

RUNLONG YU

Email: ryu5@ua.edu

EDUCATION

Ph.D. Major: Computer Science University of Science and Technology of China (USTC)	Jun. 2023 Hefei, China
B.E. Major: Computer Science University of Science and Technology of China (USTC)	Jun. 2017 Hefei, China

PROFESSIONAL EXPERIENCES

Tenure-Track Assistant Professor Department of Computer Science, The University of Alabama	Aug. 2025 – present Tuscaloosa, USA
Postdoctoral Associate Department of Computer Science, University of Pittsburgh	Sep. 2023 – Aug. 2025 Pittsburgh, USA
Research Intern Data Application Center, Technology Engineering Group, Tencent	Jul. 2019 – Jan. 2020 Shenzhen, China

HONORS AND AWARDS

ALAAI Faculty Fellow for Frontier AI Foundation: Alabama Center for the Advancement of Artificial Intelligence (ALAAI)	2026
IEEE ICDM Best BlueSky Paper Award (First Prize) Foundation: Computing Community Consortium (CCC) & IEEE	2025
IEEE ICDM Best Paper Award Candidate Foundation: IEEE	2025
Gold Medal of Anhui Province “Internet+” College Student Innovation Competition Foundation: Department of Education of Anhui Province	2021
Champion of the CCF BDCI Fighting Epidemics Big Data Charity Challenge Foundation: Beijing Municipal Bureau of Economy and Information Technology & CCF	2021
China National Scholarship Foundation: Ministry of Education of P.R.China	2019
KDD CUP 2019 Regular ML Track PaddlePaddle Special Award Foundation: ACM	2019
Third Runner-up of China Big Data and Artificial Intelligence Innovation Competition Foundation: Hefei Data Resources Bureau	2018
Suzhou Industrial Park Scholarship Foundation: Suzhou Industrial Park	2018
GDC Technology Scholarship Foundation: GDC Technology company	2018
First Prize of Chinese Physics Olympiad Foundation: Chinese Physical Society	2012

SELECTED PUBLICATIONS

Publications Since Joining UA (2025–Present)

[†] denotes corresponding author.

Journal Articles

1. **Runlong Yu**, Yiqun Xie, Xiaowei Jia. Environmental Computing as a Branch of Science, *Communications of the ACM (CACM)*, v 68, n 7, pages 92-94, 2025. *Impact Factor: 22.7*

