

DONGHUI LI

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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 <i>Dissertation: “Interconnectedness Between Hydrological Drought and Reservoir Operation”</i> 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 <i>Thesis: “Development of Web-Based Supporting Tools for Generic Diagnostic Reservoir Operation”</i> University of Illinois at Urbana-Champaign, USA
2014 – 2018	B.E. in Hydraulic Engineering Tsinghua University, China

RESEARCH EXPERIENCES

Doctoral Researcher	2020 – 2024 (expected)
<i>Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign</i>	
<ul style="list-style-type: none">• 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
<i>Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign</i>	

- 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

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| • 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 |

TEACHING EXPERIENCES

Teaching Assistant, University of Illinois at Urbana-Champaign

CEE434 Environmental Systems I

2021 Fall, 2022 Fall

- Lectured basic concepts of machine learning, and the applications to water resources area.
- Graded students' assignments and hosted the TA office hour to solve students' problems.

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