrew Selle, Alexey Stomakhin, The Affine Particle-in-Cell Method, ACM Transactions on Graphics (Proceedings of **SIGGRAPH**), 2015
- Theodore Gast, Craig Schroeder, Alexey Stomakhin, Chenfanfu Jiang, Joseph Teran, Optimization Integrator for Large Time Steps, IEEE Transactions on Visualization and Computer Graphics (TVCG 2015), 21(10) pp. 1103-1115, 2015
- Daniel Ram, Theodore Gast, Chenfanfu Jiang, Craig Schroeder, Alexey Stomakhin, Joseph Teran, Pirouz Kavehpour, A Material Point Method for Viscoelastic Fluids, Foams and Sponges, ACM SIGGRAPH/ Eurographics Symposium on Computer Animation (SCA 2015), 2015
- Alexey Stomakhin, Craig Schroeder, Chenfanfu Jiang, Larrence Chai, Joseph Teran, Andrew Selle, Augmented MPM for Phase-Change and Varied Materials, ACM Transactions on Graphics (Proceedings of SIG-GRAPH), 2014
- Yuting Wang, Chenfanfu Jiang, Craig Schroeder, Joseph Teran, An Adaptive Virtual Node Algorithm with Robust Mesh Cutting, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA 2014), pp. 77-85, 2014
- 3. Jan Hegemann, Chenfanfu Jiang, Craig Schroeder, Joseph Teran, A Level Set Method for Ductile Fracture, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA 2013), pp. 193-201, 2013 *Awarded SCA 2013 best paper*
- Jingyi Fang, Chenfanfu Jiang, Demetri Terzopoulos, Modeling and Animating Myriapoda: A Real-time Kinematic/Dynamic Approach, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA 2013), pp. 203-212, 2013
- 1. Chenfanfu Jiang, Jian Zheng, Bin Zhao, Relativistic Correction of $(v/c)^2$ to the Collective Thomson Scattering, Chinese Phys. B 20095202, 2011

Book and Course Notes

- Minchen Li, Chenfanfu Jiang, Physics-Based Simulation, Free online book https://phys-sim-book.github. io/, 2024
- 2. Yuanming Hu, Xinxin Zhang, Ming Gao, Chenfanfu Jiang, On Hybrid Lagrangian-Eulerian Simulation Methods: Practical Notes and High-Performance Aspects, SIGGRAPH course notes, 2019
- 1. Chenfanfu Jiang, Craig Schroeder, Alexey Stomakhin, Andre Selle, Joseph Teran, The Material Point Method for Physics Based Simulation: Modeling and Discretization, SIGGRAPH course notes, 2016

Abstracts and Posters

- 14. Feng Luo, Ling Liu, G Geoff Wang, Vijay Kumar, Mark S Ashton, Jacob Abernethy, Fatemeh Afghah, Matthew HE M Browning, David Coyle, Philip Dames, Tom O'Halloran, James Hays, Patrick Heisl, Chenfanfu Jiang, Puskar Khanal, Venkat Narayan Krovi, Sara Kuebbing, Nianyi Li, JingJing Liang, Ninghao Liu, Steve Mc-Nulty, Christopher M Oswalt, Neil Pederson, Demetri Terzopoulos, Christopher W Woodall, Yongkai Wu, Jian Yang, Yin Yang, Liang Zhao, Artificial Intelligence for Climate Smart Forestry: A Forward Looking Vision, IEEE International Conference on Cognitive Machine Intelligence (CogMI), 2023
- Johan Gaume, Ming Gao, Joshua Wolper, Martin P. Luethi, Andreas Vieli, Joseph Teran, Chenfanfu Jiang, A Material Point Method for Glacier Calving, In EGU General Assembly Conference Abstracts, p. 21958. 2020.
- Xingyue Li, Betty Sovilla, Stephanie Wang, Chenfanfu Jiang, Johan Gaume. Numerical modeling of snow avalanche dynamics based on the Material Point Method. In EGU General Assembly Conference Abstracts, p. 2153. 2020.
- 11. Bertil Trottet, Alec van Herwijnen, Stephanie Wang, Chenfanfu Jiang, Joseph Teran, Johan Gaume. Sharp transition in modes of dynamic crack propagation in dry-snow slab avalanche release. In EGU General Assembly Conference Abstracts, p. 20604. 2020.