Conference Articles

1. Yilong Dai, Yiming Sun, Yiheng Chen, Ziyi Wang, Shengyu Chen, Xiaowei Jia, **Runlong Yu**[†]. Physics-Preserving Latent Compression for Zero-Shot Resolution Transfer in 3D Turbulence, *IEEE International Conference on Data Mining (ICDM)*, Research Track, accepted, to be published, 2026. *Research Track Acceptance Rate: 19.9%*
2. Chonghao Qiu, Shiyuan Luo, Feng Zhu, **Runlong Yu**, Yiqun Xie, Xiaowei Jia. ISO-UNet: A Climate-State Conditioned Regional Expert Network for Water Isotope Field Regression, *IEEE International Conference on Data Mining (ICDM)*, Research Track, accepted, to be published, 2026. *Research Track Acceptance Rate: 19.9%*
3. Yilong Dai, Shengyu Chen, Xiaowei Jia, **Runlong Yu**[†]. Flow Learners for PDEs: Toward a Physics-to-Physics Paradigm for Scientific Computing, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, Blue Sky Ideas Track, pages 13164–13169, 2026. *Blue Sky Ideas Track Acceptance Rate: 23.6%*
4. Qi Cheng, Licheng Liu, Yixuan Chen, Qing Zhu, **Runlong Yu**, Zhenong Jin, Yiqun Xie, Xiaowei Jia. LLM-based Evaluation Policy Extraction for Ecological Modeling, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, AI4Sciences Track, pages 10704–10715, 2026. *AI4Sciences Track Acceptance Rate: 30.8%*
5. Yilong Dai, Shengyu Chen, Ziyi Wang, Xiaowei Jia, Yiqun Xie, Vipin Kumar, **Runlong Yu**[†]. Learning PDE Solvers with Physics and Data: A Unifying View of Physics-Informed Neural Networks and Neural Operators, *International Joint Conference on Artificial Intelligence (IJCAI)*, Survey Track, accepted, to be published, 2026. *Survey Track Acceptance Rate: 20.9%*
6. Yiming Sun, Qi Cheng, Licheng Liu, **Runlong Yu**, Yiqun Xie, Xiaowei Jia. Retrieval-Augmented Multi-scale Framework for County-Level Crop Yield Prediction Across Large Regions, *SIAM International Conference on Data Mining (SDM)*, accepted, to be published, 2026. *Acceptance Rate: 26.0%*
7. Yiheng Chen, Zihui Ma, Peishi Jiang, Yilong Dai, Qikai Hu, Xinyue Ye, Lingyao Li, Rita Leal Sousa, **Runlong Yu**[†]. When Earth Foundation Models Meet Diffusion: An Application to Land Surface Temperature Super-Resolution, *SIAM International Conference on Data Mining (SDM)*, accepted, to be published, 2026. *Acceptance Rate: 26.0%*
8. Yilong Dai, Yiming Sun, Yiheng Chen, Shengyu Chen, Xiaowei Jia, **Runlong Yu**[†]. FlowRefiner: Flow Matching-Based Iterative Refinement for 3D Turbulent Flow Simulation, *SIAM International Conference on Data Mining (SDM)*, accepted, to be published, 2026. *Acceptance Rate: 26.0%*
9. Lingyao Li^{*†}, **Runlong Yu**^{*†}, Qikai Hu, Bowei Li, Min Deng, Yang Zhou, Xiaowei Jia. From Pixels to Places: A Systematic Benchmark for Evaluating Image Geolocalization Ability in Large Language Models, *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Main Conference, accepted, to be published, 2026. (*equal contribution) *Main Conference Acceptance Rate: 15.4%*
10. Yiheng Chen, Lingyao Li, Zihui Ma, Qikai Hu, Yilun Zhu, Min Deng, **Runlong Yu**[†]. Empowering LLM Agents with Geospatial Awareness: Toward Grounded Reasoning for Wildfire Response, *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Findings of the ACL, accepted, to be published, 2026. *Overall Acceptance Rate (Main Conference + Findings): 29.7%*
11. Naiyi Li, Zihui Ma, **Runlong Yu**[†], Lingyao Li[†]. LSDTs: LLM-Augmented Semantic Digital Twins for Adaptive Knowledge-Intensive Infrastructure Planning, *AAAI Conference on Artificial Intelligence (AAAI)*, pages 38871–38879, 2026. *AISI Track Acceptance Rate: 24.1%*

12. Shiyuan Luo, Chonghao Qiu, **Runlong Yu**, Yiqun Xie, Xiaowei Jia. GREAT: Generalizable Representation Enhancement via Auxiliary Transformations for Zero-Shot Environmental Prediction, *AAAI Conference on Artificial Intelligence (AAAI)*, pages 38998–39006, 2026. *AISI Track Acceptance Rate: 24.1%*
13. **Runlong Yu**, Xiaowei Jia. Truth Without Comprehension: A BlueSky Agenda for Steering the Fourth Mathematical Crisis, *IEEE International Conference on Data Mining Workshops (ICDMW)*, BlueSky Track, pages 2472–2476, 2025. *Best BlueSky Paper Award (First Prize)*
14. Shiyuan Luo*, **Runlong Yu***, Chonghao Qiu, Rahul Ghosh, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Learning to Retrieve for Environmental Knowledge Discovery: An Augmentation-Adaptive Self-Supervised Learning Framework, *IEEE International Conference on Data Mining (ICDM)*, pages 527–536, 2025. (*equal contribution) *Best Paper Award Candidate; Regular Paper Acceptance Rate: 13.5%*
15. Shiyuan Luo, **Runlong Yu**, Shengyu Chen, Yingda Fan, Yiqun Xie, Yanhua Li, Xiaowei Jia. Geo-Aware Models for Stream Temperature Prediction across Different Spatial Regions and Scales, *ACM International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, pages 124–136, 2025. *Acceptance Rate: 26.0%*
16. Lingyao Li, Dawei Li, Zhenhui Ou, Xiaoran Xu, Jingxiao Liu, Zihui Ma, **Runlong Yu**, Min Deng. LLMs as World Models: Data-Driven and Human-Centered Pre-Event Simulation for Disaster Impact Assessment, *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pages 3078–3096, 2025. *Main Conference Acceptance Rate: 22.1%*

