Chenxuanyin Zou

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Education & Awards

University of British Columbia (*Ph.D. student*) Since Jan. 2024

Chemical and Biological Engineering Department Prof. *Yankai Cao*

Dabrowski & Shepherd Award in Environmental Engineering, 2024W

Northeastern University (*Master*) Sep. 2020 – Jul. 2023

Laboratory of Synthetical Automation For Process Industries Prof. *Jun Fu*

Outstanding Master's Thesis, Thesis Award (<2%) 2023

Suzhou Industrial Park Scholarship, Enterprise Scholarship (1/31) 2023

First-class Scholarship, Graduate Scholarship (40%) 2021-2023

Northeastern University (*Bachelor*) Sep. 2016 – Jun. 2020

College of Information Science And Engineering GPA: 3.8/5.0 (20%)

Second-class Scholarship, Undergraduate Scholarship (10%) 2020

Third-class Scholarship, Undergraduate Scholarship (30%) 2017-2019

Meritorious Winner, MCM/ICM 2019

Publications

1. **Multiobjective dynamic optimization of nonlinear systems with path constraints**
   Jun Fu, **Chenxuanyin Zou**, Mingsheng Zhang, Xinglong Lu, and Yuzhe Li
   IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2023, 53(3), 1530-1542.
2. **Differentiable Decision Tree via "ReLU+Argmin" Reformulation**
   Qiangqiang Mao, Jiayang Ren, Yixiu Wang, **Chenxuanyin Zou**, Jingjing Zheng, Yankai Cao
   Accepted by *The Conference on Neural Information Processing Systems (NeurIPS), 2025* (**Spotlight**).
3. **Beyond Greedy: Towards Optimal Deep Classification Trees**
   Chenxuanyin Zou, Jiayang Ren, Qiangqiang Mao, Jing Liu, Marcus Lai, Yankai Cao
   Submitted to *International Conference on Learning Representations (ICLR), 2026*
4. **A Second-order Optimization Method for Pareto Optimal Solutions**
   Jun Fu, **Chenxuanyin Zou**, Linqing Dua, Mengchang Wang
   Submitted to *Automatica*, under review.
5. **A Survey on Diffusion Models for Anomaly Detection**
   Jing Liu, Zhenchao Ma, Zepu Wang, **Chenxuanyin Zou**, Jiayang Ren, et al.
   https://arxiv.org/abs/2501.11430

Academic Experience

Summer School on *Forecasting and Mathematical Modeling for Renewable Energy* July, 2024

Location: Banff International Research Station (BIRS), UBC Okanagan, Kelowna, BC, Canada.

- Wind and solar power are the primary sources of renewable energy, and both driven by the weather, hence stochastic and variable. To solve the grand challenges related to their optimal deployment requires an interdisciplinary approach combining expertise in mathematics, statistics, atmospheric sciences, fluid dynamics, engineering and economics. In this summer school, we received training in key methodologies for forecasting and mathematical modeling of renewables.

MCM/ICM – *Meritorious Winner* 2018 – 2019

Aim: Design an escape plan for the Louvre Museum for terrorist attacks.

- Utilize the charging and discharging process of capacitance to approximate the process of people entering and leaving the rooms, design a charged circuit according to the building structure of the Louvre Museum, then discharge it. The best escape plan is the path through which electrons move in the circuit.

Internship and Hand-on Experience 2018 – 2021

- **Internship** at Baowu Steel Group Corporation Limited, Shanghai, China.
- **Internship** at SIASUN Robot & Automation CO., Shenyang, Liaoning, China.
- Quanser experimental equipment through **Simulink** (Linear Flexible Inverted Pendulum, etc.
- Control an experimental blowing machine through PLC (SIEMENS & ABB).