Xingjian Zhang

✉ xingjian.zhang@melix.org | ⑂ @xjzhaang

Education

École Polytechnique, Institut Polytechnique de Paris

Ph.D. candidate in Biomedical Engineering (AI bioimaging)   2023 - Present
- Advisors: Abdul I. Barakat (École Polytechnique), Elsa D. Angelini (Télécom Paris)
- Expected completion - late 2026 / early 2027

M.S. in Mechanics - Biomechanics and Biomedical Engineering   2021 - 2023
B.S. in Computer Science and Mathematics   2018 - 2021

Experience

PhD candidate | *LadHyX, École Polytechnique & LTCI, Télécom Paris*   Nov 2023 - Present
- **Applying** deep learning techniques to microscopy imaging data to quantify cellular nuclear deformations on microgroove substrates, advancing in-vitro diagnostic capabilities for laminopathies and breast cancer
- **Clinical collaborations** with Marie Lannelongue Hospital surgeons and medtech startups (Sensome, EloCare) yielding clinically-adopted workflows and published biomedical sensing research
- **Teaching and supervision** at Télécom Paris and École Polytechnique: TA for master-level courses (ML, DL, Medical Imaging, Object Recognition) and supervised M2 research projects on computer vision topics

AI Research Intern | *Dassault Systèmes*   Mar 2023 - Sep 2023
- **Developed** 3D deep learning models (CNN and transformer-based) for automated tumor segmentation on volumetric CT scans, trained on multi-GPU clusters for large-scale experimentation
- **Enhanced** existing 2D segmentation workflows by introducing fully volumetric architectures, improving 3D spatial consistency and model generalization in production systems

Research Intern | *LOB, École Polytechnique*   Apr 2022 - Mar 2023
- **Developed** segmentation algorithms and computational workflows for pSHG and THG microscopy imaging
- **Developed** *BioImageLoader*, a Python library that streamlines large-scale bioimage data loading for ML pipelines

Publications

Peer-reviewed Publications
- MC Yagüe, <u>X Zhang</u>, et al., "Noninvasive real-time monitoring of cellular spatiotemporal dynamics via machine learning-enhanced electrical impedance spectroscopy", ***Science Advances***, 2025.
- C Leclech, G Cardillo, B Roellinger, <u>X Zhang</u>, et al., "Microscale topography triggers dynamic 3D nuclear deformations", ***Advanced Science***, 2025.
- A Hauguel, K Kasani, V Chevance, <u>X Zhang</u>, et al., "Changes in ascending aorta and aortic arch secondary flow patterns following endovascular repair", *Eur J Vasc Endovasc Surg*, 2025.
- B Asadipour, E Beaurepaire, <u>X Zhang</u>, et al., "Modeling and predicting second harmonic generation from protein molecular structure", ***Physical Review X***, 2024.
- <u>X Zhang</u>, C Leclech, et al., "Myoblast mutation classification via microgroove-induced nuclear deformations", *MIDL*, 2024.
- G Pogudin, <u>X Zhang</u>, "Interpretable exact linear reductions via positivity", *CMSB*, 2021.

Pre-prints / under review
- B Asadipour, R Ronzano, J Morizet, <u>X Zhang</u>, et al., "Label-free multimodal non-linear microscopy to probe metabolism and myelin distribution"
- S Lim, <u>X Zhang</u>, et al., "BioImageLoader: Easy handling of bioimage datasets for machine learning"

Selected Presentations

- "Deep learning classification of laminopathy mutations on microgroove substrates", *ESB 2025 Congress*, Zürich, Switzerland (Oral)
- "Myoblast mutation classification via microgroove-induced nuclear deformations", *MIDL 2024*, Paris, France (Poster)
- "Interpretable exact linear reductions via positivity", *CMSB 2021*, Bordeaux, France (Oral)

Skills

Programming: 🐍Python, Julia, ⓡR, Matlab, C++C/C++, JSJavaScript/HTML/CSS
ML and MLOps Tools: ⟳ Pytorch, TensorFlow, JAX, ◈Git, 🐋Docker, ☆PySpark, SQL, Pandas, Multi-GPU training
Tools: NIS-Elements, ImageJ/FIJI, Icy, CellProfiler, ITK, 3D Slicer, Imaris, ParaView, MONAI, DICOM/NIFTI/HDF5/ND2 formats
Languages: Chinese (native), English (C2), French (B2)