Publications Prior to Joining UA

Journal Articles

1. **Runlong Yu**, Qi Liu, Yuyang Ye, Mingyue Cheng, Enhong Chen, Jianhui Ma. Collaborative List-and-Pairwise Filtering from Implicit Feedback, *IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)*, v 34, n 6, pages 2667–2680, 2022. *Impact Factor: 8.9*
2. **Runlong Yu**, Hongke Zhao, Zhong Wang, Yuyang Ye, Peining Zhang, Qi Liu, Enhong Chen. Negatively Correlated Search with Asymmetry for Real-Parameter Optimization Problems, *Journal of Computer Research and Development (J-CRAD)*, v 56, n 8, pages 1746–1757, 2019. *Class A by China Computer Federation*
3. Yin Gu, Kai Zhang, Qi Liu, Haojie Yuan, **Runlong Yu**. π -eLight: Learning Interpretable Programmatic Policies for Effective Traffic Signal Control, *IEEE Transactions on Mobile Computing (IEEE TMC)*, v 25, n 1, pages 1122–1136, 2026. *Impact Factor: 7.7*
4. Xiaojie Li, **Runlong Yu**, Lei Chen, Shengjun Liu, Enhong Chen. Process Optimization of Multi-stage Continuous Production System Based on Feature Fusion Modeling, *IEEE Transactions on Automation Science and Engineering (IEEE T-ASE)*, v 22, pages 21512–21524, 2025. *Impact Factor: 5.4*
5. Kai Zhang, Hongbo Gang, Feng Hu, **Runlong Yu**, Qi Liu. Adaptive ensemble learning for efficient keyphrase extraction: Diagnosis, aggregation, and distillation, *Expert Systems with Applications (ESWA)*, v 278, Article 127236, 2025. *Impact Factor: 7.5*
6. Yuyang Ye, Hengshu Zhu, Tianyi Cui, **Runlong Yu**, Le Zhang, Hui Xiong. University Evaluation through Graduate Employment Prediction: An Influence based Graph Autoencoder Approach, *IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)*, v 36, n 11, pages 7255–7267, 2024. *Impact Factor: 8.9*
7. Yuyang Ye, Zheng Dong, Hengshu Zhu, Tong Xu, Xin Song, **Runlong Yu**, Hui Xiong. MANE: Organizational Network Embedding with Multiplex Attentive Neural Networks, *IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)*, v 35, n 4, pages 4047–4061, 2023. *Impact Factor: 8.9*
8. Huijie Liu, Han Wu, Le Zhang, **Runlong Yu**, Ye Liu, Chunli Liu, Minglei Li, Qi Liu, Enhong Chen. A Hierarchical Interactive Multi-channel Graph Neural Network for Technological Knowledge Flow Forecasting, *Knowledge and Information Systems (KAIS)*, v 64, n 7, pages 1723–1757, 2022. *Impact Factor: 2.5*

9. Qixiang Shao, **Runlong Yu**, Hongke Zhao, Chunli Liu, Mengyi Zhang, Hongmei Song, Qi Liu. Toward Intelligent Financial Advisors for Identifying Potential Clients: A Multitask Perspective, *Big Data Mining and Analytics (BDMA)*, v 5, n 1, pages 64-78, 2022. *Impact Factor: 11.8*

