

Dichang Zhang

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RESEARCH INTERESTS

Generative and foundational modeling for high-dimensional simulations and observational data.

EDUCATION

Stony Brook University

Ph.D. Candidate in Computer Science

Cumulative GPA: 3.93/4.00

NY, United States

Aug 2022 - Present

École Polytechnique Fédérale de Lausanne

Visiting Doctoral Student in Computer and Communication Sciences

VD, Switzerland

Feb 2025 - May 2025

University of Michigan, Ann Arbor

B.S. Data Science and Honors in Computer Science

Cumulative GPA: 3.90/4.00

MI, United States

Aug 2019 - Apr 2022

Research Experience

Stony Brook CV Lab

Research Assistant

May 2023 - Present

Stony Brook University

Faculty Advisor: Prof. Dimitris Samaras

- Developing machine-learning methods for modeling and controlling high-dimensional physical phenomena;
- Building data-driven environmental surrogate models for wind flow and precipitation prediction;
- Building data-driven cosmological detection models for rare events.

EPFL CV Lab

Research Assistant

Feb 2025 – May 2025

École Polytechnique Fédérale de Lausanne

Faculty Advisor: Prof. Pascal Fua

- Collaboration on masked pretraining and transfer learning for high-fidelity physical modeling;
- Applying vision transformer architectures to fluid and cosmological simulation data.

Fouhey AI Lab

Research Assistant

May 2020 – Mar 2022

University of Michigan

Faculty Advisor: Prof. David Fouhey

- Explored statistical representations of solar electromagnetic fields;
- Designed machine-learning models to predict solar magnetic fields from observational data.

State Key Lab of Fire Science

Summer Lab Assistant

Jun 2018 - Aug 2018

University of Science and Technology of China

Faculty Advisor: Prof. Yuan Hu

- Conducted laboratory work in fire-prevention material testing and characterization.

PUBLICATIONS

- **Dichang Zhang**, Zhen Wei, Aobo Yang, Yiren Shen, Christian Santoni, Ali Khosronejad, Pascal Fua, Dimitris Samaras "Masked Pretrained CNN for Few-Shot High-Fidelity Fluid Dynamics Prediction", In Submission, 2025.
- **Dichang Zhang**, Christian Santoni, Zexia Zhang, Dimitris Samaras, Ali Khosronejad "Adaptive

Multitask Neural Network for High-Fidelity Wake Flow Modeling of Wind Farms" Energies 18 (11), 2897, 2025.

- **Dichang Zhang**, Zexia Zhang, Christian Santoni, Ali Khosronejad, Dimitris Samaras "Transfer Learning in Multi-fidelity Surrogate Modeling: A Wind Farm Case" International Conference on Machine Learning 2024 AI4Science.
- Christian Santoni, **Dichang Zhang**, Zexia Zhang, Dimitris Samaras, Fotis Sotiropoulos, Ali Khosronejad "Toward ultra-efficient high-fidelity predictions of wind turbine wakes: Augmenting the accuracy of engineering models with machine learning" Physics of Fluids, 2024.
- Richard E. L. Higgins, David F. Fouhey, **Dichang Zhang**, Spiro K. Antiochos, Graham Barnes, J. Todd Hoeksema, K. D. Leka, Yang Liu, Peter W. Schuck, and Tamas I. Gombosi "Fast and Accurate Emulation of the SDO/HMI Stokes Inversion with Uncertainty Quantification" The Astrophysical Journal, 2021.
- Junling Wang, **Dichang Zhang**, Yan Zhang, Wei Cai, Congxue Yao, Yuan Hu, Weizhao Hu "Construction of multifunctional boron nitride nanosheet towards reducing toxic volatiles (CO and HCN) generation and fire hazard of thermoplastic polyurethane" Journal of Hazardous Materials, 2019.
- Fukai Chu, **Dichang Zhang**, Yanbei Hou, Shuilai Qiu, Junling Wang, Weizhao Hu, and Lei Song "Construction of Hierarchical Natural Fabric Surface Structure Based on Two-Dimensional Boron Nitride Nanosheets and Its Application for Preparing Biobased Toughened Unsaturated Polyester Resin Composites" ACS Applied Materials & Interfaces, 2018.