MINGLANG YIN

Center for Biomedical Engineering, Brown University, Providence, RI, 02906

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EDUCATION

Doctor of Philosophy in Biomedical Engineering — 2018 - Present
Brown University — Providence, RI
Advisor: George Em Karniadakis

Master of Science in Fluids and Thermal Sciences — 2016 - 2018
Brown University — Providence, RI
Advisor: George Em Karniadakis
Thesis: 3D/1D computed fractional flow reserve comparison in coronary artery disease

Bachelor of Engineering in Aeronautical Engineering — 2012 - 2016
Northwestern Polytechnical University — Xi'an, Shaanxi, China
Advisor: Weiwei Zhang
Thesis: Reduced-order aerodynamic modeling and study on generalization capability

RESERCH INTERESTS

Computational Fluid Dynamics, Machine Learning, Computational Mechanics, Scientific Computing, Data-driven Modeling, Reduced-order Modeling

PUBLICATIONS

M. Yin, X. Zheng, G.E. Karniadakis, "Non-invasive Inference of Thrombus Material Properties with Physics-informed Neural Networks", under review (2020).

M. Yin, X. Zheng, H. Hasegawa, G.E. Karniadakis. "Multi-modal simulation of blood flow in zebrafish brain", under prepare (2020).

A. Blumers, **M. Yin**, Y. Hasegawa, Z. Li, and G.E. Karniadakis. "Supervised parallel-in-time algorithm for long-time Lagrangian simulations of stochastic dynamics: Application to blood flow in zebrafish", under prepare (2020).

M. Yin, A. Yazdani, and G.E. Karniadakis. "One-dimensional modeling of fractional flow reserve in coronary artery disease: Uncertainty quantification and Bayesian optimization." Computer Methods in Applied Mechanics and Engineering, 353 (2019): 66-85.

D. Hopper, D. Jaganathan, J. Orr, J. Shi, F. Simeski, **M. Yin**, J.T.C. Liu, "Heat Transfer in Nanofluid Boundary Layer Near Adiabatic Wall." Journal of Nanofluids 7.6 (2018): 1297-1302.

M. Yin, J. Kou, W. Zhang, "A reduced-order aerodynamic model with high generalization capability based on neural network", Acta Aerodynamica Sinica 35.02 (2017): 205-213.

J. Kou, W. Zhang, and **M. Yin**, "Novel Wiener models with a time-delayed nonlinear block and their identification." Nonlinear Dynamics 85.4 (2016): 2389-2404.

EXPERIENCE

Research Assistance

- Center for Biomedical Engineering, Brown University — Jan. 2018 - Present
- Division of Applied Mathematics, Brown University — Jan. 2018 - Present
- School of Aeronautics, Northwestern Polytechnical University(advisor: Weiwei Zhang) — Jan. 2016- Jul. 2016

Lecturer

· Brown University(Pre-college program: introduction to mechanical engineering) Aug. 2017
· School of Engineering, Brown University

Referee

· Journal of Computational Physics, Journal of Royal Society Interface, Soft Matter

CONFERENCES

Presentations

· Numerical Analysis of Fractional Flow Reserve in Coronary Artery Disease: Uncertainty Quantification and Parameter Inference, SIAM Computational Science and Engineering, Spokane, WA, 2019
· Comparison of Multi-scale Models for Blood Flow in Zebrafish Brain, APS Division of Fluid Dynamics, Seattle, WA, 2019
· Physics-informed neural networks for solving forward and inverse problem with phase field models, Mach Conference, Annapolis, MD, 2020(accepted)

Posters

· Numerical Study on Hemodynamics of Brain Vasculature in Early Zebrafish Life, BMES Annual Meeting, Philadelphia, PA, 2019

Training

· San Diego Supercomputing Center summer institute on High Performance Computing and Data Science, San Diego, CA, 2019
· Integrating Machine Learning with Multiscale Modeling for Biomedical, Biological, and Behavioral Systems, Bethesda, MD, 2019

COMPUTATIONAL SKILLS

Programming Language: C/C++, Python, R, Julia, FORTRAN, Scripting language, Matlab, Javascript
Parallel computing: Message Passing Interface(MPI), CUDA, Extensive experience on Titan, SUMMIT, COMIT and Stampede II.
Machine learning library: PyTorch, Tensorflow, Keras
Meshing: Pointwise
Others: Paraview, VMTK, Tecplot 360, MySQL