Chang Yu

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Research Interests

Scalable physical AI infrastructure for physical intelligence: massively parallel, high-fidelity simulation systems that turn physics-grounded world generation, robot interaction, and real-world feedback into scalable manipulation policies.

Education

University of California, Los Angeles — Los Angeles, USA
Ph.D. in Computer Science — *2023 – Present*
Advisor: Prof. Chenfanfu Jiang and Prof. Demetri Terzopoulos.
Honors and Awards: Meshy Fellowship Outstanding Prize 2025.

University of Electronic Science and Technology of China — Chengdu, China
(Honor) **B.Eng. in Software Engineering,** Elite Program — *2019 – 2023*
GPA: 3.99/4.0 **Average Score:** 92.24 **Rank:** 1/57
Honors and Awards: UESTC Outstanding Undergraduate (1/690); Outstanding Undergraduate Scholarship (2019-2023)

Publications [Google Scholar]

* equal contribution; † project lead

Skill2Real: Agentic Skill Learning for Zero-Shot Sim-to-Real Robot Manipulation
Xincheng He, Siyu Ma, **Chang Yu**, Yunuo Chen, Yanjia Huang, Ying Nian Wu, Yin Yang, Chenfanfu Jiang.
In Submission.

TacCoRL: Integrating Tactile Feedback into VLA via Simulation
Siyu Ma*, Yuqi Liang*, **Chang Yu***†, Yunuo Chen, Hao Su, Yixin Zhu, Yin Yang, Chenfanfu Jiang.
Conference on Robot Learning (CoRL), 2026; Oral @ RSS 2026 Workshop on Tactile Sensing for Robotic Foundation Models.

MemoryVAM: Integrating Memory into Video Action Model for Robot Manipulation
Yuxin Jiang*, **Chang Yu***, Yunuo Chen, Xiang Feng, Yin Yang, Nishank Gite, Chenfanfu Jiang.
Conference on Robot Learning (CoRL), 2026; RSS 2026 Workshop on Robot World Models.

FetchMan: Learning Visual Humanoid Policies from Simulated Experiences
Omar Rayyan, Zhi Li, Max Argus, Yuxin Jiang, **Chang Yu**, Chenfanfu Jiang, Yuchen Cui.
arXiv, 2026; RSS 2026 Workshop on Whole-body Control and Bimanual Manipulation.

Sparse2Act: Learning Action-Aligned Sparse 3D Representations for Cross-Domain Robot Manipulation
Yu Guo*, **Chang Yu***, Siyu Ma*, Yunuo Chen, Yin Yang, Ying Nian Wu, Chenfanfu Jiang.
Conference on Neural Information Processing Systems (NeurIPS) 2026 Workshop: From Pretrained Representations to Acting Agents (PTA).

SAP Warp: GPU-accelerated Simulation of Friction Contact for Robotics
Yunuo Chen, Xiang Feng, **Chang Yu**, Yin Yang, Joseph Masterjohn, Chenfanfu Jiang.
Open-Source Software, June 2026.

MPM Lite: Linear Kernels and Integration without Particles
Xiang Feng*, Yunuo Chen*, **Chang Yu***, Hao Su, Demetri Terzopoulos, Yin Yang, Joe Masterjohn, Alejandro Castro, Chenfanfu Jiang.
ACM Transactions on Graphics (SIGGRAPH), 2026, Technical Paper Trailer.

Right-Side-Out: Learning Zero-Shot Sim-to-Real Garment Reversal
Chang Yu*, Siyu Ma*, Wenxin Du, Zeshun Zong, Han Xue, Wendi Chen, Cewu Lu, Yin Yang, Xuchen Han, Joseph Masterjohn, Alejandro Castro, Chenfanfu Jiang.
IEEE International Conference on Robotics and Automation (ICRA), 2026.

Taccel: Scaling Up Vision-based Tactile Robotics via High-performance GPU Simulation
Yuyang Li*, Wenxin Du*, **Chang Yu***, Puhao Li, Zihang Zhao, Tengyu Liu, Chenfanfu Jiang, Yixin Zhu, Siyuan Huang.
Conference on Neural Information Processing Systems (NeurIPS), 2025, Spotlight (13.0%).

Physics-Based Simulation
Minchen Li, Chenfanfu Jiang, Zhaofeng Luo, Wenxin Du, **Chang Yu**, Žiga Kovačič, Tianyi Xie.
Open-Source Online Book, 2025.

GRIP: A General Robotic Incremental Potential Contact Simulation Dataset for Unified Deformable-Rigid Coupled Grasping
Siyu Ma*, Wenxin Du*, **Chang Yu***, Ying Jiang*, Zeshun Zong, Tianyi Xie, Yunuo Chen, Yin Yang, Xuchen Han, Chenfanfu Jiang.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025.

A Convex Formulation of Material Points and Rigid Bodies with GPU-Accelerated Async-Coupling for Interactive Simulation
Chang Yu*, Wenxin Du*, Zeshun Zong, Alejandro Castro, Chenfanfu Jiang, Xuchen Han.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025, Best Poster Finalist @ ROMADO Workshop.

Dress-1-to-3: Single Image to Simulation-Ready 3D Outfit with Diffusion Prior and Differentiable Physics
Xuan Li*, **Chang Yu***, Wenxin Du*, Ying Jiang*, Tianyi Xie, Yunuo Chen, Yin Yang, Chenfanfu Jiang.
ACM Transactions On Graphics (SIGGRAPH), 2025.

