

# Lingxiao Wang

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## Research Areas:

My research involves *Robotics*, *Autonomous Systems*, and *Artificial Intelligence*. I focus on developing *intelligent decision-making models* to navigate/control robots and autonomous vehicles.

## Education:

- 2021: **Ph.D. in Electrical Engineering and Computer Science**,  
Embry-Riddle Aeronautical University, Daytona Beach, FL 32114.  
*Dissertation:* Robotic Olfactory-based Navigation with Mobile Robots.  
*GPA:* 4.0/4.0
- 2018: **M.S. in Electrical and Computer Engineering**,  
Embry-Riddle Aeronautical University, Daytona Beach, FL 32114.  
*GPA:* 4.0/4.0
- 2016: **B.S. in Telecommunication Engineering**,  
Civil Aviation University of China, Tianjin, China.  
*GPA:* 3.5/4.0

## Professional Experience:

- 2022 – : **Assistant Professor, Tenure-Track**,  
Dept. of Electrical Engineering,  
Louisiana Tech University, Ruston, LA 71272
- 2021 – 2022: **Visiting Assistant Professor**,  
Dept. of Electrical Engineering and Computer Science,  
Embry-Riddle Aeronautical University, Daytona Beach, FL 32114
- 2018 – 2021: **Graduate Teaching Assistant**,  
Dept. of Electrical Engineering and Computer Science,  
Embry-Riddle Aeronautical University, Daytona Beach, FL 32114

## Honors and Awards:

- 2024: **Research Enhancement Award**,  
Louisiana Space Grant Consortium
- 2023: **RED Travel Grant Award**,  
Louisiana Tech University
- 2020: **Outstanding Doctoral Student**,  
Embry-Riddle Aeronautical University
- 2017: **Outstanding Master Student**,  
Embry-Riddle Aeronautical University

## Research Grants (\$562,000 in total as 2025):

- [G1] **PI:** June 2024 – June 2027, “Advancing Embodied AI for Enhanced Robotic Odor Source Localization”, Louisiana Board of Regents, **\$108,000**.

- [G2] **PI:** August 2024 – August 2025, “Deep Learning-based Aerosol and Ocean Parameter Retrieval from Polarimeter and Lidar Data”, LaSPACE, **\$35,000**.
- [G3] **PI:** August 2024 – August 2025, “Predicting New Thermoset Shape Memory Polymers via Transformers and Graphic Neural Networks”, LAMDA Seed Grant, **\$40,000**.
- [G4] **PI:** Feb. 2025 – Jan. 2026, “CO<sub>2</sub> Monitoring via an Integrated Robotic and Sparse Sensor System”, NSF FUEL, **\$125,000**.
- [G5] **PI:** July 2025 – June 2026, “Empowering the Future Workforce of Electrical Engineering for Louisiana Energy Industry”, NSF FUEL, **\$100,000**.
- [G6] **PI:** July 2025 – June 2026, “Enhancing Control Systems Education through the Modernization of the Automatic Control Laboratory at Louisiana Tech University”, Louisiana Board of Regents, **\$70,000**.
- [G7] **PI:** July 2025 – June 2026, “Towards Efficient and Robust Embodied Decision-making in Autonomous Driving”, Louisiana Department of Transportation & Development, **\$40,000**.
- [G8] **PI:** July 2025 – June 2026, “Enhancing Data Retrieval for NASA’s Earth and Space Science Measurements using Deep Learning Methods”, LA NASA EPSCoR, **\$40,000**.
- [G9] **PI:** April 2025 – March 2026, “Empowering Students with Hands-on AI and Robotics to Foster an Entrepreneurial Mindset Through Innovative Learning Tools”, KEEN, **\$4,000**.

