DONGHUI LI

2017 Hydrosystems Laboratory, Urbana, IL, 61801 • (217) 721-3706

donghui3@illinois.edu | https://donghuili.me

RESEARCH INTERESTS

- Water Resources Engineering and Forecast-informed Reservoir Operation
- Machine Learning and Data-driven Model
- Hydrological and Socioeconomic Drought
- Water Economics

EDUCATION

2020 – 2024 (expected)	Ph.D. in Civil and Environmental Engineering
	Dissertation: "Interconnectedness Between Hydrological Drought and Reservoir Operation"
	University of Illinois at Urbana-Champaign, USA
2021 – 2022	Graduate Minor in Statistics
	University of Illinois at Urbana-Champaign, USA
2018 – 2020	M.S. in Civil and Environmental Engineering
	Thesis: "Development of Web-Based Supporting Tools for Generic Diagnostic Reservoir Operation"
	University of Illinois at Urbana-Champaign, USA
2014 – 2018	B.E. in Hydraulic Engineering
	Tsinghua University, China

RESEARCH EXPERIENCES

Doctoral Researcher 2020 – 2024 (expected)

Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign

- Developed a generic data-driven reservoir operation model (GDROM) that couples the hidden Markov model with decision tree model.
- Applied the GDROM to 450+ large reservoirs across the CONUS and built an open dataset to document the empirically derived rules.
- Analyzed the pattern of regional water storage responding to meteorological drought events across the CONUS, and developed a combined drought indicator based on the response pattern.

Master Researcher 2018 – 2020

Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign

- Developed a web-based reservoir operation supporting tool that implements several generic reservoir operation models.

Senior Project 2017 – 2018

Department of Hydraulic Engineering, Tsinghua University

- Hedging operation for parallel-reservoirs system for water supply and flood control.

PUBLICATIONS

* indicates co-first authorship.

- **Li, D.**[*], Chen Y[*]., Lyu L., & Cai, X. (in review). Operation rules and patterns for 452 large reservoirs in the Contiguous United States. *Water Resources Research.*
- Chen, Y[*]., **Li, D.**[*], Zhao, Q., & Cai, X. (2022). Developing a generic data-driven reservoir operation model. *Advances in Water Resources*, *167*, 104274.
- Zhao, Q[*]., **Li, D.**[*], & Cai, X. (2021). Online generic diagnostic reservoir operation tools. *Environmental Modelling & Software*, *135*, 104918.

CONFERENCE PRESENTATIONS

- **Li, D.**, Chen Y., Zhao Q., & Cai, X. (2023 May). Operation rules and patterns for 450+ large reservoirs in the Contiguous United States. *EWRI 2023.*
- **Li, D.**, Chen Y., & Cai, X. (2023 Feb.). Data-driven Operation Rules for Reservoirs Across the CONUS. *USACE R & D Day 2023 at UIUC.*
- **Li, D.**, Chen Y., Zhao Q., & Cai, X. (2022 May). Improving the human dimension of hydrological simulation based on a data-driven reservoir operation model. *EWRI 2022.*
- Chen Y., **Li, D.**, Zhao Q., & Cai, X. (2022 May). Developing a generic data-driven reservoir operation model. *EWRI 2022.*
- **Li, D.**, Zhao Q., & Cai, X. (2021 May). DROT – A Diagnostic Reservoir Operation Tool. *EWRI 2021.*
- **Li, D.**, Zhao Q., & Cai, X. (2019 May). Decision support tool for reservoir operation based on derived rules. *EWRI 2019.*

AWARDS & FELLOWSHIPS

- Conference Travel/Presentation Award — 2021, University of Illinois at Urbana-Champaign
- Yen Fellowship — 2018, University of Illinois at Urbana-Champaign
- Academic Excellence Scholarship — 2016 & 2017, Tsinghua University

TEACHIING EXPERIENCES

Teaching Assistant, University of Illinois at Urbana-Champaign

CEE434 Environmental Systems I 2021 Fall, 2022 Fall

- Graded students' assignments and hosted the TA office hour to solve students' problems.

Guest Lecturer, University of Illinois at Urbana-Champaign

CEE434 Environmental Systems I 2021 Fall

- Guest-lectured the basic concepts of machine learning, and the applications to water resources area.

PROFESSIONAL AFFILIATIONS

- Member, American Geophysical Union (AGU)
- Member, American Society of Civil Engineers (ASCE)

RESEARCH SKILLS

- Programming languages (scientific computing oriented): Python, R, Matlab, Fortran
- Machine learning: scikit-learn, PyTorch
- Cloud computing and web development: AWS EC2, HTML, JavaScript