Xiaole "Alex" Jiang

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Summary

Researcher working on **world models and robotics**. Came from theoretical physics (quantum gravity Ph.D., Jan 2027). Proposed and led *k*-WM, a simple extension to JEPA world models that makes long-horizon planning better and faster (ICLR 2027 submission), and co-led PanoTac, a low-cost tactile fingertip for touch-based manipulation (ICRA 2027 submission). Interested in advancing world models toward general-purpose embodied intelligence.

Research Experience

NYU Generalizable Robotics and AI Lab (GRAIL), Courant Institute May 2025 – Present
Visiting Researcher *New York, NY*

k-WM: Predicting k Steps at Once for Long-Horizon Planning with World Models [website]
X. A. Jiang*, Y. Wang*, L. Pinto, Y. LeCun, G. Zhou. *Under review, ICLR 2027.*

- Proposed and led *k*-WM, a simple, general extension to JEPA world models that improves long-horizon planning.
- Improved planning success by up to 37% and speed by up to **3.3**× across three JEPA model families and four tasks.

PanoTac: A Dense Three-Axis Tactile Sensor for Robust Touch-Centric Manipulation [website]
B. Wang*, **X. Jiang***, Z. Teng, X. Liu, Y. Li, L. Pinto, Z. J. Cui, B. Huang. *Under review, ICRA 2027.*

- Co-led a project introducing PanoTac, a low-cost, compliant tactile fingertip for dense normal and shear sensing.
- Built the policies and inference and data-collection pipelines; raised success from 45.0% (vision only) to **91.7%**.

YOR: Your Own Mobile Manipulator for Generalizable Robotics [website]
M. H. Anjaria et al., incl. **X. Jiang**, S. Chintala, L. Pinto. *arXiv:2602.11150, 2026.*

- Built the whole-body teleoperation, data collection, data processing, and policy training stack for a sub-$10K open-source mobile bimanual robot; validated the platform by training a behavior-cloning policy.

The Graduate Center, City University of New York 2021 – Present
Ph.D. Candidate, Theoretical Physics: Quantum Gravity *New York, NY*

Modular Hamiltonians for Future-Perturbed States [paper]
X. Jiang, D. Kabat, A. Marthandan, D. Sarkar. *Journal of High Energy Physics, 2026.*

- Computed how perturbations change modular Hamiltonians, a key link between entanglement and spacetime.

Entanglement Groups [paper]
X. Jiang, D. Kabat, G. Lifschytz, A. Marthandan. *Annals of Physics, 2026.*

- Developed a framework that uses symmetry groups to describe and classify entanglement among many parties.

* equal contribution. High-energy theory papers list authors alphabetically.

Education

The Graduate Center, City University of New York Expected Jan 2027
Ph.D. in Theoretical Physics: quantum field theory, holography, and quantum information *CUNY Science Fellowship*
Advisor: Prof. Daniel Kabat

Bates College 2017 – 2021
Triple major in Physics, Mathematics, and Philosophy; magna cum laude *Physics & Astronomy Prize; Philosophy Prize*
Honors thesis: Convection in Rotating Spherical Fluid Shell (Navier–Stokes simulations on a compute cluster)

Additional Publications

[1] M. Abdullah, C. Bavor, B. Chafamo, **X. Jiang**, M. H. Kalim, K. Stiffler, C. A. Whiting. **Inflation from Dynamical Projective Connections.** *Physical Review D* 106 (2022) 084049. [doi]

[2] N. Lundblad, R. A. Carollo, C. Lannert, M. J. Gold, **X. Jiang**, D. Paseltiner, N. Sergay, D. C. Aveline. **Shell Potentials for Microgravity Bose–Einstein Condensates.** *npj Microgravity* 5, 30 (2019). [doi]

Teaching, Awards & Service

- **Adjunct Lecturer in Physics**, Lehman College (CUNY): taught every semester, 2022 – present.
- **Best Visualization Award**, IAIFI Summer School Hackathon. Summer schools: Les Houches (Quantum Geometry, 2024); ICTP-SAIFR (Holography@25).
- **Board of Directors**, CUNY Research Foundation; Advancement & External Affairs Committee, CUNY Board of Trustees.

Skills

Training and deploying visuomotor policies on real robots *(diffusion policy, behavior cloning; Franka, mobile bimanual)*
World models and model-based planning *(JEPA, MPC)*
Teleoperation and data-collection pipelines for robot learning
Visuo-tactile sensor fusion and real-time policy inference
Multi-GPU training and fine-tuning of transformer-based vision models *(ViTs)*
Software: Python, PyTorch, Git, Linux