Dongge Jia

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Homepage, GitHub

SKILLS

Imitation learning with NeRF-enhanced demonstrations

Visual autoregressive modeling

Deep reinforcement learning

ManiSkill 3 and RLBench

Numerical and analytical solver development for PDEs in mechanics

Multiphysics and multiscale modeling

EDUCATION

University of Pittsburgh (Pitt), Pennsylvania 2022–2024
PhD Student (Voluntarily Withdrawn Due to Mismatch of Research Interests)
Focus: Computational Mechanics
GPA: 4.0/4.0 (43 credit hours)
Graduate Courses: Introduction to Machine Learning (at Carnegie Mellon University via cross-registration); Mathematics of Data-Enabled Science and Engineering; among others

Computer Science College Credits through American Council on Education (ACE) 2024
Average Grade: 93.8/100 (12 credit hours)
Undergraduate Courses (transcript link): Operating Systems; Computer Architecture; Discrete Mathematics; Network System Design

Shanghai Jiao Tong University (SJTU, top 4 in China), Shanghai, China 2019–2022
M.S. in Civil Engineering
GPA: 3.76/4.0 (Rank: 2nd out of 29)

Huazhong University of Science and Technology (HUST, top 8 in China), Wuhan, China 2015–2019
B.Eng. in Civil Engineering
GPA for second to fourth years: 3.91/4.0 (Rank: 2nd out of 86)
My first-year grades were not strong due to health challenges
Courses (Grades): Probability Theory and Mathematical Statistics (99/100); Numerical Methods (94/100); Advanced Programming Language (C++) (91/100); Database System Technology and Applications (94/100)

Exceptional Performance at China National College Entrance Examination (top 0.3%) 2015

HONORS & AWARDS https://donggejia.github.io/docs_store/Honors.pdf

Ministry of Education of China, 1 Global Gold Award (top 0.1%) + 2 Shanghai Gold Award (top 1%) in the China International College Students' Innovation Competition (Project 1: Digital Twin System for Bridge Maintenance; Project 2: Modified Carbon Fiber Mineral-based Reinforcements), 2024

SJTU, COSCO SHIPPING Scholarship (top 2.5%), 2021

SJTU, Yuqiu Yang Scholarship (top 2.5%), 2020

SJTU, Qingyang Jin Scholarship (top 3%), 2020

SJTU, First-Class Research Fellowship, 2019, 2020, 2021 (three times)

HUST, Outstanding Graduate, 2019

HUST, **Star of Learning and Innovation** (top 0.5%), 2018

HUST, **Merit Student** (top 3%), 2017, 2018 (twice)

Ministry of Education of China, **National Encouragement Scholarship** (top 3%), 2017, 2018 (twice)
HUST, Excellent Student Cadre, 2017, 2018 (twice)
HUST, Excellent College Assistantship, 2017
HUST, Excellent Singer, 2016

RESEARCH EXPERIENCES https://donggejia.github.io/

Imitation Learning for Generalizable Visuomotor Control 2024
Designed a generalizable neural field (GNF) to reconstruct 3D voxel-based demonstrations enriched with semantic information;
Developed the next-scale vision-language modeling of GNF for multi-task robotic policy learning.

Task Offloading for Networked UAVs Using Deep Reinforcement Learning 2024
Developed deep reinforcement learning algorithms—TD3, PPO, and DDPG—for task offloading.

Landmark Localization in Medical Images 2024
Implemented a convolutional SpatialConfiguration-Net (SCN) model for accurate hand joint localization and labeling.

Solving PDEs for Thermal-Mechanical Modeling of Cervical Spine, Concrete, and Soft Soil 2018–2023
Conducted inverse property optimizations for the biomechanical modeling of cervical spine;
Created efficient solutions for the thermal-mechanical modeling of concrete and soft clay.

PUBLICATIONS

Peer-Reviewed Articles

[5] **Jia, D.**, Xie, J. and Atanasov, N. NSactor: Next-scale vision-language modeling for multi-task robotic manipulation. (target at IROS 2025)

[4] Zhang, X., **Jia, D.** and Xie, J. Task offloading for networked UAVs using deep reinforcement learning. (in preparation) https://donggejia.github.io/docs_store/Wimob.pdf

[3] **Jia, D.**, Brigham, J. C., and Fascetti, A. An efficient static solver for the lattice discrete particle model. *Computer-Aided Civil and Infrastructure Engineering*, 39, 3531–3551, 2024. (**5-year IF: 10.8, 97th percentile** in "Computational Theory and Mathematics") https://doi.org/10.1111/mice.13306

