Yi, LIN

Ph.D., Associate Professor

College of Computer Science, Sichuan University

Chengdu, Sichuan, 610065, China

+86-13547903121

yilin@scu.edu.cn, yilin.scu@gmail.com

RESEARCH INTERESTS

- Machine Learning, Deep Learning
- Intelligent Transportation Systems
- Spatial-temporal Data Analysis
- Multi-media Information Processing

EDUCATION

09/2015-06/2019	**Ph.D.**, **Sichuan University**, Chengdu, China Computer Science (supervised by Prof. Jianwei ZHANG)
11/2017-11/2018	**Visiting Ph.D.**, **University of Wisconsin-Madison**, Madison, USA Transportation Engineering (supervised by Prof. Bin RAN)
09/2010-07/2013	**M. E.**, **Sichuan University**, Chengdu, China Mechanical Engineering (supervised by Prof. Dejun REN)
09/2006-07/2010	**B. E.**, **Harbin University of Science and Technology**, Harbin, China Mechanical Engineering

WORKING

06/2019-present	**Associate Professor**, **Sichuan University**, Chengdu, China Computer Science
07/2013-09/2015	**Software Engineer**, **Wisesoft Co. Ltd.**, Chengdu, China Air Traffic Control Systems

PROFESSIONAL ACTIVITIES

Reviewer

- IEEE Transactions on Cybernetics
- IEEE Transactions on Big Data
- Knowledge-based Systems
- Chinese Journal of Aeronautics
- Information Fusion
- Neurocomputing
- Neural Processing Letters
- Journal of Navigation
- IET Communication
- IET Intelligent Transport Systems
- IEEE Transactions on Industrial Informatics
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Aerospace and Electronic Systems
- IEEE Transactions on Circuits and Systems II: Express Briefs
- IEEE Intelligent Transportation Systems Magazine
- ACM Transactions on Intelligent Systems and Technology
- Transportation Research Part C: Emerging Technologies
- Computer and Speech Language
- Computational Intelligence and Neuroscience
- Aircraft Engineering and Aerospace Technology

- PeerJ Computer Science
- IEEE Access
- Aerospace
- Cybernetics and Systems
- Journal of Cloud Computing
- Optics Express
- Journal of Aerospace Information Systems
- Transactions of Nanjing University of Aeronautics and Astronautics
- Journal of Circuits, Systems, and Computers
- Chinese Journal of Electronics
- Mathematical Biosciences and Engineering
- Journal of Intelligent & Fuzzy Systems

Member

Senior Member, IEEE

Member, **CSAA**

Member of Executive Committee, **CCF Intelligent Transportation Chapter**

Board Member, **CICC Air Traffic Control/LLM and Decision-making Intelligence Section**

Editorship

- Associate Editor, ***Journal of Intelligent & Fuzzy Systems***
- Editorial member, ***Journal of Electronics and Information Technology*** (JEIT), ***Advanced Engineering Sciences*** (AES), and ***Journal Naval Aviation University***.
- Leading guest editor for special issue of ***Aerospace*** Journal: "Controlling Speech Understanding and Air Traffic Safety Enhancement Based on AI"

HONORS

01/2024 **Outstanding Youth Scientist, Sichuan University**

07/2023 **Scientific and Technological Progress of CSAA (2nd grade, 1/10)**

07/2023 **Outstanding Youth Scientist, CSAA**

12/2022 **Outstanding Editor Board Member, JEIT**

PROJECTS

01/2024-12/2027 **National Natural Science Foundation of China (NSFC), PI.,** Research on the multilingual speech recognition on small corpus towards complex real-time air traffic control environment.

01/2024-12/2027 **National Natural Science Foundation of China (NSFC), PI.,** Research on the speech understanding for air traffic control considering audio-visual acoustics and situational contexts towards complex task-oriented environment.

01/2024-12/2027 **National Natural Science Foundation of China (NSFC), Co-PI.,** Research on Situation Awareness and Decision-making Mechanism of Air Traffic Controllers in Remote Towers.

01/2020-12/2021 **Sichuan Scientific R&D Project, PI.,** The key techniques for the computer vision tasks.

01/2022-12/2024 **Key Laboratory of Flight Techniques and Flight Safety, CAAC, PI.,** Research on the risk detection based on spoken instruction understanding in air traffic control.

01/2020-12/2020 **Open Fund of Sichuan University, PI.,** Real-time traffic dynamic sensing from pilot-controller conversation using a deep learning approach.

01/2021-12/2024 **National Natural Science Foundation of China-Key project, Investigator,**

	Research on theory and method of collaborative safety monitoring of ATC based on machine learning in complex environment.
01/2019-12/2021	**National Natural Science Foundation of China, Investigator,** Research on key technologies of air traffic control safety monitoring based on deep learning.
11/2017-11/2018	**Research in TOPS lab**, **University of Wisconsin-Madison**, **Investigator**, Design and evaluation of Connected and Automated Vehicle & Highway systems

SELECTIVE PUBLICATIONS

**** Corresponding Author. More paper at** https://www.researchgate.net/profile/Yi-Lin-102.*

[1] Z. Zhang, D. Guo, S. Zhou, J. Zhang, **Y. Lin***, Flight trajectory prediction enabled by time-frequency wavelet transform. ***Nat. Commun***. **14**, 5258 (2023).

