

# KEJUN TANG

## PERSONAL DATA

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**Position:** Research Scientist, Changsha Institute for Computing and Digital Economy, Peking University

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**Researchgate Profile:** <https://www.researchgate.net/profile/Kejun-Tang>

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## RESEARCH INTERESTS

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tensor methods, deep generative models, scientific machine learning, uncertainty quantification, scientific computing.

## EDUCATION

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09/2015-12/2020: Ph.D., Computational mathematics, School of Information Science and Technology, ShanghaiTech University & Chinese Academy of Sciences

02/2019-08/2019: Visiting student, Center for Computation and Technology & Department of Mathematics at Louisiana State University

09/2011-07/2015: B.S., Computational mathematics, School of Mathematics and Information Science, YanTai University

## EMPLOYMENT HISTORY

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February, 2023 - present: Research Scientist, Changsha Institute for Computing and Digital Economy, Peking University

February, 2021 - January, 2023: Postdoctoral research associate, Peng Cheng Laboratory

October, 2019- January, 2020. NIO, Data Scientist Intern

January, 2015- March, 2015. Kingaren, Database Engineer Intern

## TEACHING ASSISTANT (TA)

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- Spring 2018, ShanghaiTech: Machine Learning (graduate)
- Spring 2016, ShanghaiTech: Probability and Statistics (undergraduate)
- Fall 2015, ShanghaiTech: Linear Algebra (undergraduate)

## PUBLICATIONS AND PREPRINTS

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- **Kejun Tang\***, Jiayu Zhai\*, Xiaoliang Wan and Chao Yang, Adversarial Adaptive Sampling: Unify PINN and Optimal Transport for the Approximation of PDEs, <https://arxiv.org/abs/2305.18702.pdf>, preprint, 2023.
- Yani Feng, **Kejun Tang**, Xiaoliang Wan, Qifeng Liao, Dimension-reduced KRnet maps for high-dimensional Bayesian inverse problems, <https://arxiv.org/pdf/2303.00573.pdf>, preprint, 2023.
- Pengfei Yin, Guangqiang Xiao, **Kejun Tang** and Chao Yang, AONN: An adjoint-oriented neural network method for all-at-once solutions of parametric optimal control problems, <https://arxiv.org/pdf/2302.02076.pdf>, preprint, 2023.
- **Kejun Tang**, Xiaoliang Wan and Chao Yang. DAS-PINNs: A deep adaptive sampling method for solving high-dimensional partial differential equations, Journal of Computational Physics, 476 (2023): 111868.
- Xiaoliang Wan, **Kejun Tang**. Augmented KRnet for density estimation and approximation, <https://arxiv.org/pdf/2105.12866.pdf>, preprint, 2021.
- Yani Feng\*, **Kejun Tang\***, Lianxing He, Pingqiang Zhou and Qifeng Liao. Tensor train random projection, Computer Modeling in Engineering and Sciences, 134(2), 1195–1218, 2022.
- **Kejun Tang**, Xiaoliang Wan, and Qifeng Liao. Adaptive deep density approximation for Fokker-Planck equations, Journal of Computational Physics, 457 (2022): 111080.
- **Kejun Tang**, Qifeng Liao. Rank adaptive tensor recovery based model reduction for partial differential equations with high-dimensional random inputs, Journal of Computational Physics, 409 (2020): 109326.

- **Kejun Tang**, Xiaoliang Wan, and Qifeng Liao. Deep density estimation via invertible block-triangular mapping, Theoretical & Applied Mechanics Letters, 10 (3), 143-148, 2020.
- Ke Li\*, **Kejun Tang\***, Tianfan Wu, and Qifeng Liao. D3M: A deep domain decomposition method for partial differential equations, IEEE Access, 8 (2019).
- Ke Li\*, **Kejun Tang\***, Tianfan Wu, Jinglai Li and Qifeng Liao. A hierarchical neural hybrid method for failure probability estimation, IEEE Access, 7 (2019).

\* Co-first Author

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#### PATENTS

- Ke Li, Qifeng Liao, Kejun Tang. The invention discloses a distributed high-dimensional uncertainty quantization method based on a depth flow model. ( NO. CN113128100A)

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#### INVITED TALKS

- “AONN: An adjoint-oriented neural network method for all-at-once solutions of parametric optimal control problems”, CSIAM UQ, Yantai, China, May 2023.
- “DAS: A deep adaptive sampling method for solving partial differential equations”, Young Scholars Forum, National Engineering Laboratory of Big Data Analysis and Application Technology & Chongqing Big Data Research Institute, Peking University, China, March 2022.
- “Adaptive deep density approximation for Fokker-Planck equations”, Workshop of AI for computing, Shenzhen, China, July 2021.
- “Rank adaptive tensor recovery based model reduction for PDEs with high-dimensional random inputs”, invited talk of uncertainty quantification and data-driven symposium at SIAM CSE 2019, Spokane, Washington, February 2019.
- “Tensor recovery for PDEs with high-dimensional random inputs”, contributed talk at CSIAM, Chengdu, China, September 2018.

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#### GRANTS

- China Postdoctoral Science Foundation - Adaptive physics-constrained neural networks for high-dimensional partial differential equations, 2022M711730, PI, 2022

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#### AWARDS

- Academic scholarship, 2016-2019.
- Best TA (Teaching Assistant) of ShanghaiTech University, 2016.
- National Endeavor Fellowship, 2014
- Second Prize of The Chinese Mathematics Competitions, 2014
- Honorable Mention of Mathematical Contest In Modeling, 2014
- Excellent Student Scholarship, 2013

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#### SKILLS

**Programming:** Python, Matlab, TensorFlow, PyTorch

**Operating Systems:** Linux, UNIX

**Github:** <https://github.com/MJfadeaway>