

Zhengyi Wang

Education

- 2019–present **PhD candidate (Supervised by Daniel Delahaye, Jean-Loup Farges, Sameer Alam), Ecole Nationale de l'Aviation Civile, Toulouse, France.**
- 2017–2018 **MS. Operational Research, Ecole Nationale de l'Aviation Civile, Toulouse, France.**
GPA:15.6/20 Rank: 5/40
- 2017–2018 **Exchange program with ENAC engineer SITA (Information System of Air Transport), minoring in Artificial Intelligence, Ecole Nationale de l'Aviation Civile, Toulouse, France.**
- 2016–2019 **MS. Aviation Engineering, minoring in ATM & Airport Operation, Sino-european Institute of Aviation Engineering, Civil Aviation University of China, Tianjin, China.**
Average rank: 4/57 Merit-based scholarship: first class
- 2012–2016 **BS. Aircraft Propulsion Engineering, Sino-european Institute of Aviation Engineering, Civil Aviation University of China, Tianjin, China.**
Average rank: 5/110 Merit-based scholarship: first class

Publications

Journal Publications

- [1] **Zhengyi Wang***, Daniel Delahaye, Jean-Loup Farges, and Sameer Alam. Complexity optimal air traffic assignment for multi-layer transport network in urban air mobility operations. *Transportation Research Part C: Emerging Technologies*, under review, 2021.
- [2] **Zhengyi Wang***, Daniel Delahaye, Jean-Loup Farges, and Sameer Alam. Air traffic assignment for intensive urban air mobility operations. *Journal of Aerospace Information Systems*, 18(11):860–875, 2021.
- [3] **Zhengyi Wang***, Man Liang, and Daniel Delahaye. Automated data-driven prediction on aircraft estimated time of arrival. *Journal of Air Transport Management*, 88:101840, 2020.
- [4] **Zhengyi Wang***, Man Liang, and Daniel Delahaye. A hybrid machine learning model for short-term estimated time of arrival prediction in terminal manoeuvring area. *Transportation Research Part C: Emerging Technologies*, 95:280–294, 2018.
- [5] Wei Gao and **Zhengyi Wang***. Short-term airport traffic flow prediction based on lstm recurrent neural network. *Journal of Aeronautics, Astronautics and Aviation*, 49(4):299–307, 2017.

Conference Publications

- [6] **Zhengyi Wang**, Daniel Delahaye, Jean-Loup Farges, and Sameer Alam. Adaptive structuring of unmanned traffic: A utm concept-complexity-optimal traffic assignment for future urban airspace (poster). In *JDD 2021, Journées des doctorants ONERA*, 2021.
- [7] Imen Dhief, **Zhengyi Wang**, Man Liang, Sameer Alam, Michael Schultz, and Daniel Delahaye. Predicting aircraft landing time in extended-tma using machine learning methods. In *ICRAT 2020, 9th International Conference for Research in Air Transportation*, 2020.
- [8] **Zhengyi Wang**, Man Liang, and Daniel Delahaye. Data-driven conflict detection enhancement in 3d airspace with machine learning. In *2020 International Conference on Artificial Intelligence and Data Analytics for Air Transportation (AIDA-AT)*, pages 1–9. IEEE, 2020.
- [9] **Zhengyi Wang**, Man Liang, and Daniel Delahaye. Learning real trajectory data to enhance conflict detection accuracy in closest point of approach problem. In *ATM 2019, Thirteenth USA/Europe Air Traffic Management Research and Development Seminar*, 2019.
- [10] **Zhengyi Wang**, Man Liang, and Daniel Delahaye. Data-driven conflict detection enhancement with machine learning (poster). In *SID 2019, 9th SESAR Innovation Days*, 2019.
- [11] **Zhengyi Wang**, Man Liang, and Daniel Delahaye. Automated data-driven prediction on aircraft estimated time of arrival. In *SID 2018, 8th SESAR Innovation Days*, 2018.
- [12] **Zhengyi Wang**, Man Liang, and Daniel Delahaye. Short-term 4d trajectory prediction using machine learning methods. In *SID 2017, 7th SESAR Innovation Days*, 2017.