## **Publications:**

### **Articles in Peer-Reviewed Journals** (\*Corresponding Author)

- [J1] Xiyuan Liu, **Lingxiao Wang**, Jiahao Li, Khan Mahmud, and Shuo Pang\*. “Enhancing Wildfire Detection via Trend Estimation under Auto-Regression Errors.” *Mathematics* (**Q2**) 13 (7), 1046, 2025.
- [J2] Khan Raqib Mahmud, **Lingxiao Wang\***, Sunzid Hassan, and Zheng Zhang. “A Knowledge-Driven Framework for Robotic Odor Source Localization using Large Language Models” *Robotics and Autonomous Systems* (**Q1, IF: 4.3**), 2025.
- [J3] Sunzid Hassan, **Lingxiao Wang\***, and Khan Raqib Mahmud. “Integrating Vision and Olfaction via Multi-Modal LLM for Robotic Odor Source Localization.” *Sensors* (**Q2, IF: 3.4**), 2024.
- [J4] Sunzid Hassan, **Lingxiao Wang\***, and Khan Raqib Mahmud. "Robotic Odor Source Localization via Vision and Olfaction Fusion Navigation Algorithm." *Sensors* (**Q2, IF: 3.4**) 24, no. 7, 2309, 2024.
- [J5] **Lingxiao Wang\***, and Shuo Pang. “Autonomous Underwater Vehicle Based Chemical Plume Tracing via Deep Reinforcement Learning Methods.” *Journal of Marine Science and Engineering* (**Q2**) 11, no. 2, 366, 2023.
- [J6] **Lingxiao Wang**, and Shuo Pang\*. “Robotic Odor Source Localization via Adaptive Bio-Inspired Navigation using Fuzzy Inference Methods.” *Robotics and Autonomous Systems* (**Q1, IF: 4.3**) 147, 103914, 2022.
- [J7] Runlong Miao, **Lingxiao Wang**, and Shuo Pang\*. “Coordination of Distributed Unmanned Surface Vehicles via Model-Based Reinforcement Learning Methods.” *Applied Ocean Research* (**Q1, IF: 4.3**) 122, 103106, 2022.
- [J8] **Lingxiao Wang**, Shuo Pang\*, and Jinlong Li. “Olfactory-Based Navigation via Model-Based Reinforcement Learning and Fuzzy Inference Methods.” *IEEE Transactions on Fuzzy Systems* (**Q1, IF: 11.9**) 29, no. 10, 3014-3027, 2020.

## Articles in Peer-Reviewed Conferences

- [C1] **Lingxiao Wang**, Sunzid Hassan, and Khan Raqib Mahmud, “Semantic Odor Source Localization via Visual and Olfactory Integrated Navigation.” Accepted in *IEEE International Conference on AI, Robotics, and Control (AIRC)*, IEEE, 2025.
- [C2] **Lingxiao Wang**, Snorre Starnes, Sunzid Hassan, Alexander Isiani, Cheston Sturdivant, Hoang My Le, Khan Raqib Mahmud. “Deep Learning-based Aerosol and Ocean Data Retrieval from Satellite Polarimeter Measurements.” Accepted in *2025 IEEE SoutheastCon*, IEEE, 2025.
- [C3] Khan Raqib Mahmud, **Lingxiao Wang**, Jinyuan Chen, Xiyuan Liu, and Sunzid Hassan. “Comparative Analysis of Deep Learning Approaches for Predicting Thermomechanical Behavior of Shape Memory Polymers.” Accepted in *2025 IEEE SoutheastCon*, IEEE, 2025.
- [C4] Khan Raqib Mahmud, **Lingxiao Wang**, Xiyuan Liu, Jiahao Li, and Sunzid Hassan. “Deep Learning-based Wildfire Smoke Detection using Uncrewed Aircraft System Imagery.” In *21st International Conference on Ubiquitous Robots (UR)*, pp. 580-587. IEEE, 2024.
- [C5] Sunzid Hassan, **Lingxiao Wang**, and Khan Raqib Mahmud. “Multi-Modal Robotic Platform Development for Odor Source Localization.” In *7th IEEE International Conference on Robotic Computing (IRC)*, pp. 59-62. IEEE, 2023.
- [C6] **Lingxiao Wang**, and Shuo Pang. "Robotic Odor Source Localization via End-to-End Recurrent Deep Reinforcement Learning." In *7th IEEE International Conference on Robotic Computing (IRC)*, pp. 43-50. IEEE, 2023.
- [C7] **Lingxiao Wang**, Shuo Pang, Mantasha Noyela, Kevin Adkins, Lulu Sun, and Marwa El-Sayed. “Vision and Olfactory-Based Wildfire Monitoring with Uncrewed Aircraft Systems.” In *20th International Conference on Ubiquitous Robots (UR)*, pp. 716-723. IEEE, 2023.
- [C8] **Lingxiao Wang**, Ziyu Yin, and Shuo Pang. “Learn to Trace Odors: Robotic Odor Source Localization via Deep Learning Methods with Real-world Experiments.” In *IEEE SoutheastCon 2023*, pp. 524-531. IEEE, 2023.
- [C9] **Lingxiao Wang**, Shuo Pang, and Jinlong Li. “Learn to Trace Odors: Autonomous Odor Source Localization via Deep Learning Methods.” In *20th IEEE International Conference on Machine Learning and Applications (ICMLA)*, pp. 1429-1436. IEEE, 2021.
- [C10] **Lingxiao Wang**, and Shuo Pang. “An Implementation of the Adaptive Neuro-Fuzzy Inference System (ANFIS) for Odor Source Localization.” In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 4551-4558. IEEE, 2020.
- [C11] **Lingxiao Wang**, Shuo Pang, and Guangyu Xu. “3-Dimensional Hydrothermal Vent Localization based on Chemical Plume Tracing.” In *IEEE Global Oceans 2020: Singapore–US Gulf Coast*, pp. 1-7. IEEE, 2020.
- [C12] **Lingxiao Wang**, and Shuo Pang. “Chemical Plume Tracing using an AUV based on POMDP Source Mapping and A-star Path Planning.” In *OCEANS 2019 MTS/IEEE SEATTLE*, pp. 1-7. IEEE, 2019.
- [C13] **Lingxiao Wang**, and Shuo Pang. “AUV Navigation based on Inertial Navigation and Acoustic Positioning Systems.” In *OCEANS 2018 MTS/IEEE Charleston*, pp. 1-8. IEEE, 2018.

