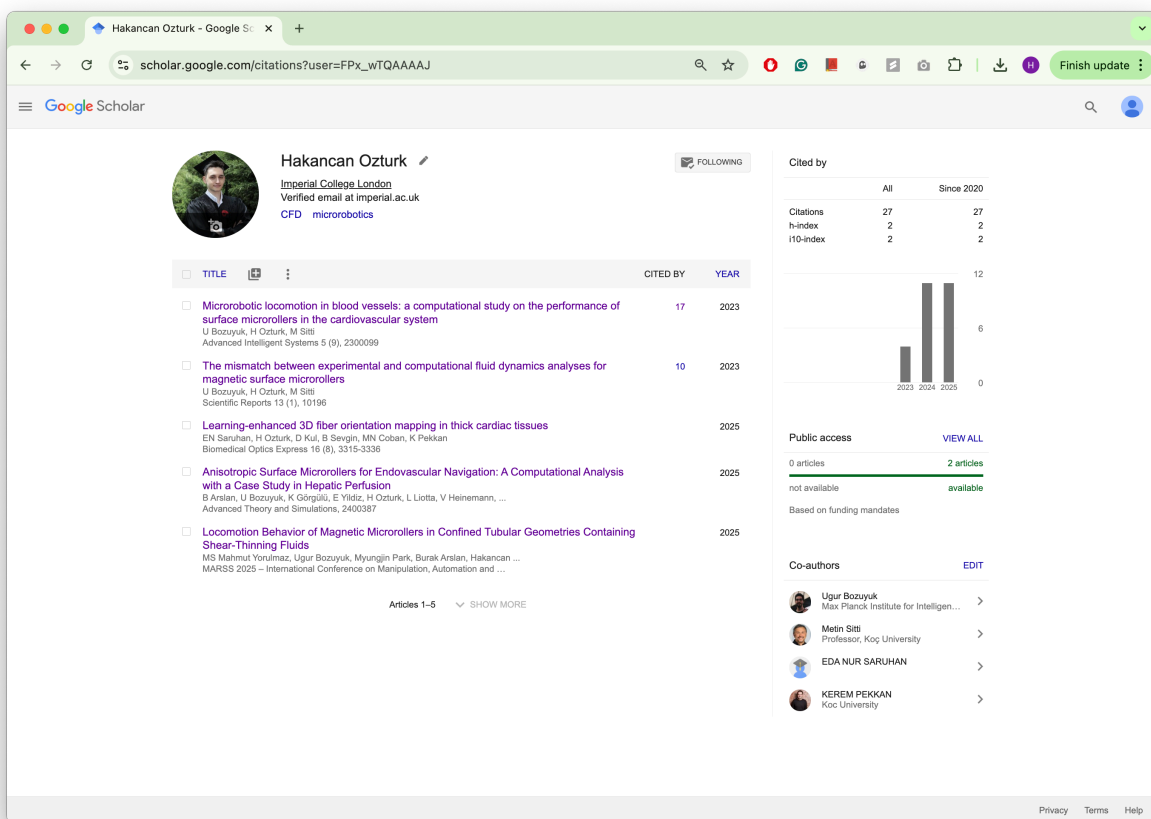


Optional Criteria 4.2 - Cross-Institutional AI Research

I have contributed to AI/ML research across multiple institutions, working on diverse problems spanning computational physics, medical imaging, and fluid dynamics. My research covers computational fluid dynamics at Max Planck Institute, machine learning for biomedical imaging at Koç University, and grid-invariant AI for turbulent flows at Imperial College London. This breadth demonstrates my ability to apply AI/ML techniques to solve complex problems across different scientific domains.



My research portfolio: 5 publications, 27+ citations across Max Planck, Koç, and Imperial research

IMPERIAL

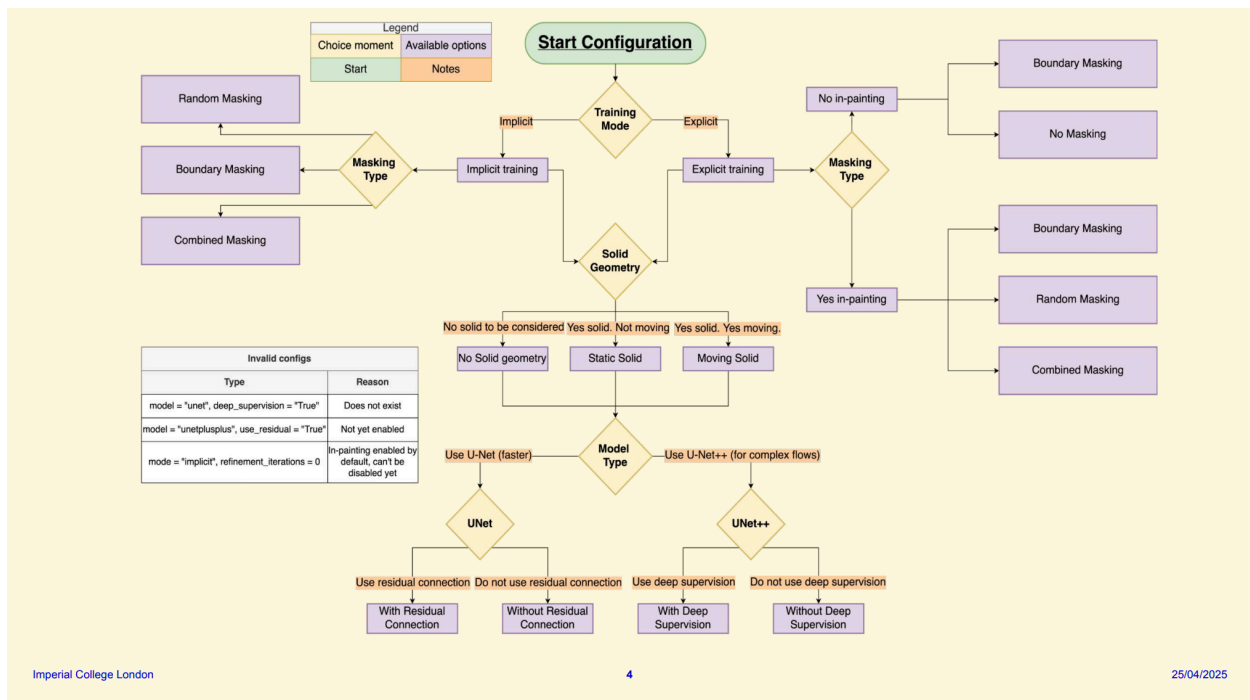
Exploring the effect of mask optimisation and in-painting for a grid-invariant U-Net for modelling fluid flows