[2] Zhu, Y. and **Jia, D. (two co-first authors)**, Brigham, J. C., and Fascetti, A. Coupled Lattice Discrete Particle Model for the simulation of water and chloride transport in cracked concrete members. *Computer-Aided Civil and Infrastructure Engineering*, online early view before inclusion in an issue, 2024. (**5-year IF: 10.8, 97th percentile** in "Computational Theory and Mathematics") https://doi.org/10.1111/mice.13385

[1] **Jia, D.**, Gao, W., Duan, D., Yang, J., and Dai, J. Full-range behavior of FRP-to-concrete bonded joints subjected to combined effects of loading and temperature variation. *Engineering Fracture Mechanics*, 254, 107928, 2021. (5-year IF: 4.8, 90th percentile in "Mechanical Engineering") https://doi.org/10.1016/j.engfracmech.2021.107928

Conference Presentations (without Proceedings)

[3] **Jia, D.**, Ouhsousou, S., LeVasseur, C. M., Shaw, J., Anderst, W., and Brigham, J. C. In vivo subject-specific estimation of cervical spine disc material properties. Presentation at *the 8th International*

Conference on Computational and Mathematical Biomedical Engineering (CMBE), Arlington, Virginia, 2024. https://donggejia.github.io/docs_store/Spine CMBE 2024.pdf

[2] **Jia, D.**, Brigham, J. C., and Fascetti, A. An efficient static solver for the lattice discrete particle model. Presentation at *Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024)*, Chicago, Illinois, 2024. https://donggejia.github.io/docs_store/EMI.pdf

[1] **Jia, D.**, Zhu, Y., Brigham, J. C., and Fascetti, A. A novel dual lattice discrete particle model for multiphysics simulation of coupled mechanical and transport behavior in concrete members subjected to long-term loading. Presentation at *the 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics (WCCM-PANACM)*, Vancouver, Canada, 2024. https://donggejia.github.io/docs_store/Multiphysics_WCCM.pdf

Undergraduate Research

[2] Xu, D. (advisor), and **Jia, D.** MATLAB-based software: Long-term settlement calculation software for soft clay foundation considering different creep effects. *China Copyright Administration*, No. 04768603, 2019. https://donggejia.github.io/docs_store/copyright.png

[1] Xu, D. (advisor), **Jia, D.**, and Zheng, Y. One-dimensional elastic visco-plastic nonlinear consolidation model of soft clay under cyclic loading. *Chinese Preprint*, 2018. https://donggejia.github.io/docs_store/elastic visco-plastic nonlinear consolidation model fina submit.pdf

PROGRAMMING

Proficient in PyTorch, Python, Julia, C++, MATLAB, and Mathematica
Familiar with VBA, SQL, and Fortran

Developed three open-source software tools, available on my GitHub repository:

LDPMLab

The first open-source, multi-functional Julia package for the Lattice Discrete Particle Model, integrating my work in multiphysics modeling and featuring both static and dynamic solvers

SpatialConfiguration-Net Using PyTorch

An efficient implementation of SpatialConfiguration-Net with a more structured and concise codebase

Calcusettlement

MATLAB-based software for calculating settlements of soft clay foundations under diverse dynamic loading conditions, incorporating different creep effects

INTERNSHIPS

Intern at San Diego State University Research Foundation, California 2024

Researching imitation learning for robotic manipulation and deep reinforcement learning for task offloading among networked UAVs.

Computer Engineering Intern at Alibaba Cloud, Hangzhou, China Summer 2022

Developed a **Recurrent Neural Network (RNN)** model to predict energy consumption patterns in a server room of an Internet Data Center.

Industry Analysis Intern at China Industrial Securities, Shanghai, China Summer 2021

Conducted an in-depth analysis of post-COVID-19 real estate market trends in China and the US, identifying emerging opportunities and growth stocks.

SERVICE

Reviewer for Academic Journals, *IEEE Transactions on Systems, Man and Cybernetics: Systems; Computer-Aided Civil and Infrastructure Engineering*

Business Manager, International Engineering Students' Organization at Pitt 2024

Teaching Assistant, CEE 1330 - Introduction to Structural Analysis at Pitt Spring 2023

Group Leader, 10th Future Entrepreneur Training Camp at HUST 2018

Director, Publicity Department of the Student Union at HUST 2017–2018

CERTIFICATES

Alibaba Cloud Certifications: IT Technical Service; Data Center Infrastructure Engineering

China Computer Rank Certifications: Database Technology; C++; MySQL

REFERENCES

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