ARM: Appearance Reconstruction Model for Relightable 3D Generation
Xiang Feng*, **Chang Yu***, Zoubin Bi*, Yintong Shang, Feng Gao, Hongzhi Wu, Kun Zhou, Chenfanfu Jiang, Yin Yang.
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025, Highlight.

Gaussian Splashing: Unified Particles for Versatile Motion Synthesis and Rendering
Yutao Feng*, Xiang Feng*, Yintong Shang, Ying Jiang, **Chang Yu**, Zeshun Zong, Tianjia Shao, Hongzhi Wu, Kun Zhou, Chenfanfu Jiang, Yin Yang.
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025.

Embedded IPC: Fast and Intersection-free Simulation in Reduced Subspace for Robot Manipulation
Wenxin Du*, **Chang Yu***, Siyu Ma, Ying Jiang, Zeshun Zong, Yin Yang, Joseph Masterjohn, Alejandro Castro, Xuchen Han, Chenfanfu Jiang.
IEEE International Conference on Robotics and Automation (ICRA), 2025.

XPBI: Position-Based Dynamics with Smoothing Kernels Handles Continuum Inelasticity
Chang Yu*, Xuan Li*, Lei Lan, Yin Yang, Chenfanfu Jiang.
SIGGRAPH Asia, 2024.

VR-GS: A Physical Dynamics-Aware Interactive Gaussian Splatting System in Virtual Reality
Ying Jiang*, **Chang Yu***, Tianyi Xie*, Xuan Li*, Yutao Feng, Huamin Wang, Minchen Li, Henry Lau, Feng Gao, Yin Yang, Chenfanfu Jiang.
SIGGRAPH, 2024.

MeshTaichi: A Compiler for Efficient Mesh-based Operations
Chang Yu*, Yi Xu*, Ye Kuang, Yuanming Hu, Tiantian Liu.
ACM Transactions on Graphics (SIGGRAPH Asia), 2022.

Real-time Physics Engine Based on MPM & PBD
Yilong Wu*, **Chang Yu***.
ICVRV, 2020.

Experience [LinkedIn]

NVIDIA Seattle Robotics Lab — Seattle, USA
Robotics Research Intern, Advisor: Jie Xu — *Jun '26 –*

Neural world dynamics calibration. Build an action-conditioned neural world dynamics model for Unitree G1 locomotion and loco-manipulation, converting hardware rollouts into calibrated simulators for real-to-sim-to-real policy learning.

Rollout data engine. Integrated a generative rollout pipeline for distribution exploration, G1 trajectory adaptation, action randomization, and large-scale dataset generation.

Validation diagnostics. Developed rollout coverage, OOD diagnostics, and sim-vs-hardware validation loops to surface simulator fidelity gaps before policy deployment.

CoRe Lab at Peking University — Beijing, China
Visiting Student, Advisor: Yixin Zhu — *Oct '25 – Dec '25*

Developing sim-to-real RL policies for dexterous manipulation with Taccel's GPU-accelerated tactile simulation stack.

MVIG Lab at Shanghai Jiao Tong University — Shanghai, China
Visiting Student, Advisor: Cewu Lu — *Jun '25 – Sep '25*

Researched deformable-object manipulation and sim-to-real policy learning for cloth/garment interaction and real-robot validation.

Toyota Research Institute — Los Altos, USA
Research & Development Intern, Advisor: Xuchen Han — *Jun '24 – Mar '25*

Development of real-time GPU MPM simulation algorithm for the open-source robotic toolbox Drake.

Taichi Graphics (now Meshy) — Beijing, China
Research & Development Intern, Advisor: Tiantian Liu — *Mar '21 – Jul '23*

Research, development and deployment of MeshTaichi extension. A research project. Developed and deployed a novel GPU mesh compiler based on Taichi that provides an intuitive programming model for efficient mesh-based operations. Devised the programming interface and backend code generation. Submitted a patent. Work published in SIGGRAPH Asia 2022.

Development of Taichi's Vulkan GPU backend. Developed and deployed an IR builder to convert Taichi Lang's Intermediate Representation into SPIR-V, which could be compiled and executed by Vulkan SDK and OpenCL. Served as a Taichi deployment solution for non-CUDA GPU environment and Ahead-of-Time compilation. Technical talks presented on TaichiCon01/02.

Teaching. Teaching Assistant of Taichi Graphics Course S1, Fall 2021.

Skills

Physical AI Data Engine: massively parallel GPU simulation, high-fidelity physics worlds, closed-loop world synthesis, robot interaction and evaluation, real-hardware validation
GPU Runtime & HPC: C/C++ (OpenGL, Vulkan), CUDA, Python (Taichi, Warp, PyTorch), SPIR-V/AOT deployment
Simulation & Realism: Isaac Lab, Isaac Gym, Isaac Sim, MuJoCo, Drake, Newton, PhysX, contact/friction dynamics, tactile simulation
Robot Rollouts & Interfaces: ROS1, ROS2, MoveIt, URDF, Data Collection & Teleoperation pipelines, RL policy evaluation
Real Hardware: Aloha/Piper, UR5e, Franka, Unitree G1, LeapHand, Taccel/FlexiTac (vision/resistive tactile)
Assets & Tools: Houdini, Blender, Unity, UE5, Git, LaTeX, SSH, CMake