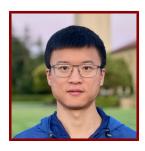
Stanford



Dapeng Feng

Postdoctoral Scholar, Earth System Science

Bio

BIO

Dapeng Feng is a postdoctoral fellow in the Department of Earth System Science and Stanford Institute for Human-Centered Artificial Intelligence. During his PhD he developed the differentiable hydrologic modeling framework to unify machine learning and physical models for large-scale water cycle simulations and streamflow forecasting. His current research interests focus on systematically integrating AI, physical models, and big earth observations for large-scale geoscientific modeling and knowledge discovery, particularly in characterizing the terrestrial water cycle and its interactions with plant and climate systems.

INSTITUTE AFFILIATIONS

• Postdoctoral Fellow, Institute for Human-Centered Artificial Intelligence (HAI)

HONORS AND AWARDS

- HAI Postdoctoral Fellowship, Stanford Institute for Human-Centered Artificial Intelligence (2023)
- Top Downloaded Article (Feng et al., 2022), Water Resources Research (2024)
- Editors' Choice Award (Ma, Feng et al., 2021), Water Resources Research (2023)
- Top Cited Article 2020-2021 (Feng et al., 2020), Water Resources Research (2022)
- James E. Marley Graduate Fellowship in Engineering, Penn State University (2020)
- C. Norwood Wherry Memorial Graduate Fellowship in Engineering, Penn State University (2021)
- University Graduate Fellowship, Penn State University (2018)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Pennsylvania State University (2023)
- Ph.D., Penn State University, Hydrology (2023)
- M.E., Peking University, Hydrology and Water Resources (2018)
- B.E., Wuhan University, Hydraulic Engineering (2015)

STANFORD ADVISORS

• Alexandra Konings, Postdoctoral Faculty Sponsor

LINKS

• Google Scholar: https://scholar.google.com/citations?user=BeSNxLMAAAAJ

Publications

PUBLICATIONS

- Differentiable modelling to unify machine learning and physical models for geosciences NATURE REVIEWS EARTH & ENVIRONMENT
 Shen, C., Appling, A. P., Gentine, P., Bandai, T., Gupta, H., Tartakovsky, A., Baity-Jesi, M., Fenicia, F., Kifer, D., Li, L., Liu, X., Ren, W., Zheng, et al 2023
- The suitability of differentiable, physics-informed machine learninghydrologic models for ungauged regions and climate change impact assessment HYDROLOGY AND EARTH SYSTEM SCIENCES

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Feng, D., Beck, H., Lawson, K., Shen, C. 2023; 27 (12): 2357-2373
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 Differentiable, Learnable, Regionalized Process-Based Models With Multiphysical Outputs can Approach State-Of-The-Art Hydrologic Prediction Accuracy WATER RESOURCES RESEARCH

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• From calibration to parameter learning: Harnessing the scaling effects of big data in geoscientific modeling. Nature communications

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 Mitigating Prediction Error of Deep Learning Streamflow Models in Large Data-Sparse Regions With Ensemble Modeling and Soft Data GEOPHYSICAL RESEARCH LETTERS

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 Enhancing Streamflow Forecast and Extracting Insights Using Long-Short Term Memory Networks With Data Integration at Continental Scales WATER RESOURCES RESEARCH

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• Improving River Routing Using a Differentiable Muskingum-Cunge Model and Physics-Informed Machine Learning WATER RESOURCES RESEARCH Bindas, T., Tsai, W., Liu, J., Rahmani, F., Feng, D., Bian, Y., Lawson, K., Shen, C. 2024; 60 (1)

• Identifying Structural Priors in a Hybrid Differentiable Model for Stream Water Temperature Modeling WATER RESOURCES RESEARCH Rahmani, F., Appling, A., Feng, D., Lawson, K., Shen, C. 2023; 59 (12)

• The Data Synergy Effects of Time-Series Deep Learning Models in Hydrology WATER RESOURCES RESEARCH

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Continental-scale streamflow modeling of basins with reservoirs: Towards a coherent deep-learning-based strategy JOURNAL OF HYDROLOGY
Ouyang, W., Lawson, K., Feng, D., Ye, L., Zhang, C., Shen, C.
 2021; 599

 Transferring Hydrologic Data Across Continents - Leveraging Data-Rich Regions to Improve Hydrologic Prediction in Data-Sparse Regions WATER RESOURCES RESEARCH

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Ma, K., Feng, D., Lawson, K., Tsai, W., Liang, C., Huang, X., Sharma, A., Shen, C. 2021; 57 (5)
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• From Hydrometeorology to River Water Quality: Can a Deep Learning Model Predict Dissolved Oxygen at the Continental Scale? Environmental science & technology

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Zhi, W., Feng, D., Tsai, W. P., Sterle, G., Harpold, A., Shen, C., Li, L. 2021; 55 (4): 2357-2368
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• An integrated hydrological modeling approach for detection and attribution of climatic and human impacts on coastal water resources JOURNAL OF HYDROLOGY

Feng, D., Zheng, Y., Mao, Y., Zhang, A., Wu, B., Li, J., Tian, Y., Wu, X. 2018; 557: 305-320