Yuchen Wang

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EDUCATION

Department of Computer Science, William & Mary

- Ph.D. in Computer Science Sep 2024-Now

School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University

- M.S. in Control Science & Engineering Sep 2021-Mar 2024

School of Control and Computer Engineering, North China Electric Power University

- B.E. in Automation Sep 2017-Jul 2021

PUBLICATIONS

[1]: **Yuchen Wang**, Hongjue Zhao, Haohong Lin, Enze Xu, Lifang He, Huajie Shao, "A Generalizable Physics-Enhanced State Space Model for Long-Term Dynamics Forecasting in Complex Environments", *ICML*, 2025.

[2]: Hongjue Zhao, **Yuchen Wang**, Hairong Qi, Zijie Huang, Han Zhao, Lui Sha, Huajie Shao, "Accelerating Neural ODEs: A Variational Formulation-based Approach", *ICLR*, 2025.

[3]: Hongjue Zhao, **Yuchen Wang**, Hairong Qi, Jiajia Li, Lui Sha, Han Zhao, Huajie Shao, "Accelerating Neural Differential Equations for Irregularly-Sampled Dynamical Systems Using Variational Formulation", *ICLR workshop on "AI4DifferentialEquations in Science"*, 2024.

[4]: **Yuchen Wang**, Can Xiong, Changjiang Ju, Genke Yang, Yu-wang Chen, Xiaotian Yu, "A Deep Transfer Operator Learning Method for Temperature Field Reconstruction in a Lithium-ion Battery Pack", *IEEE Transactions on Industrial Informatics* (IF=**11.7**), 2024.

[5]: **Yuchen Wang**, Can Xiong, Yiming Wang, Po Xu, Changjiang Ju, Jianghao Shi, Genke Yang, Jian Chu. "Temperature state prediction for lithium-ion batteries based on improved physics-informed neural networks." Journal of Energy Storage (IF=**8.9**), 2023.

PREPRINT

[1]: Zhenyu Zong, **Yuchen Wang**, Haohong Lin, Lu Gan, Huajie Shao, "A Physics-Guided Causal Model for Generalizable Zero-Shot Motion Prediction in Autonomous Driving", submitted to *CoRL*, 2025.

[2]: Enze Xu, Toon Tran, Hongjue Zhao, **Yuchen Wang**, Mengdi Huai, Huajie Shao, "Identifying Invariant Physical Dynamics Across Multiple Environments", submitted to *NeurIPS*, 2025.

RESEARCH EXPERIENCES

Research Assistant, College of William & Mary Sep. 2024 – present

Advisor: Prof. Huajie Shao

- First-authored paper "A Generalizable Physics-Enhanced State Space Model for Long-Term Dynamics Forecasting in Complex Environments", *ICML*, 2025.
- Co-authored paper "Accelerating Neural ODEs: A Variational Formulation-based Approach", *ICLR*, 2025.
- Co-authored paper "A Physics-Guided Causal Model for Generalizable Zero-Shot Motion Prediction in Autonomous Driving", submitted to *CoRL*, 2025.
- Co-authored paper ""Identifying Invariant Physical Dynamics Across Multiple Environments", submitted to *NeurIPS*, 2025.

Research Intern, College of William & Mary Nov. 2023 – Jun. 2024

Advisor: Prof. Huajie Shao

- Co-authored paper "Accelerating Neural Differential Equations for Irregularly-Sampled Dynamical Systems Using Variational Formulation", accepted by ICLR 2024 workshop on 'AI4DifferentialEquations in Science'.

Research Assistant, Shanghai Jiao Tong University Sep. 2021- Jan. 2024

Advisor: Prof. Changjiang Ju, Prof. Genke Yang

- *First* authored paper "Temperature State Prediction for Lithium-ion Batteries Based on Improved Physics-Informed Neural Networks", published in *Journal of Energy Storage* (IF=**8.9**).
- *First* authored paper "A Deep Transfer Operator Learning Method for Temperature Field Reconstruction in a Lithium-ion Battery Pack", published in *IEEE Transactions on Industrial Informatics* (IF=**11.7**).
- Designed sub-algorithm about Production Planning on National Key Research and Development Program of China: *Development of factory operating system for basic information platform of intelligent manufacturing in process industry*.
- Contributed to the Ningbo City-funded "*Dynamic Parameter Detection, Performance Evaluation, and System Safety Technology Development of Lithium-ion Battery Systems*" project, developing algorithms to estimate the state of health, temperature, and safety of battery systems.
- Completed graduate thesis entitled "*Research on Key Technologies for Temperature Field Reconstruction in a Lithium-ion Battery Pack Based on Physics-informed Machine learning*".

Research Assistant, North China Electric Power University Mar. 2020- Mar. 2021

Advisor: Prof. Tongxiang He

- Applied PID control in Single-Input-Single-Output (SISO) and Cascade Three-Input-Three-Output (TITO) setups for managing water levels and feedwater flow in a boiler system.
- Developed Distributed Control System (DCS) configuration diagrams using PAS-300 software.
- Completed undergraduate thesis entitled "*A Study on Superheated Steam Temperature System using The State Feedback Control with Error Integral Based on Simulink*".

WORK EXPERIENCES

Algorithm Engineer, Battery Management System Jun. 2022- Jul. 2023

Advisor Dr. Can Xiong

- Led the development of an LSTM-based algorithm for lithium-ion battery temperature state estimation.
- Contributed to the development of an Extended Kalman Filter-based algorithm for State of Charge (SOC) estimation of lithium-ion batteries.
- Participated in the development of a Gaussian Process Regression-based algorithm for State of Health (SOH) prediction of lithium-ion batteries.

Intern, Ningbo Industrial Internet Institute Jun. 2021- Sep. 2021

Advisor Prof. Changjiang Ju

- Developed industrial PLC HMI (Human-Machine Interface) software using C#, accomplishing firmware updates and file operations.
- Participated in the preparation of a research report on the hydrogen energy industry.

HONORS/AWARDS

- Outstanding Graduate of Shanghai Jiao Tong University 2024
- Graduate Student Merit Scholarship 2023
- Shanghai Jiao Tong University Second Academic Scholarship 2022
- College-level third-class scholarships of North China Electric Power University 2020
- Alumni Scholarship 2019