[2] **Y. Lin**, Q. Wang, X. Yu, Z. Zhang, D. Guo, J. Zhou, Towards Recognition for Radio-Echo Speech in Air Traffic Control: Dataset and a Contrastive Learning Approach. ***IEEE/ACM Trans. Audio, Speech, Lang. Process***. **31**, 3249–3262 (2023).

[3] **Y. Lin**, D. Guo, Y. Wu, L. Li, E. Q. Wu, W. Ge, Fuel consumption prediction for pre-departure flights using attention-based multi-modal fusion. ***Inf. Fusion***. **101**, 101983 (2024).

[4] **Y. Lin**, D. Guo, J. Zhang, Z. Chen, B. Yang, A Unified Framework for Multilingual Speech Recognition in Air Traffic Control Systems. ***IEEE Trans. Neural Networks Learn. Syst.*** **32**, 3608–3620 (2021).

[5] **Y. Lin**, L. Deng, Z. Chen, X. Wu, J. Zhang, B. Yang, A Real-Time ATC Safety Monitoring Framework Using a Deep Learning Approach. ***IEEE Trans. Intell. Transp. Syst.*** **21**, 4572–4581 (2020).

[6] **Y. Lin**, F. Fan, J. Zhang, J. Zhou, P. Liao, H. Chen, Z. Deng, Y. Zhang, DHI-GAN: Improving Dental-Based Human Identification Using Generative Adversarial Networks. ***IEEE Trans. Neural Networks Learn. Syst.***, **34**, 9700–9712 (2023).

[7] **Y. LIN**, M. RUAN, K. CAI, D. LI, Z. ZENG, F. LI, B. YANG, Identifying and managing risks of AI-driven operations: A case study of automatic speech recognition for improving air traffic safety. ***Chinese J. Aeronaut.*** **36**, 366–386 (2023).

[8] **Y. Lin**, L. Li, H. Jing, B. Ran, D. Sun, Automated traffic incident detection with a smaller dataset based on generative adversarial networks. ***Accid. Anal. Prev.*** **144**, 105628 (2020).

[9] D. Guo, E. Q. Wu, Y. Wu, J. Zhang, R. Law, **Y. Lin***, FlightBERT: Binary Encoding Representation for Flight Trajectory Prediction. ***IEEE Trans. Intell. Transp. Syst.*** **24**, 1828–1842 (2023).

[10] D. Guo, **Y. Lin***, X. You, Z. Yang, J. Zhou, B. Yang, J. Zhang, H. Shi, S. Hu, Z. Zhang, "M2ATS: A Real-world Multimodal Air Traffic Situation Benchmark Dataset and Beyond" in ***Proceedings of the 31st ACM International Conference on Multimedia***, pp. 213–221.

[11] D. Guo, Z. Zhang, **J. Zhang, Y. Lin***, "FlightBERT++: A Non-autoregressive Multi-Horizon Flight Trajectory Prediction Framework" in ***Proceedings of the 38th AAAI Conference on Artificial Intelligence***, pp. 127–134.

[12] Z. Yan, H. Yang, D. Guo, **Y. Lin***, Improving airport arrival flow prediction considering heterogeneous and dynamic network dependencies. ***Inf. Fusion***. **100**, 101924 (2023).

[13] Z. Yan, H. Yang, Y. Wu, **Y. Lin***, A multi-view attention-based spatial–temporal network for airport arrival flow prediction. ***Transp. Res. Part E Logist. Transp. Rev.*** **170**, 102997 (2023).

[14] **Y. Lin**, Y. Wu, D. Guo, P. Zhang, C. Yin, B. Yang, J. Zhang, A Deep Learning Framework of Autonomous Pilot Agent for Air Traffic Controller Training. ***IEEE Trans. Human-Machine Syst.*** **51**, 442–450 (2021).

[15] **Y. Lin**, J. Zhou, W. Ren, W. Zhang, Autonomous underwater robot for underwater image enhancement via multi-scale deformable convolution network with attention mechanism. ***Comput. Electron. Agric.*** **191**, 106497 (2021).

[16] **Y. Lin**, B. Yang, L. Li, D. Guo, J. Zhang, H. Chen, Y. Zhang, ATCSpeechNet: A multilingual end-to-end speech recognition framework for air traffic control systems. ***Appl. Soft Comput***. **112**, 107847 (2021).

[17] **Y. Lin**, Q. Li, D. Guo, J. Zhang, C. Zhang, Tensor completion-based trajectory imputation approach in air traffic control. ***Aerosp. Sci. Technol.*** **114**, 106754 (2021).

