YAOHUA ZANG

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EDUCATION

Zhejiang University, China *September 2015 - June 2021*
Ph.D., Computational Mathematics
Supervisor: Prof. Gang Bao

Georgia Institute of Technolog, USA *August 2018 - September 2019*
Visiting Scholar, Applied Mathematics
Supervisor: Prof. Haomin Zhou

Jilin University, China *September 2011 - June 2015*
B.S., Computational Mathematics

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 *October 2023 - Current*
Postdoctoral Researcher (Supervisor:Prof. Faidon-Stelios Koutsourelakis)

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

Huawei Research Institute, Hangzhou, China *July 2021 - July 2023*
AI Algorithm and Application Engineer

- **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 *Fall Semester 2016*
Teaching Assistant, *Scientific Computing*

School of Mathematics, Zhejiang University, China *Summer Semester 2016*
Teaching Assistant, *Linear Algebra*

PROFESSIONAL SERVICE

Member of the *Inverse Problems Young Academy (IPYA)* *July 2025 - Present*

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*, *CSIAM Transactions on Applied Mathematics*, *Mathematical Biosciences and Engineering*, *Physica Scripta*.

HONORS AND AWARDS

Zhejiang University Outstanding Doctoral Dissertation, Zhejiang University, China *2021*

Distinguished PhD graduate of Zhejiang University, Zhejiang University, China *2021*

Excellent Postgraduate, Zhejiang University, China, *2020*

LANGUAGES AND SKILLS

Languages

- English (fluent)

Skills

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