Conference Articles

1. **Runlong Yu***, Shengyu Chen*, Yiqun Xie, Xiaowei Jia. A Survey of Foundation Models for Environmental Science, *Pacific Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, pages 39-57, 2025. (*equal contribution) *Accepted to Data Science: Foundations and Applications (DSFA) Session*
2. **Runlong Yu**, Yiqun Xie, Xiaowei Jia. What We Talk About When We Talk About AI for Science, *SIAM International Conference on Data Mining (SDM)*, pages 439-442, 2025. *Invited Blue Sky Idea*
3. **Runlong Yu**, Chonghao Qiu, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Physics-Guided Foundation Model for Scientific Discovery: An Application to Aquatic Science, *AAAI Conference on Artificial Intelligence (AAAI)*, v 39, n 27, pages 28548-28556, 2025. *AISI Track Acceptance Rate: 23.3%*
4. **Runlong Yu**, Chonghao Qiu, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Yanhua Li, Xiaowei Jia. Adaptive Process-Guided Learning: An Application in Predicting Lake DO Concentrations, *IEEE International Conference on Data Mining (ICDM)*, pages 580-589, 2024. *Regular Paper Acceptance Rate: 10.9%*
5. **Runlong Yu**, Robert Ladwig, Xiang Xu, Peijun Zhu, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Evolution-based Feature Selection for Predicting Dissolved Oxygen Concentrations in Lakes, *International Conference on Parallel Problem Solving from Nature (PPSN)*, pages 398-415, 2024. *Acceptance Rate: 34.4%*
6. **Runlong Yu**, Xiang Xu, Yuyang Ye, Qi Liu, Enhong Chen. Cognitive Evolutionary Search to Select Feature Interactions for Click-Through Rate Prediction, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, pages 3151-3161, 2023. *Research Track Acceptance Rate: 22.1%*
7. **Runlong Yu**, Qi Liu, Yuyang Ye, Mingyue Cheng, Enhong Chen, Jianhui Ma. Collaborative List-and-Pairwise Filtering from Implicit Feedback (Extended Abstract), *IEEE International Conference on Data Engineering (ICDE)*, pages 3801-3802, 2023. *Invited Extended Abstract*
8. **Runlong Yu**, Yuyang Ye, Qi Liu, Zihan Wang, Chunfeng Yang, Yucheng Hu, Enhong Chen. XCrossNet: Feature Structure-Oriented Learning for Click-Through Rate Prediction, *Pacific Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, pages 436-447, 2021. *Acceptance Rate: 20.4%*
9. **Runlong Yu**, Yunzhou Zhang, Yuyang Ye, Le Wu, Chao Wang, Qi Liu, Enhong Chen. Multiple Pairwise Ranking with Implicit Feedback, *ACM Conference on Information and Knowledge Management (CIKM)*, pages 1727-1730, 2018. *Short Paper Acceptance Rate: 23.4%*
10. Yiming Sun, **Runlong Yu**, Runxue Bao, Yiqun Xie, Ye Ye, Xiaowei Jia. Domain-Adaptive Continual Meta-Learning for Modeling Dynamical Systems: An Application in Environmental Ecosystems, *SIAM International Conference on Data Mining (SDM)*, pages 297-306, 2025. *Acceptance Rate: 26.7%*
11. Yingda Fan, **Runlong Yu**, Janet Rice Barclay, Alison P. Appling, Yiming Sun, Yiqun Xie, Xiaowei Jia. Multi-Scale Graph Learning for Anti-Sparse Downscaling, *AAAI Conference on Artificial Intelligence (AAAI)*, v 39, n 27, pages 27969-27977, 2025. *AISI Track Acceptance Rate: 23.3%*
12. Yuyang Ye, Zhi Zheng, Yishan Shen, Tianshu Wang, Hengruo Zhang, Peijun Zhu, **Runlong Yu**, Kai Zhang, Hui Xiong. Harnessing Multimodal Large Language Models for Multimodal Sequential Recommendation, *AAAI Conference on Artificial Intelligence (AAAI)*, v 39, n 12, pages 13069-13077, 2025. *Acceptance Rate: 23.4%*
13. Xiang Xu, Hao Wang, Wei Guo, Luankang Zhang, Wanshan Yang, **Runlong Yu**, Yong Liu, Defu Lian, Enhong Chen. Multi-granularity Interest Retrieval and Refinement Network for Long-Term User Behavior Modeling in CTR Prediction, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, pages 2745-2755, 2025. *ADS Track Acceptance Rate: 22.0%*