A RAPIDS (Rapid AI-Powered Image-to-Dynamic Simulation) study

Aniket Joshi, Donghu Guo, Nathalie C Pinheiro, Hakancan Ozturk, Boyang Chen, Christopher C Pain

Applied Modelling & Computation Group, Department of Earth Science & Engineering, Imperial College London, London SW7 2AZ, United Kingdom.

Grid-Invariant AI architecture for turbulent flow simulation - my MSc research



Neural network architecture I developed combining autoencoders and adversarial networks

RAPIDS (Internal)

Watch 1 Fork 2 Starred 1

main 8 Branches 0 Tags

Go to file Add file Code

Aniket-J adding no mask implicit ✓ e020bbe · 2 months ago 41 Commits

File	Commit Message	Time Ago
.github/workflows	Create jekyll-gh-pages.yml	6 months ago
AI4PDEs_data_creation	added AI4PDEs to generate data	4 months ago
compression_models	trying for compression, line 474 in main flow modified	2 months ago
data_creation_aid	key feature: numpy consolidation for AI4PDEs added	4 months ago
docs	sphinx docs cleanup	2 months ago
scripts_making_your_life_easy	sphinx docs cleanup	2 months ago
src	adding no mask implicit	2 months ago
.DS_Store	compression pipeline working	2 months ago
.gitignore	adding no mask implicit	2 months ago
ESE-cluster-submit.sh	adding scripts for folks to use cluster training	4 months ago
README.md	Apple Silicon supports 3D, see ReadMe for fix	3 months ago
environment.yml	Add modern repository setup with uv-first installation, up...	4 months ago
pyproject.toml	compression pipeline working	2 months ago
requirements.txt	Add modern repository setup with uv-first installation, up...	4 months ago
setup.py	compression pipeline working	2 months ago
test_logs.log	sphinx docs cleanup	2 months ago

README

RAPIDS

Rapid AI-Powered Image-to-Dynamic Simulations

About

Rapid AI-Powered Image-to-Dynamic Simulations

Readme Activity Custom properties 1 star 1 watching 2 forks

Releases

No releases published [Create a new release](#)

Packages

No packages published [Publish your first package](#)

Contributors 2

Aniket-J Aniket J hkc5 Hakancan

Deployments 32

github-pages 2 months ago + 31 deployments

Languages

Python 99.4% Shell 0.6%

RAPIDS open-source repository - manuscript currently in preparation

This is ongoing research from my Imperial College MSc where I developed a grid-invariant AI architecture for turbulent flow simulation using PyTorch. I ran over 2,000 GPU hours of optimization and achieved 35% improvement in long-term stability and 50% better prediction accuracy. The project is backed by NVIDIA and automotive companies, and we are currently preparing the manuscript for publication.

Koç University - Biomedical AI

Biomedical Optics Express

COUNTRY

United States

Universities and research institutions in United States

Media Ranking in United States

SUBJECT AREA AND CATEGORY

Biochemistry, Genetics and Molecular Biology
└ Biotechnology

Physics and Astronomy
└ Atomic and Molecular Physics, and Optics

PUBLISHER

Optica Publishing Group (formerly OSA)

SJR 2024

0.896 **Q1**

H-INDEX

117

Optica Publishing - Impact Factor: 3.9, h-index: 117

Saruhan, E. N., Ozturk, H., et al. (2025). Learning-enhanced 3D fiber orientation mapping in thick cardiac tissues. *Biomedical Optics Express*, 16(8), 3315-3336.

I contributed AI/ML enhancements to 3D fiber mapping for cardiac tissue analysis in collaboration with Koç University's cardiovascular lab.

Key numbers: 5 publications across 3 institutions • 27+ citations • Research areas: computational fluid dynamics, medical imaging, turbulent flow simulation • Imperial research ongoing (manuscript in preparation) • 2,000+ GPU hours of optimization • Published in Nature journals, Optica, and Wiley