

# DONGHUI LI

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

[donghui3@illinois.edu](mailto:donghui3@illinois.edu) | <https://donghuili.me>

## RESEARCH INTERESTS

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

## EDUCATION

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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

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<b>Doctoral Researcher</b>	2020 – 2024 (expected)
<i>Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign</i>	
<ul style="list-style-type: none"><li>• Developed a generic data-driven reservoir operation model (GDROM) that couples the hidden Markov model with decision tree model.</li><li>• Applied the GDROM to 450+ large reservoirs across the CONUS and built an open dataset to document the empirically derived rules.</li><li>• 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.</li></ul>	
<b>Master Researcher</b>	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

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\* 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

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- **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

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**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**

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

## **RESEARCH SKILLS**

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