14. Yin Gu, Kai Zhang, Qi Liu, **Runlong Yu**, Xin Lin, Xinjie Sun. ProCC: Programmatic Reinforcement Learning for Efficient and Transparent TCP Congestion Control, *ACM International Conference on Web Search and Data Mining (WSDM)*, pages 963-972, 2025. *Acceptance Rate: 23.4%*
15. Yuyang Ye, Lu-An Tang, Haoyu Wang, **Runlong Yu**, Wenchao Yu, Erhu He, Haifeng Chen, Hui Xiong. PAIL: Performance based Adversarial Imitation Learning Engine for Carbon Neutral Optimization, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, pages 6148-6157, 2024. *ADS Track Acceptance Rate: 20.0%*
16. Yujie Chen, **Runlong Yu**, Qi Liu, Enhong Chen, Zhenya Huang. Using Entropy for Group Sampling in Pairwise Ranking from Implicit Feedback, *International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)*, pages 2496-2500, 2023. *Short Paper Acceptance Rate: 25.1%*
17. Xiaojie Li, **Runlong Yu**, Guiquan Liu, Lei Chen, Enhong Chen, Shengjun Liu. Research on Multi-objective Optimization Algorithm for Coal Blending, *China National Conference on Big Data and Social Computing (BDSC)*, pages 37-60, 2023. *Regular Paper Acceptance Rate: 16.3%*
18. Yang Yu, Qi Liu, Likang Wu, **Runlong Yu**, Lei Yu, Zaixi Zhang. Untargeted Attack against Federated Recommendation Systems via Poisonous Item Embeddings and the Defense, *AAAI Conference on Artificial Intelligence (AAAI)*, pages 4854-4863, 2023. *Acceptance Rate: 19.6%*
19. Zhikang Mo, Qixiang Shao, Likang Wu, **Runlong Yu**, Jiexin Xu, Hongmei Song, Enhong Chen. TGNN: A GNN-Based Method with Multi-entity Node for Personal Banking Time Prediction, *Intelligent Networked Things: 5th China Conference (CINT)*, pages 68-79, 2023. *Acceptance Rate: 34.6%*
20. Yuren Zhang, Enhong Chen, Binbin Jin, Hao Wang, Min Hou, Wei Huang, **Runlong Yu**. Clustering based Behavior Sampling with Long Sequential Data for CTR Prediction, *International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)*, pages 2195-2200, 2022. *Short Paper Acceptance Rate: 24.7%*
21. Zheng Gong, Shiwei Tong, Han Wu, Qi Liu, Hanqing Tao, Wei Huang, **Runlong Yu**. Tipster: A Topic-Guided Language Model for Topic-Aware Text Segmentation, *International Conference on Database Systems for Advanced Applications (DASFAA)*, pages 213-221, 2022. *Acceptance Rate: 18.0%*
22. Huijie Liu, Han Wu, Le Zhang, **Runlong Yu**, Ye Liu, Chunli Liu, Qi Liu, Enhong Chen. Technological Knowledge Flow Forecasting through A Hierarchical Interactive Graph Neural Network, *IEEE International Conference on Data Mining (ICDM)*, pages 389-398, 2021. *Regular Paper Acceptance Rate: 9.9%*
23. Mingyue Cheng, Fajie Yuan, Qi Liu, Shenyang Ge, Zhi Li, **Runlong Yu**, Defu Lian, Senchao Yuan, Enhong Chen. Learning Recommender Systems with Implicit Feedback via Soft Target Enhancement, *International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)*, pages 575-584, 2021. *Regular Paper Acceptance Rate: 21.0%*
24. Shiwei Tong, Qi Liu, **Runlong Yu**, Wei Huang, Zhenya Huang, Zachary A Pardos, Weijie Jiang. Item Response Ranking for Cognitive Diagnosis, *International Joint Conference on Artificial Intelligence (IJCAI)*, pages 1750-1756, 2021. *Acceptance Rate: 13.9%*
25. Yuyang Ye, Hengshu Zhu, Tong Xu, Fuzhen Zhuang, **Runlong Yu**, Hui Xiong. Identifying High Potential Talent: A Neural Network based Dynamic Social Profiling Approach, *IEEE International Conference on Data Mining (ICDM)*, pages 718-727, 2019. *Regular Paper Acceptance Rate: 9.1%*
26. Mingyue Cheng, **Runlong Yu**, Qi Liu, Vincent W. Zheng, Hongke Zhao, Hefu Zhang, Enhong Chen. Alpha-Beta Sampling for Pairwise Ranking in One-Class Collaborative Filtering, *IEEE International Conference on Data Mining (ICDM)*, pages 1000-1005, 2019. *Short Paper Acceptance Rate: 18.5%*
27. Han Wu, Kun Zhang, Guangyi Lv, **Runlong Yu**, Weihao Zhao, Enhong Chen, Jianhui Ma. Deep Technology Tracing for High-tech Companies, *IEEE International Conference on Data Mining (ICDM)*, pages 1396-1401, 2019. *Short Paper Acceptance Rate: 18.5%*

Books & Chapters

1. Tong Xu, **Runlong Yu**. Epidemic Prevention and Control Big Data Cloud Platform: Solutions for Major Public Health Emergencies, *Annual Report on Development of Big Data Applications in China No.4 (2020) (Blue Book of Big Data Applications)*, Social Sciences Academic Press, ISBN 978-7-5201-7651-4, 2020.

