

Zhongyu Zhang

📖 Google scholar 🏠 <https://webzhongyu.com> ✉ zhongyu4@ualberta.ca 🌐 <https://github.com/zzygith>

Education

University of Alberta (2023.01-present) Edmonton, Alberta, Canada
PhD candidate Process Control (Supervised by Prof. Zukui Li & Prof. Biao Huang)

University of Alberta (2020.09-2022.12) Edmonton, Alberta, Canada
MSc's Degree Process Control GPA: 3.8/4.0 (Supervised by Prof. Zukui Li)

Shandong University (2016.09-2020.06) Jinan, Shandong, China
BEng's Degree Automation GPA: 4.17/5

Projects

KIVCET Furnace Feed Optimization (2025-2026) – Teck Metals Canada

- Built a cloud-based pipeline to generate optimization recommendations for KIVCET furnace feed moisture and element-ratio control.
- Implemented a constrained blending optimization model reflecting real operating bounds, and validated performance via multi-day simulation comparisons against manual operation results.
- Automated KPI tracking and reporting to support daily decision-making and continuous model refinement with operations stakeholders.

Industrial Application of Model-Plant-Mismatch Detection (2024-2025) – Teck Metals Canada

- Applied the Model-Plant-Mismatch Detection toolbox to identify potential mismatches in production systems, improving operational insights.
- Migrated local detection code to a cloud platform, streamlining processes and enhancing daily reports with automated mismatch detection results.

Publications

- S. Li, Z. Li, Z. Zhang, et al. Database-driven and property-constrained inference of molecular composition of petroleum fractions from routine experimental data[J]. *Chemical Engineering Journal*, 2026: 176448.
- Z. Zhang, B. Huang, Z. Li. Simultaneous Outlier-Exclusion and Distributionally Robust Learning through Partial Optimal Transport. *Computers & Chemical Engineering* (2025): 109408.
- S. Li, Z. Zhang, Z. Li, G. Cai, L. Zhang, Q. Shi. Molecular composition reconstruction of naphtha fractions through data-driven modeling and interpretable optimization. *Chemical Engineering Science* (2025): 122655.
- Z. Zhang, B. Huang, Z. Li. Dynamic Process Flexibility Analysis Using Neural Networks and a Volumetric Flexibility Index. *Industrial & Engineering Chemistry Research*. 2025, 64, 7452-7465.
- Z. Zhang, S. Yang, B. Huang, Z. Li. Novel Feasible Set Learning and Process Flexibility Analysis Method Using Deep Neural Networks. *Industrial & Engineering Chemistry Research*. 2024, 63, 11516-11529.
- Z. Zhang, and Z. Li. Model Predictive Control for Renal Anemia Treatment through Physics-informed Neural Network. *IFAC-PapersOnLine* 58.14 (2024): 307-312.
- Z. Zhang, Z. Li. Haemoglobin Response Modelling under Erythropoietin Treatment: Physiological Model-Informed Machine Learning Method. *The Canadian Journal of Chemical Engineering*. 2023, 101, 4307-4319.
- Z. Zhang, B. Huang, Z. Li. Distributionally robust optimization for Gaussian mixture model ambiguity under moment variations. *Computers & Chemical Engineering* (Under Review)
- Z. Zhang, B. Huang, Z. Li. The Two Faces of Outliers in Robust Learning: Exclusion and Emphasis via Partial Optimal Transport. (Under Preparation)

Presentations

Distributionally Robust Optimization for Gaussian Mixture Model Ambiguity Under Moment Variations

- Oral presentation in American Institute of Chemical Engineers (AIChE) Annual Meeting on November 3 2025, Boston, Massachusetts, U.S.

Decision-focused Learning Considering Solution Robustness under Data Uncertainty

- Oral presentation in Canadian Chemical Engineering Conference (CSCChE 2025) on October 7, 2025, Montreal, Quebec, Canada

Dynamic Process Operational Flexibility Analysis Using Neural Networks

- Poster presentation in Canadian Chemical Engineering Conference (CSCChE 2024) on October 6-9, 2024, Toronto, Ontario, Canada

Model Predictive Control for Renal Anemia Treatment through Physics-Informed Neural Network

- Poster presentation in 12th IFAC International Symposium on Advanced Control of Chemical Processes (ADCHEM) on July 14-17, 2024, Toronto, Ontario, Canada

A Novel Volumetric Flexibility Index Calculation Method Using Physics-Informed Neural Networks

Oral presentation in American Institute of Chemical Engineers (AIChE) Annual Meeting on November 9 2023, Orlando, Florida, U.S.

Awards

- Graduate Students' Association Academic Travel Grant (2025)
- Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship (2023)
- Graduate Students' Association Academic Travel Grant (2023)

Teaching Assistant Experience

- CHE 574 Process Optimization (Winter 2026)
- CHE 358 Process Data Analytics and Machine Learning (Spring/Summer 2024)