

Dongyu Luo

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🌐 dongyuluo.github.io

EDUCATION

Curi Lab

Spring 2027 –

Incoming Ph.D. Student in Computer Science
Advisor: Prof. Weiyu Liu

The University of Hong Kong

Sep 2022 – Aug 2026

Bachelor of Science in Decision Analytics
First Class Honours, Dean's Honours List

Hong Kong SAR

University of Maryland, College Park

Jan 2025 – May 2025

Exchange (Grades: 3*A+, 1*A-)

Maryland, USA

RESEARCH EXPERIENCE

UMD Multisensory Machine Intelligence Lab

Jan 2025 – Present

Advisor: Prof. Ruohan Gao

Maryland, USA

- Designed CONTROLTAC, a two-stage controllable framework for generating realistic tactile images conditioned on physical constraints (contact force and position). This approach effectively resolves critical tactile data scarcity issues and has been successfully validated across multiple challenging downstream tasks, demonstrating robust performance in real-world scenarios. [1]
- Spearheading a neuro-symbolic pipeline that bridges the sim2real gap by fusing sparse physics simulations with generative rendering. By conditioning high-quality dynamic tactile data generation on simulation-derived sparse physics structures, this approach aims to circumvent the hazards of collecting extreme real-world data (e.g., large shear forces) while avoiding the prohibitive computational costs of complex soft-body dynamics simulations.

Shanghai Artificial Intelligence Laboratory

Apr 2024 – Dec 2024

Advisor: Prof. Wanli Ouyang

Shanghai, China

- Conducted research on solving partial differential equations (PDEs) using neural operators and physics-informed neural networks (PINNs).
- Developed SIMDIFFPDE, a high-performing generative baseline for solving PDEs across multiple datasets and grid types. By introducing a multi-scale noise strategy to efficiently capture information at different frequencies, the model achieved consistent state-of-the-art results without relying on complex architectures or tailored designs. [2]

PUBLICATIONS

- [1] **Dongyu Luo***, Kelin Yu*, Amir-Hossein Shahidzadeh, Cornelia Fermüller, Yiannis Aloimonos, Ruohan Gao, “ControlTac: Scaling Tactile Data with Physically Controlled Tactile Image Generation,” *under submission; ICCV CDEL Workshop Oral*, 2025. [Link].
- [2] **Dongyu Luo**, Jianyu Wu, Qianhong Ma, Jing Wang, Hairun Xie, Xiangyu Yue, Wanli Ouyang, Miao Zhang, Shixiang Tang, “SimDiffPDE: Simple Diffusion Baselines for Solving Partial Differential Equations,” *under submission*, 2024. [Link].

* Equal Contribution

OTHER PROJECTS AND ACTIVITIES

PT: Transformer-based Hospital Readmission Predictor [Link]

STAT3612 Final Project

- Achieved 1st place out of 27 teams in a Kaggle competition by engineering a multi-modal Transformer model to predict 30-day hospital readmissions; integrated EHR, images, and notes with Random Forest ensembles to ensure robustness against missing temporal data.

RetailLLM: Large Language Model for Retail Industry [Link] STAT4011 Final Project

- Designed and optimized a pioneering retail-specific LLM that integrates multi-modal data (proprietary, web-scraped, and user info) for robust multi-turn dialogue; embedded sophisticated analytics including clustering, regression, time series forecasting, and sentiment analysis to enable dynamic information retrieval.

EXTRA-CURRICULAR ACTIVITIES

Beyond the Pivot (Teaching Volunteer Organization) [Link] Oct 2022 – Oct 2023
Team Leader Yunnan, China & Hong Kong SAR

- Led the Yunnan team to Ninglang Yi Autonomous County in Lijiang for a volunteer teaching initiative, overseeing pre-departure training, on-site coordination, curriculum delivery, and post-program reporting while also undertaking classroom teaching duties.

SKILLS

Spoken Languages: Chinese (Native), English (Fluent), Cantonese (Intermediate)

Programming Languages: Python, C/C++, L^AT_EX, MATLAB, R

AWARDS

Rosita King Ho Scholarship May 2025

Gold Award, China Mainland, Hong Kong and Macao Digital Economy Innovation and Entrepreneurship Competition Jan 2024

National Bronze Medal, China National Biology Olympiad (CNBO) Oct 2021
 Selected from top ~1% of participants nationwide

Provincial First Prize, Chinese Physics Olympiad (CPhO) Sep 2021
 Selected from top ~1% of participants provincewide