

Jianing Bai 白佳凝

Room 236, Mechanics Building, School of Technology, Peking University, Beijing, 100084, P. R. China

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EDUCATION

College of Engineering, Peking University, Beijing, China

Aug 2020- Jul 2023

M.S. in Mechanical Engineering

College of Information Science and Engineering, Hebei North University, Zhangjiakou, China

Aug 2015- Jul 2019

B.E. in Information Engineering, Overall GPA: 3.51/4.0, Major GPA: 3.86/4.0 Ranking: Top 3% (100+ students)

Core Courses: Higher Mathematics (90) / Probability Theory and Mathematical Statistics (96) / Discrete Mathematics (93) /

Computer Network (93) / Data Structure (91) / Network Communication Programming (93) / Network Database System (90)

ACADEMIC FOCUS / RESEARCH INTEREST

Machine Learning, Power Systems, Network Systems, Reinforcement Learning, Control Optimization.

PUBLICATIONS

1. **Jianing Bai**, Ren Wang, and Zuyi Li. [Physics-Constrained Backdoor Attacks on Power System Fault Localization](#). IEEE Power and Energy Society General Meeting 2023, IEEE.

2. **Jianing Bai**, Tianhao Zhang, Chen Wang, and Guangming Xie. [MA-CC: Cross-Layer Congestion Control via Multi-Agent Reinforcement Learning](#). Computing Conference 2023, Springer.

3. Yan Cao, Zhijun Jin, Rukai Zhu, Kouqi Liu, and **Jianing Bai**. [Comprehensive Evaluation of the Organic-Rich Saline Lacustrine Shale in the Lucaogou Formation, Jimusar Sag, Junggar Basin, NW China](#). Energy 2024, Elsevier.

RESEARCH EXPERIENCES

Multi-Agent Reinforcement Learning Based Network | Peking University | Research Assistant

Dec 2020 - May 2022

Advisor: [Guangming Xie](#), professor at College of Engineering, Peking University

- Researched and applied the multi-agent reinforcement learning algorithm to TCP and AQM to address the proposed cross-layer congestion control problem through cooperation.
- Designed a typical dumbbell-like network scenario under the ns3-gym simulator by modeling it as a multi-agent decision-making problem, which developed the application of MARL in the congestion control area.
- Proved that the proposed method outperformed typical rule-based and learning-based congestion control algorithms, potentially improving the adaptability and time variance of components of the Internet's communication infrastructure.

Distributed System Enhanced ACGAN | National University of Singapore | Research Assistant

May 2022 - Jun 2022

Advisor: [Yang You](#), professor at College of Computer Science, National University of Singapore

- Programmed model in Python to implement and deploy ACGAN for image recognition tasks.
- Improve the model training efficiency based on data parallel, pipeline parallel, and tensor parallel strategies.

Physics-Constrained Backdoor Attacks on Power System | Illinois Tech | Research Assistant

June 2022 - Jan 2023

Advisor: [Ren Wang](#), assistant professor at Department of Electrical and Computer Engineering, Illinois Institute of Technology

- Designed a novel physics-constrained backdoor attack strategy on DL-based fault line localization tasks in power systems.
- Considered different threat models where attackers could directly manipulate training data or only access measurements to improve the variety of the program; conducted fault localizations on the IEEE 68-bus power system..
- Demonstrated that the proposed physics-constrained backdoor attacks could fail the predictions using a small amount of malicious data while maintaining a high accuracy on clean data.

AWARDS

1. First Prize, Triple-A Student Award (3 students/department)

2016, 2017, 2018

2. Academic Excellence Award of Peking University (5 students/class)

2020

SKILLS

Programming Languages: C/C++, Python (including PyTorch and TensorFlow)

Tools: LaTeX, Linux OS, Matlab, Microsoft Office, Photoshop

Standard English Tests: TOEFL (83)