Thesis

- [13] **Zhengyi Wang**. *4D Aircraft Trajectory Prediction Based on Data Analysis and Ensemble Learning*. Master's thesis, Sino-european Institute of Aviation Engineering, Civil Aviation University of China, 2018.
- [14] **Zhengyi Wang**. *Aircraft Trajectory Prediction Based on Historical Flight Path*. Bachelor's thesis, Sino-european Institute of Aviation Engineering, Civil Aviation University of China, 2016.

*Corresponding author

Professional Experience

Internship

- 2018 **PFE internship (6 months): Automated data-driven prediction on estimated time of arrival**, *Optim lab*, ENAC.
Developing an automated and robust 4D trajectory prediction model based on data analysis, deep feedforward neural networks and ensemble learning. Supervisor: Daniel Delahaye
- 2017 **Technical internship (2 months): 4D trajectory prediction based on machine learning**, *MA-IAA lab*, ENAC.
Predicting ETA of flights in TMA by a novel hybrid model, consisting of clustering-based preprocessing part and NN-based prediction part. Supervisor: Daniel Delahaye

Research Project

- 2019-2022 **Adaptive structuring of unmanned traffic: A UTM concept**, *Funded by research project CON-CORDE of the Defense Innovation Agency (AID) of the French Ministry of Defense (2019650090004707501)*.
Propose solutions for automatically organizing large-scale drone traffic that maximizes the use of airspace while respecting the constraints of civil air traffic.
- 2019-2020 **Data-driven conflict detection enhancement for en-route operations**, *Optim group*, ENAC.
Determine the distance and time of closest approach between flights in the en-route phase in order to assist mid-term conflict detection with the lookahead time of 5-20 minutes.
- 2017-2019 **4D trajectory prediction with machine learning models**, *Optim group*, ENAC.
Improve the operational efficiency and the predictability of air traffic by short-term 4D trajectory prediction in terminal manoeuvring area by application of machine learning methods.
- 2019 **Separation standard assessment of C919**, *ATM Operation Planning and Safety Techniques Key Lab of Tianjin*, CAUC.
Assess the current horizontal, vertical separation of aircraft type C919 based on the collision risk.
- 2018 **Short-term air traffic flow prediction on XXIA airport**, *ATM Operation Planning and Safety Techniques Key Lab of Tianjin*, CAUC.
Predict the hourly departure/arrival throughput of XXIA airport by deep learning approaches.
- 2016-2017 **ZBNY airport capacity assessment (2016-2017)**, *ATM Operation Planning and Safety Techniques Key Lab of Tianjin*, CAUC.
Assess the departure/arrival single runway capacity for ZBNY airport before closure.
- 2016-2017 **Airborne data link communication simulation software development**, *CNS/ATM Research Institute*, CAUC.
Participated in XML logic programming and technical report writing.
- 2015-2016 **Visualization and implementation of aircraft trajectory prediction (2015-2016)**, *Intelligent Signal and Image Processing Key Lab of Tianjin*, CAUC.
Implemented an anisotropic adaptive sampling algorithm and a HMI for 3D trajectory prediction.

Peer Review

Transportation research part C
Sustainable cities and society
Journal of air transport management
Journal of air transportation
International journal of astronautics and aeronautical engineering
Journal of intelligent systems
Journal of physics: conference series (JPCS)

Skills

Language

| | | |
|---------|----------|------------------------------|
| Chinese | Native | |
| English | Advanced | <i>TOEIC (2018): 895/990</i> |
| French | Advanced | <i>DELFB2 (2016): Passed</i> |

Programming

| | |
|--------------|---|
| Advanced | Python, Matlab, Java, L ^A T _E X |
| Intermediate | C/C++, HTML/CSS |
| Basic | R, SQL, oCaml, Lisp, Prolog |