Xingjian Zhang

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Education

École Polytechnique, Institut Polytechnique de Paris	France
PhD candidate in AI for Biomechanics	2023 - Now
MS in Biomechanics and Biomedical Engineering	2021 - 2023
BS in Computer Science and Mathematics	2018 - 2021

Experience

PhD candidate @ LadHyX, École Polytechnique | LTCI, Télécom Paris   Nov 2023 - Present

- Conducting deep learning research to study cellular nuclear deformations on microgroove substrates to develop a functional in-vitro diagnostic tool for laminopathies and breast cancer.
- Teaching assistance at École Polytechnique (EP) and Télécom Paris (TP):
    - Medical and Biological Imaging / Knowledge Representation (IMA204, TP)
    - Machine Learning for Image and Object Recognition (IMA205, TP)
    - Deep Learning (IA306, TP)
    - Machine Learning (CSC_2S004, EP)
    - Web Programming (CSC_1S004, EP)

Deep Learning Intern @ Dassault Systèmes   Mar 2023 - Sep 2023

- Conducted research in 3D tumor segmentation for the TwinOnco project, advancing beyond existing methods that relied on 2D slice segmentation and aggregation.
- Designed and implemented deep learning models to segment tumor boundaries in complex medical imaging datasets in 3D.

Research Intern @ LOB, École Polytechnique   Apr 2022 - Mar 2023

- Developed segmentation algorithms for axons and dendrites in noisy THG microscopy images of mouse cerebellum.
- Created a computational model to quantify muscle fiber orientations from pSHG microscopy of protein organizations in zebrafishes.
- Developed BioImageLoader, a Python library providing a unified interface for bioimage datasets in machine learning applications.

Publications

Published

1. C. Leclech, G. Cardillo, B. Roellinger, X. Zhang, J. Frederick, K. Mamchaoui, C. Coirault, and A. I. Barakat, "Microscale topography triggers dynamic 3D nuclear deformations", *Advanced Science*, 2025

2. X. Zhang, C. Leclech, B. Roellinger, C. Coirault, E. Angelini, A.I. Barakat, "Myoblast mutation classification via microgroove-induced nuclear deformations", *International Conference on Medical Imaging with Deep Learning (MIDL)*, 2024

3. B. Asadipour, E. Beaurepaire, X. Zhang, A. Chessel, P. Mahou, W. Supatto, MC. Schanne-Klein, C. Stringari, "Modeling and predicting second harmonic generation from protein molecular structure", *Physical Review X*, 2024

4. G. Pogudin, X. Zhang, "Interpretable exact linear reductions via positivity", *International Conference on Computational Methods in Systems Biology (CMSB)*, 2021

Pre-prints

1. M.C. Yagüe, X. Zhang, M. Volpatti, Y. Wei, G. Lebedev, J. Gamby, A.I. Barakat, "Noninvasive real-time monitoring of cellular spatiotemporal dynamics via machine learning-enhanced electrical impedance spectroscopy", 2025.

2. A. Hauguel, K. Kasani, V. Chevance, X. Zhang, A.I. Barakat, S. Haulon, A. Azarine , "Changes in ascending aorta and aortic arch secondary flow patterns following endovascular repair of the descending thoracic aorta", 2025.

3. B. Asadipour, R. Ronzano, J. Morizet, X. Zhang, A. Chessel, P. Mahou, M. Aigrot, B. Stankoff, A. Desmazieres, E. Beaurepaire, C. Stringari, "Label-free multimodal non-linear microscopy to probe metabolism and myelin distribution in organotypic cerebellar slices", 2024.

4. S. Lim, X. Zhang, E. Beaurepaire, A. Chessel, "BioImageLoader: Easy handling of bioimage datasets for machine learning", 2023

Awards

PhD Full Fellowship from École Polytechnique, IP Paris
Master's Scholarship from École Polytechnique, IP Paris

Skills

Programming: 🐍 Python, ⬤ Julia, Ⓡ R, ◢ Matlab, C++ C/C++, ⟳ Pytorch and Multi-GPU learning
Languages: Chinese (native), English (C2), French (B2)