Xingjian Zhang

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Education

École Polytechnique, Institut Polytechnique de Paris — France

PhD. candidate in Biomechanics — 2023 - Now

M.S. in Biomechanics and Biomedical Engineering — 2021 - 2023

B.S. in Computer Science and Mathematics — 2018 - 2021

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*, accepted
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 / under review

1. 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.
2. S. Lim, **X. Zhang**, E. Beaurepaire, A. Chessel, "BioImageLoader: Easy handling of bioimage datasets for machine learning", 2023

Experience

PhD Student @ LadHyX, École Polytechnique | LTCI, Télécom Paris — Nov 2023 - Now

- Deep learning research to study dynamic cellular nuclear deformations on microgroove substrates to develop a functional in-vitro diagnostic tool for laminopathies and breast cancer.
- TA for Master's-level courses on deep learning, image and object recognition, and biomedical imaging / knowledge representation (course codes IA306, IMA204, IMA205 at Télécom Paris). Undergraduate course on web programming (course code CSE104 at École Polytechnique).

Deep Learning Intern @ Dassault Systèmes — Mar 2023 - Sep 2023

- Deep learning research in 3D tumor segmentation. Designed and developed AI models for the TWINONCO project.

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

- Image processing to segment axons and dendrites of mouse cerebellum images from THG microscopy. Developed segmentation tools for noisy 2D THG images and validated on 3D Imaris tracings.
- Modeled muscle fiber orientations of myosin/collagen/tubulin in zebrafish images from pSHG microscopy. Developed an algorithm to compute in-plane and out-of-plane fiber angles using structure tensors in Python. Automated Matlab code to compute anisotropy factor of different harmonophores.
- Development of Python library bioimageloader for wrapping bioimage datasets in a unified interface for machine and deep learning applications.

Research Intern @ LTCI, Télécom Paris — May 2022 - Jun 2022

- Deep learning on various datasets of different imaging modalities such MRI, CT, CXR etc. with different windowing settings to study the optimalities of VOI prior in full acquisition dynamics.

Research Intern @ LIX, École Polytechnique — Sep 2020 - Apr 2021

- Created an algorithm in julia using Fourier-Motzkin elimination to improve the physical interpretability of exact linear reduction for rule-based biochemical systems

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++, Pytorch and Multi-GPU learning

Languages: Chinese (native), English (C2), French (B2)