

YAOHUA ZANG

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EDUCATION

Zhejiang University, China
Ph.D., Computational Mathematics
Supervisor: Prof. Gang Bao

September 2015 - June 2021

Georgia Institute of Technology, USA
Visiting Scholar, Applied Mathematics
Supervisor: Prof. Haomin Zhou

August 2018 - September 2019

Jilin University, China
B.S., Computational Mathematics

September 2011 - June 2015

AREAS OF INTEREST

AI4Science, Inverse Problems, Numerical PDEs, Data-driven Inverse Material Design, Machine Learning Enhanced Optimal Control

PROFESSIONAL EXPERIENCE

Technical University of Munich, Munich, Germany
Postdoctoral Researcher (Supervisor: Prof. Faidon-Stelios Koutsourelakis)

October 2023 - Current

- **Research Projects:** Data-driven Modeling of Materials and Engineering Physics

Huawei Research Institute, Hangzhou, China
AI Algorithm and Application Engineer

July 2021 - July 2023

- **Projects:** Machine Learning Enhanced Algorithms for Robotic Control.

RESEARCH PUBLICATIONS

Publications

- **Yaohua Zang**, *Phaedon-Stelios Koutsourelakis. (2025). DGenNO: a novel physics-aware neural operator for solving forward and inverse PDE problems based on deep, generative probabilistic modeling. *Journal of Computational Physics*, 538, 114137.
- Wei Hu, Jihao Long, **Yaohua Zang**, Weinan E, *Jiequn Han. (2025). Solving optimal control problems of rigid-body dynamics with collisions using the hybrid minimum principle. *Communications in Nonlinear Science and Numerical Simulation*, 143, 108603.
- **Yaohua Zang**, *Phaedon-Stelios Koutsourelakis. (2025). PSP-GEN: Stochastic inversion of the Process-Structure-Property chain in materials design through deep, generative probabilistic modeling. *Acta Materialia*, 284, 120600.
- Vincent C Scholz, **Yaohua Zang**, *Phaedon-Stelios Koutsourelakis. (2025). Weak neural variational inference for solving Bayesian inverse problems without forward models: applications in elastography. *Computer Methods in Applied Mechanics and Engineering*, 433, 117493.
- *Hanwen Kang, **Yaohua Zang**, Xing Wang, Yaohui Chen. (2022). Uncertainty-driven Spiral Trajectory for Robotic Peg-in-Hole Assembly. *IEEE Robotics and Automation Letters* 7(3), 6661-6668.
- **Yaohua Zang**, Jihao Long, Xuanxi Zhang, Wei Hu, Weinan E, *Jiequn Han. (2022). A Machine Learning Enhanced Algorithm for the Optimal Landing Problem. *Mathematical and Scientific Machine Learning* (pp. 319-334). PMLR.
- Gang Bao, Xiaojing Ye, ***Yaohua Zang**, Haomin Zhou. (2020). Numerical solution of inverse problems by weak adversarial networks. *Inverse Problems*, 36(11), 115003.

- ***Yaohua Zang**, Gang Bao, Xiaojing Ye, Haomin Zhou. (2020). Weak adversarial networks for high-dimensional partial differential equations. *Journal of Computational Physics*, 411, 109409.
- ***Yaohua Zang**, Gang Bao, Xiaojing Ye, Hongyuan Zha, Haomin Zhou. (2020). A jump stochastic differential equation approach for influence prediction on heterogeneous networks. *Communications in Mathematical Sciences*, 18(8), 2341-2359.

Preprints

- **Yaohua, Zang**, *Phaedon-Stelios Koutsourelakis. (2025). Design-GenNO: A Physics-Informed Generative Model with Neural Operators for Inverse Microstructure Design. *arXiv preprint arXiv:2502.06250*.
- Gang, Bao, ***Yaohua, Zang**. (2025). ParticleWNN: a Novel Neural Networks Framework for Solving Partial Differential Equations. *arXiv preprint arXiv:2509.08749*.