RESEARCH FUNDING AND GRANT WRITING

Funded

1. **Development of an End-User-Driven Inland Water Quality Monitoring and Decision-Support System Powered by NASA-IBM Prithvi-EO2 Foundation Model**, *National Aeronautics and Space Administration (NASA)*, Award No. 80NSSC26K0971, \$749,999, 2026–2029. **Role: Co-Investigator (33%); PI: Hongxing Liu; Co-Is: Yuehan Lu and Christopher Impellitteri.** *Funded*

Pending / Under Review

1. **Cross-Scale Prediction and Control of Energy–Water Systems Under Extreme Events: The Oroville Dam Case**, *U.S. Department of Energy (DOE)*, \$997,922, 2026–2029. **Role: PI (100%).** *Status: Under review.*
2. **User-Centered Housing Risk Decision Support Using Prithvi Earth Foundation Models**, *National Aeronautics and Space Administration (NASA)*, \$494,754, 2026–2028. **Role: PI (34%); Co-PIs: T. Loof and P. Jiang.** *Status: Under review.*
3. **Efficient Agentic AI for Sustainable Forestry, Land Intelligence, and Mill Operations**, *National Science Foundation (NSF)*, \$1,749,999, 2026–2028. **Role: Co-PI; PI: Jackey Gong; Co-PI: J. Geyer.** *Status: Under review.*
4. **AI Companion Robot Research: User, Intelligence, and Form Development**, *University of South Carolina*, \$68,653, 2026–2028. **Role: PI (100%).** *Status: Under review.*
5. **UTC – THRIVE: Tunnel Health, Resilience, Inspection, & Viability Extension**, *Colorado School of Mines*, \$300,001, 2026–2027. **Role: Co-PI (40%); PI: Xinyue Ye (60%).** *Status: Under review.*
6. **A Paradigm Shift for Water Quality Prediction: Building Ontology and Knowledge Graphs**, *CIROH / National Oceanic and Atmospheric Administration (NOAA)*, \$60,000. **Role: Co-PI (33.33%); PI: X. Hong; Co-PI: T. N. Le.** *Status: Under review.*

Pre-Submission

1. **Project-First Biomedical Research Education in the AI Era: Mentoring, Skills Development, and Curriculum Innovation**, *National Institutes of Health (NIH)*, \$3,885,054, 2026–2031. **Role: Co-PI; PI: Jackey Gong; Co-PIs: K. Holley, J. Geyer, and T. Elsayed.** *Status: Pre-submission.*

Declined

1. **Collaborative Research: CAIG: From Synthetic Cities to Real Cities: Physics-Guided Multi-Fidelity Reconstruction of Extreme Heatwave Evolution**, *National Science Foundation (NSF)*, \$592,041, 2026–2029. **Role: PI (67%); Co-PI: Xinyue Ye (33%).**
2. **Collaborative Research: CAIG: Dual Threats of Droughts and Heatwaves: A Physics-Structured Graph Operator for Riverine Hydro-Thermal Processes**, *National Science Foundation (NSF)*, \$593,783, 2026–2029. **Role: Co-PI (50%); PI: Peishi Jiang (50%).**
3. **Collaborative Research: FIRE-WUI: Enabling Immersive Experiences of WUI Wildfire Risks to Accelerate House Adaptation**, *National Science Foundation (NSF)*, \$217,845, 2026–2028. **Role: PI (100%).**

4. **Topic 16-A Phase I: Transferable Transmission-Grid Foundation Models for Scalable Contingency Screening and Infrastructure Planning**, *U.S. Department of Energy (DOE)*, \$750,000, 2026–2027. **Role: PI (39%); Co-PIs: B. Balasubramanian, L. Wang, and S. Li.**
5. **Topic 16-B Phase I: Physics-Certified Agentic Decision Support for Near-Real-Time Control of Active Distribution Systems**, *U.S. Department of Energy (DOE)*, \$750,001, 2026–2027. **Role: Co-PI (30%); PI: L. Wang; Co-PIs: S. Li and B. Balasubramanian.**