- 10. Lars Blatny, Henning Lowe, Stephanie Wang, Chenfanfu Jiang, Johan Gaume. Microstructure-based modeling of snow using the material point method and finite strain elastoplasticity. 2020.
- 9. Johan Gaume, Theodore Gast, Joseph Teran, Alec van Herwijnen, Chenfanfu Jiang, Unified modeling of the release and flow of snow avalanches using MPM, ECCM ECFD, 2018
- 8. Tomer Weiss, Alan Litteneker, Chenfanfu Jiang, Demetri Terzopoulos, Position-Based Multi-Agent Dynamics for Real-Time Crowd Simulation, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA 2017 Posters), 2017
- 7. Chenfanfu Jiang, Craig Schroeder, Joseph Teran, A New Particle-In-Cell Technique for Reducing Noise, 14th U.S. National Congress on Computational Mechanics, 2017.
- 6. Yixin Zhu*, Chenfanfu Jiang* , Yibiao Zhao, Demetri Terzopoulos, Song-Chun Zhu, Evaluating Physical Quantities and Learning Human Utilities from RGBD Videos, SIGGRAPH Asia (Virtual Reality Meets Physical Reality Workshop), 2016.
- James Kubricht^{*}, Chenfanfu Jiang^{*}, Yixin Zhu^{*}, Song-Chun Zhu, Demetri Terzopoulos, Hongjing Lu, Probabilistic Simulation Predicts Human Performance on Viscous Fluid-Pouring Problem, Neural Information Processing Systems (NIPS) (Intuitive Physics Workshop), 2016
- 4. Chenfanfu Jiang, Kwitae Chong, Jeff Eldredge, Daniel Ram, Craig Schroeder, Joseph Teran, Anand Santhanam, Demetri Terzopoulos, Peyman Benharash, Material Point Method Simulation of Ballistic Trauma, 12th World Congress on Computational Mechanics (WCCM), 2016.
- 3. Kwitae Chong, Chenfanfu Jiang, Anand Santhanam, Demetri Terzopoulos, Peyman Benharash, Joseph Teran, Jeff Eldredge, Numerical Simulation of Hemorrhage in Human Injury, 68th Annual Meeting of the APS Division of Fluid Dynamics, Gallery of Fluid Motion, Volume 60 Number 21, 2015.
- 2. Kwitae Chong, Chenfanfu Jiang, Peyman Benharash, Joseph Teran and Jeff Eldredge, Particle Simulation of Hemorrhage of Injured Human Body, 9th Southern California Symposium on Flow Physics, San Diego State University, 2015.
- 1. Jian Zheng, Chenfanfu Jiang, Bin Zhao, Relativistic Correction of $(v/c)^2$ to the Collective Thomson Scattering, Bulletin of the American Physical Society, vol. 55, (APS 2010), 2010.

12 Selected Publicity

- (UCLA) Professor Chenfanfu Jiang's Collaboration with Toyota Research Institute Recognized as Finalist for IROS 2024 RoboCup Best Paper Award
- (UCLA) Professor Chenfanfu Jiang Receives 2023 Amazon Science Hub Award
- (Amazon) Amazon and UCLA announce 2023 Science Hub awards
- (Radiance Fields) VR-GS: Physics Based Gaussian Splatting in VR
- (Medium) Revolutionizing 3D Modeling with PIE-NeRF Innovation
- (Radiance Fields) PIE-NeRF Serves Up a New Slice: Physics-Based NeRFs
- (Marktechpost) Meet PhysGaussian: An Artificial Intelligence Technique that Produces High-Quality Novel Motion Synthesis by Integrating Physically Grounded Newtonian Dynamics into 3D Gaussians
- (Medium) PhysGaussian Blends Physics with 3D Rendering Innovation
- (UCLA) Professor Chenfanfu Jiang awarded Sony Faculty Innovation Award
- (Decoder) PAC-NeRF learns physical properties of objects from videos
- (UCR) UC grant to create computer code library for engineering applications
- (UCLA) UCLA team receives best paper award at international robotics conference
- (UCLA) Best Paper Award on Mechanisms and Design at ICRA 2021
- (UCLA) Interview with new faculty Chenfanfu Jiang
- (Penn) Simulation of glacial calving and tsunami waves predicts climate change consequences
- (Penn) Penn Engineers' New Simulation of Glacial Calving and Tsunami Waves Accurately Predicts these Climate Change Consequences
- (80 Level) Fracture Studies for Game and Movie Animation
- (Technology) AnisoMPM: Animating Anisotropic Damage Mechanics
- (ECP) ECP-Funded Research Develops Solutions for Additive Manufacturing Simulation Needs

- (ACM SIGGRAPH) New Research From University of Pennsylvania Examines Realistic Damage Mechanics
- (Gizmodo) Meat-Tearing CG Breakthrough Promises to Make Video Game Injuries Disgustingly Realistic
- (ACM) Meat-Tearing CG Breakthrough Promises to Make Video Game Injuries Disgustingly Realistic
- (80lv) Fracture Studies for Game and Movie Animation
- (The Takeout) Advances in science: We can now tear CGI bread in half
- (Vice) We Are Not Prepared for the Next Generation of CGI Food
- (Nature) The 50 most read Nature Communications Earth and planetary sciences articles published in 2018
- (ACM Technews) Computer Scientists Create CG Sand That Looks Unbelievably Real
- (Penn) The snow graphics in Frozen can predict the mechanics of real avalanches
- (UCLA) Best Paper Award at ACM SIGGRAPH Conference on Motion in Games 2017
- (Gizmodo) We Finally Figured Out How To Make Realistic CG Mud
- (UCLA) UCLA Engineering honors top alumni, teachers, students at 2016 awards dinner
- (Phys) Mathematicians bring ocean to life for Disney's 'Moana'
- (UCLA) UCLA mathematicians bring ocean to life for Disney's Moana
- (New Scientist) Blood gushes from virtual leg injury to help train combat medics
- (Gizmodo) Simulation of a Leg Gushing Blood Is as Gross as You'd Expect
- (Popular Science) Here is A Model Of Exactly How A Leg Bleeds Once It's Been Shot
- (Science Net) Researchers use virtual blood to train medics.