[18] **Y. Lin**, J. Zhang, H. Liu, Deep learning based short-term air traffic flow prediction considering temporal–spatial correlation. ***Aerosp. Sci. Technol.*** **93**, 105113 (2019).

[19] **Y. Lin**, Q. Li, B. Yang, Z. Yan, H. Tan, Z. Chen, Improving speech recognition models with small samples for air traffic control systems. ***Neurocomputing***. **445**, 287–297 (2021).

[20] J. Zhang, P. Zhang, D. Guo, Y. Zhou, Y. Wu, B. Yang, **Y. Lin***, Automatic repetition instruction generation for air traffic control training using multi-task learning with an improved copy network. ***Knowledge-Based Syst.*** **241**, 108232 (2022).

[21] D. Guo, Z. Zhang, B. Yang, J. Zhang, **Y. Lin***, Boosting Low-Resource Speech Recognition in Air Traffic Communication via Pretrained Feature Aggregation and Multi-Task Learning. ***IEEE Trans. Circuits Syst. II Express Briefs*****. 70**, 3714–3718 (2023).

[22] D. Liu, J. Zhou, X. Xie, Z. Lin, **Y. Lin***, Underwater image restoration via background light estimation and depth map optimization. ***Opt. Express*****. 30**, 29099 (2022).

[23] W. Ge, **Y. Lin***, Z. Wang, T. Yang, Multi-prior underwater image restoration method via adaptive transmission. ***Opt. Express*****. 30**, 24295 (2022).

[24] J. Zhou, X. Wei, J. Shi, W. Chu, **Y. Lin***, Underwater image enhancement via two-level wavelet decomposition maximum brightness color restoration and edge refinement histogram stretching. ***Opt. Express*****. 30**, 17290 (2022).

[25] D. Guo, J. Zhang, B. Yang, **Y. Lin***, A Comparative Study of Speaker Role Identification in Air Traffic Communication Using Deep Learning Approaches. ***ACM Trans. Asian Low-Resource Lang. Inf. Process***. **22**, 1–17 (2023).

[26] **Y. Lin**, J. Zhang, B. Yang, H. Liu, L. Zhao, An optimal routing strategy for transport networks with minimal transmission cost and high network capacity. ***Phys. A Stat. Mech. its Appl.*** **521**, 551–561 (2019).

PATENTS

1. **Yi Lin**, Jianwei Zhang, METHOD AND DEVICE FOR FLIGHT PATH PLANNING CONSIDERING BOTH THE FLIGHT TRAJECTORY AND THE VISUAL IMAGES FROM AIR TRAFFIC CONTROL SYSTEMS FOR AIR TRAFFIC CONTROLLERS, US 11,710,412 B1, US Patent, 2023-07-25.

2. **Yi Lin**, Bo Yang, Jianwei Zhang, A speech recognition method and device for small samples in the ATC domain. (Chinese, 202010663698.0)
3. **Yi Lin**, Bo Yang, Jianwei Zhang, A multilingual speech recognition method and device in the ATC domain with a complete end-to-end mechanism. (Chinese, 202011147669.5)
4. **Yi Lin**, Tingting Zhang, A speech recognition method and device air traffic controls based on the contrastive learning mechanism. (Chinese, 202210565712.2)
5. **Yi Lin**, Haifeng Liu, Yuankai Wu, Bo Yang, An aircraft path planning method in terminal area fusing flight data and radar image. (Chinese, 202211163730.4)
6. **Yi Lin**, Jinhen Li, Bo Yang, A text-to-speech method and device for the training scene of air traffic controllers. (Chinese, 202211146535.0)
7. Zichen Zhang, **Yi Lin**, Jianwei Zhang, A speech recognition method for air traffic control based on pretrained models and multi-task learning. (Chinese, 202211118845.1)
8. Dongyue Guo, **Yi Lin**, Bo Yang, Jianwei Zhang, A method for the speaker role identification in air traffic control. (Chinese, 202110269569.8).
9. Bo Yang, Xiaohui Wang, Guoyi Liu, Bing Wang, **Yi Lin**, Xiping Wu, A method and device for enhancing situational awareness of the air-ground communication (Chinese, 201911296392.X)
10. Bo Yang, Xianlong Tan, Xiaohui Wang, Bing Wang, **Yi Lin**, Xiping Wu, An ATC instruction issuing system and method based on speech recognition and text-to-speech synthesis (Chinese, 201911296327.7)

SOCIAL LINKS

GitHub homepage: https://sculyi.github.io/

ResearchGate: https://www.researchgate.net/profile/Yi-Lin-102

Google Scholar: https://scholar.google.com/citations?hl=zh-CN&user=7RapKRUAAAAJ

ORCID: https://orcid.org/0000-0002-7194-5023

Publons: https://publons.com/researcher/4110451/yi-lin/