TALKS AND CONFERENCE PARTICIPATION

Talks

- *Workshop on Inverse Problems and Scientific Computing*, HKUST, Hong Kong S.A.R., China Jan 3-5, 2025
Invited Talk: "ParticleWNN: a Weak-form Deep Learning Framework for Solving Partial Differential Equations and Inverse Problems"
- *The International Council for Industrial and Applied Mathematics (ICIAM 2023)*, Waseda University, Tokyo, Japan August 20-25, 2023
Invited Talk: "Solving High-dimensional Inverse Problems with Weak Adversarial Networks"
- *Frontiers Symposium on "Scientific Computing and Machine Learning"*, Tongji University, Shanghai, China November 5-6, 2022
Invited Talk: "A Machine Learning Enhanced Method for the Optimal Landing Problem"
- *The China Conference on Scientific Machine Learning (CSML 2022)*, Peking University & Shanghai Jiaotong University, Beijing, China August 18-19, 2022
Invited Talk: "Weak Adversarial Networks: A Deep Learning Framework for Solving High-Dimensional Inverse Problems"
- *The Conference of Mathematical and Scientific Machine Learning (MSML 2022)*, Peking University, Beijing, China August 15-17, 2022
Invited Talk: "A Machine Learning Enhanced Method for the Optimal Landing Problem"
- *Frontier Symposium on "Deep Learning and Numerical Solution of Partial Differential Equations"*, Tianyuan Mathematical Center in Northwest China, Xian, China July 16-18, 2021
Invited Talk: "Weak Adversarial Networks: A Deep Learning Framework for Solving High-Dimensional Inverse Problems"
- *Workshop on Differential Equations on Networks and Related Problems*, Zhejiang University, Hangzhou, China July 13-14, 2018
Invited Talk: "An SDE Framework for Influence Prediction on Propagation Networks"
- *Forum "Math-for-Industry" (FMFI 2018)*, Fudan University, Shanghai, China November 17-21, 2018
Poster: "A SDE Framework for Propagation Networks"

Participated

- *IMA Special Workshops: Mathematics in Optical Imaging*, University of Minnesota, Minneapolis, MN, USA April 29 - May 03, 2019

TEACHING EXPERIENCE

School of Engineering and Design, TUM, Germany

Summer Semester 2025

Lecturer, *Deep Learning for Partial Differential Equations in Engineering Physics*

School of Mathematics, Zhejiang University, China

Summer Semester 2018

Teaching Assistant, *Computational Methods and Applications of Stochastic Differential Equations*

School of Mathematics, Zhejiang University, China
Teaching Assistant, *Scientific Computing*

Fall Semester 2016

School of Mathematics, Zhejiang University, China
Teaching Assistant, *Linear Algebra*

Summer Semester 2016

PROFESSIONAL SERVICE

Reviewer for *Journal of Machine Learning Research (JMLR)*, *Transactions on Machine Learning Research (TMLR)*, *Neural Networks (NEUNET)*, *Journal of Computational Physics (JCP)*, *Communications in Nonlinear Science and Numerical Simulation (CNSNS)*, *Computers and Mathematics with Applications (CAMWA)*, *Inverse Problems*, *Inverse Problems and Imaging (IPI)*, *Machine Learning: Science and Technology*, *SIAM Transactions on Applied Mathematics*, *Mathematical Biosciences and Engineering*, *Physica Scripta*.

HONORS AND AWARDS

Zhejiang University Outstanding Doctoral Dissertation , Zhejiang University, China	<i>2021</i>
Distinguished PhD graduate of Zhejiang University , Zhejiang University, China	<i>2021</i>
Excellent Postgraduate , Zhejiang University, China,	<i>2020</i>

LANGUAGES AND SKILLS

Languages

- English (fluent)

Skills

- **Programming Skills:** Python, Matlab, C++, LaTeX
- **Deep Learning Frameworks:** Pytorch, Keras, Tensorflow