TEACHING EXPERIENCES

- | | |
|--|-------------------------|
| 1. Instructor
Artificial Intelligence (Undergraduate & Graduate Courses; Including Online)
Department of Computer Science, The University of Alabama | Fall 2026 |
| 2. Instructor
Physics-Guided Machine Learning (Graduate Course)
Department of Computer Science, The University of Alabama | Spring 2026 |
| 3. Instructor
Principles of Data Mining (Graduate Course)
Department of Computer Science, University of Pittsburgh | Spring 2025 |
| 4. Instructor
Introduction to Data Science (Undergraduate Course)
Department of Computer Science, University of Pittsburgh | Fall 2024 |
| 5. Guest Teacher
Principles of Data Mining (Graduate Course)
Department of Computer Science, University of Pittsburgh | Spring 2024 |
| 6. Teaching Assistant
Machine Learning and Data Mining (Graduate Course)
School of Computer Science and Technology, USTC | Fall 2022 & Spring 2023 |
| 7. Teaching Assistant
Computer Science and Society (Undergraduate Course)
School of Computer Science and Technology, USTC | Fall 2020 & Spring 2021 |
| 8. Teaching Assistant
Database Systems and Applications (Undergraduate Course)
School of Computer Science and Technology, USTC | Spring 2017 |

MENTORED STUDENTS

Underlined names represent students I mentored in publishing their first first-author papers.

The University of Alabama:

- Graduate: Yilong Dai, Yiheng Chen, Tanvir Ahammad, Udbhav Srivastava
- Undergraduate: Riley Herchert

University of Pittsburgh:

- Graduate: Shiyuan Luo, Chonghao Qiu, Xiaoting Li, Yingda Fan, Yiming Sun
- Undergraduate: Mariia Sierova

University of Science and Technology of China:

- Graduate: Qixiang Shao, Yujie Chen, Xiang Xu, Xiaojie Li, Zhikang Mo, Yang Yu, Yuren Zhang

INVITED TALKS

1. “Advance Water Monitoring Using Machine Learning”, at the Environmental Data Initiative (EDI) Power Users Meeting, Sacramento, CA, USA, 2026.
2. “Geospatial Intelligence in Large Language Models”, in the OM-ST PhD Seminar, Department of Information Systems, Statistics, and Management Science, The University of Alabama, Tuscaloosa, AL, USA, 2026.
3. “Truth Without Comprehension: A BlueSky Agenda for Steering the Fourth Mathematical Crisis”, in the ICDM 2025 conference, Washington, DC, USA, 2025.
4. “What We Talk About When We Talk About AI for Science”, in the SDM 2025 conference, Alexandria, VA, USA, 2025.
5. “Adaptive Process-Guided Learning: An Application in Predicting Lake DO Concentrations”, in the KGML 2024 workshop, Minneapolis, MN, USA, 2024.
6. “Cognitive Evolutionary Search to Select Feature Interactions for Click-Through Rate Prediction”, in the KDD 2023 conference, Long Beach, CA, USA, 2023.
7. “XCrossNet: Feature Structure-Oriented Learning for Click-Through Rate Prediction”, in the PAKDD 2021 conference, Delhi, India, 2021.
8. “Negatively Correlated Search with Asymmetry for Real-Parameter Optimization Problems”, in the CCF AI 2019 conference, Xuzhou, China, 2019.

ACADEMIC AND DEPARTMENTAL SERVICES

Program Committee Member / Reviewer for selected conferences:

— AAAI 2027 (Main Conference & AI for Social Impact Track), KDD 2027 (AI4Sciences & Datasets and Benchmarks Tracks), NeurIPS 2026, ICML 2026, ACL ARR 2026, IJCAI 2026, KDD 2026 (AI4Sciences Track), AAAI 2026, WWW 2026, PAKDD 2026, AISTATS 2026, WWW 2025, AAAI 2025, IJCAI 2025, PAKDD 2025, ICML 2025, AISTATS 2025, ICLR 2025, NeurIPS 2024, ICLR 2024, ICML 2024, AAAI 2024, IJCAI 2024, NeurIPS 2023, ICML 2023, AAAI 2023, IJCAI 2023, NeurIPS 2022, ICML 2022, AAAI 2022, IJCAI 2022, AAAI 2021, IJCAI 2021, etc.

Reviewer for selected journals:

— IEEE Trans. Pattern Anal. Mach. Intell. (TPAMI), IEEE Trans. Knowl. Data Eng. (TKDE), IEEE Trans. Big Data, IEEE Trans. Syst. Man Cybern.: Syst., ACM Comput. Surv. (CSUR), ACM Trans. Knowl. Discov. Data (TKDD), ACM Trans. Recomm. Syst., Commun. ACM, Adv. Sci., etc.

Member, CS Curriculum Committee

2025–Present

Undergraduate Curriculum, Department of Computer Science, The University of Alabama