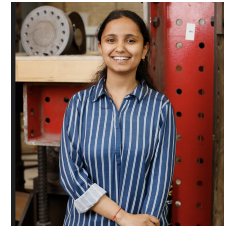


Taniya Kapoor

Date of Birth: 9 August 1996
Citizenship: Indian
S2 1.60, Stevinweg 1,
2628 CN, Delft, The Netherlands
📞 Contact: +31 (0) 6 26512873
✉ t.kapoor@tudelft.nl
🌐 Webpage



Work Experience

- 2021 – 2024 **Faculty of Civil Engineering and Geosciences, TU Delft, Delft, The Netherlands**
Doctoral Employee and Teaching Assistant, Advisors: *H Wang, A Núñez, R Dollevoet*
Topic: *Physics-inspired machine learning for fundamental structural elements*
- 2021 **Seminar for Applied Mathematics, ETH Zürich, Zürich, Switzerland**
Master Internship, Host: *Siddhartha Mishra, CAMLab*
Topic: *Physics-informed neural networks for fully nonlinear partial differential equations*
- 2018 – 2019 **Department of Mathematics, Indian Institute of Technology Delhi, Delhi, India**
Master Thesis, Host: *Harish Kumar*
Topic: *Active flux schemes for hyperbolic conservation laws*

Education

- 2020 – 2021 **Masters in High Performance Scientific Computing, Université de Lille, Lille, France.**
- 2017 – 2019 **Masters in Applied Mathematics, South Asian University, Delhi, India.**
- 2014 – 2017 **Bachelors in Mathematics, Deshbandhu College, University of Delhi, Delhi, India.**

Fellowships, Scholarships and Grant

- 2023 **Travel grant** for attending *CWI Autumn School, Amsterdam, The Netherlands*
- 2021 **PhD fellowship** University of Twente, The Netherlands; Sorbonne University, France (*declined*)
- 2021 **DAAD PhD fellowship** RWTH Aachen, Germany (*declined*)
- 2020 – 2021 **Fully funded CEMPI LABEX** fellowship for masters, *France*
- 2017 – 2019 **Fully funded Merit scholarship** for masters, *SAARC nations*

Research Interests and Skills

SciML, Physics-informed machine learning, Partial differential equations, Computational sciences
Python, MATLAB, PyTorch, TensorFlow, Cuda, MPI, OpenMP

Publications

- 2024 **T Kapoor**, H Wang, A Núñez, R Dollevoet, Transfer learning for improved generalizability in causality-respecting PINNs for beam simulations. *Engineering Applications of Artificial Intelligence.*
- 2024 **T Kapoor***, A Chandra*, D M Tartakovsky, H Wang, A Núñez, R Dollevoet, Neural oscillators for generalization of physics-informed machine learning. *Proceedings of the 38th AAAI Conference on Artificial Intelligence.*
- 2023 **T Kapoor**, H Wang, A Núñez, R Dollevoet, Physics-informed neural networks for solving forward and inverse problems in complex beam systems. *IEEE Transactions on Neural Networks and Learning Systems.*
- 2023 **T Kapoor**, A Chandra, D M Tartakovsky, H Wang, A Núñez, R Dollevoet, Neural oscillators for generalizing parametric PDEs. *Workshop at the 37th conference on Neural Information Processing Systems: Deep Learning for Differential Equations III*
- 2023 S Kapoor, A Chandra, **T Kapoor**, M Curti, Gradient weighted physics-informed neural networks for capturing shocks in porous media flows. *Workshop at the 37th conference on Neural Information Processing Systems: Machine Learning and the Physical Sciences*

- 2023 **T Kapoor**, H Wang, A Núñez, R Dollevoet, Physics-informed machine learning for moving load problems, XII International Conference on Structural Dynamics, Delft.
- 2022 **T Kapoor**, H Wang, A Núñez, R Dollevoet, Predicting traction return current in electric railway systems through physics-informed neural networks, IEEE Symposium Series on Computational Intelligence, Singapore

Preprint

- 2023 A Chandra*, **T Kapoor***, B Daniels, M Curti, K Tiels, D M Tartakovsky, E A Lomonova, Neural oscillators for magnetic hysteresis modeling, under review.

Invited Talks

- 2024 Neural ODEs for generalization of machine learning (lightning talk), Knowledge guided machine learning bridge program AAAI, Vancouver, Canada
- 2024 Neural oscillators for generalization of physics-informed neural networks, CRUNCH Seminar, Division of Applied Mathematics, Brown University, Providence, USA
- 2022 Physics-informed learning for traction return current, Rail Seminar, Section of Railway Engineering, TU Delft, CITG, Delft, The Netherlands

Contributed Talks

- 2023 Physics-informed machine learning for moving loads, XII international conference on Structural Engineering, Delft, The Netherlands
- 2022 Predicting traction return current in electric railway systems through physics-informed neural networks, Symposium series on computational Intelligence, Singapore

Posters

- 2024 **T Kapoor**, A Chandra, D M Tartakovsky, H Wang, A Núñez, R Dollevoet, Neural oscillators for generalization of physics-informed machine learning, AAAI Conference on Artificial Intelligence, Vancouver Canada 2024
- 2024 **T Kapoor**, A Chandra, D M Tartakovsky, H Wang, A Núñez, R Dollevoet, Neural oscillators for generalization of physics-informed machine learning, Knowledge guided machine learning bridge program AAAI, Vancouver, Canada 2024
- 2023 **T Kapoor**, A Chandra, D M Tartakovsky, H Wang, A Núñez, R Dollevoet, Neural oscillators for generalizing parametric PDEs, NeurIPS 2023 Workshop DLDE
- 2023 S Kapoor, A Chandra, **T Kapoor**, M Curti, Gradient weighted physics-informed neural networks for capturing shocks in porous media flows, NeurIPS 2023 Workshop ML4PS
- 2023 **T Kapoor**, H Wang, A Núñez, R Dollevoet, Physics-informed neural networks for solving forward and inverse problems in complex Beam Systems, CWI Autumn School - Scientific Machine Learning and Dynamical Systems, Amsterdam, The Netherlands.
- 2022 **T Kapoor**, R Molinaro, S Mishra, Physics-informed neural networks for approximating fully nonlinear PDEs, London Mathematical Society Workshop on the Mathematics of Deep Learning.

Reviewer Activities

- Journals *IEEE TNNLS, Engineering with Computers, Thin-Walled Structures, SoftwareX*
- Conferences *ICLR 2024 AI4DiffEqtnsInSci Workshop, NeurIPS DLDE 2023 Workshop, IJCNN, EUROLYN*

Teaching Activities at TU Delft

- Co-supervisor Master thesis: Neural networks infused with physics for beam systems
- Supervision Developed a project proposal titled 'Physics-Informed Neural Networks for Simulating the Dynamics of Beam Systems' for the masters course 'Data Science and AI for Engineers' and supervised 9 students.
- Material Prepared tutorials and exams for courses: AI, MUDE, Dynamica
- Examiner Data Science and AI for Engineers