## Teaching Experiences:

Louisiana Tech University

2022 – Present

- **ELEN 471: Automatic Control Systems**

- This course centers on automatic control systems, including topics of system modeling, control system analysis, PID, and root locus controllers.
- Received **4/4** and **3.9/4** in teaching evaluation surveys in 2022 and 2023 academic years.
- **ELEN 472: Digital Control Systems**
  - This course focuses on digital control systems, including topics of z-transform, system stability test, controllability and observability, and digital controller designs.
  - Received **4/4** and **3.9/4** in teaching evaluation surveys in 2022 and 2023 academic years.
- **ELEN 451/CSC 557: Hands-on AI and Robotics**
  - This course introduces AI & Robotics fundamentals, including neural networks, supervised learning, reinforcement learning, Transformers, Large Language Models, etc.
  - This course incorporates a series of small-scale projects that allow students to implement the learned knowledge to solve actual problems.
  - Received **4/4** in teaching evaluation surveys in the 2023 academic year.

## **Embry-Riddle Aeronautical University**

2018 – 2022

- **EE 327: Electrical Engineering Fundamentals**
  - This is an introduction course of Electrical Engineering, covering topics in electrical circuits, Ohm's Law, and logic circuits.
  - Received positive teaching evaluation that surpasses the department average in 3 consecutive years.
- **CS 450: Senior Design Projects**
  - Instructed 50 senior students for senior design projects.
  - Provided technical guidance on student project designs, such as coding, robotic system development, and troubleshooting.

## **Services:**

### **Service to Profession**

- Manuscript Reviewer for Professional Journals:
  - Elsevier Expert Systems with Applications
  - Elsevier Building and Environment
  - MDPI Drones
  - SICE Journal of Control, Measurement, and System Integration
- Manuscript Reviewer for Peer-Reviewed Conferences:
  - International Conference on Robotics and Automation (ICRA) 2022, 2023, and 2024
  - IEEE International Conference on Machine Learning and Applications (ICMLA) 2021
  - IEEE International Conference on Ubiquitous Robot (UR 2021)
- Mail Reviewer for Federal Funding Agency Programs:
  - NASA Vermont EPSCoR Preproposal Review

### **Service to Academic Program**

- Faculty Search Committee:
  - Committee member in searching for Assistant Professor of Electrical Engineering in 2024-2025 academic year.
- Ph.D. Committee:
  - Committee Chair: Khan Mahmud, Sunzid Hassan.
  - Committee Member: Jiahao Li, Deepak Lama, Vivya Kalidindi, Ramon Mufutau, Yan Deng.

- Student Organizations:
  - Faculty Advisor: Louisiana Bulldog Robotic Club.
- Panel Talks:
  - CERAWeek 2025 - Future Use of Energy Louisiana (FUEL): Industry Driven R&D. Huston, US.