PENGLI ZHAO

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RESEARCH INTERESTS

Arrival Management, Air traffic Simulation, Trajectory analysis and Airport Operation.

EDUCATION

Nanjing University of Aeronautics and Astronautics, Nanjing *September 2017 - Present*
M.S. Candidate, Air traffic control automation and intelligence, College of Civil Aviation
Research focus: Arrival Sequencing and scheduling.
Advisor: Prof. Junfeng Zhang

Nanjing University of Aeronautics and Astronautics, Nanjing *September 2013 - June 2017*
B.S in Engineering, Air Traffic Management, College of Civil Aviation

PROJECT EXPERIENCE

DST for AMAN under CDO *December 2017 - July 2019*
Collaboration with Boeing (China) Research and Technology and COMAC

This project was aiming to develop a decision support tool for ANAN under Continue Descent Operation (CDO). It could receive real-time data from radar simulator and make real time sequencing and scheduling. My work focus on function and Human Interface development.

- Developed sequencing and scheduling function, go-around function.
- Developed insight and vivid Human Machine Interface.
  - Display the sequencing information and Aircraft position in real-time.
  - Proposed indicators of terminal status and visualized them with charts.
- Experimented on AMAN to verify the functions.

AMAN Performance Evaluation *December 2017 - November 2019*
Collaboration with Central South Air Traffic Management Bureau, CAAC

This project was aiming to analysis historical radar data to evaluate the potential improvement after using AMAN in Changsha. My work focus on radar data decoding and visualization.
- Studied the CAT062 (SDPS Track Messages) specification
- Developed a tool to parser data automatically.
- Developed a tool to replay the trajectory data for analysis.

PMS (Point Merge System) Flight Procedure Evaluation *May 2019 - November 2019*
Collaboration with Airspace Management Center, ATMB, CAAC

This project was aiming to use radar simulator to evaluate a flight procedure designed for PMS in ZSPD. My work focus on trajectory data decoding and Vilification.
- Captured the ADS-B data from OpenSky Database to find the PMS operation in Europe;
- Decoded the Radar Data in order to compare the operation performance and simulation results.
- Learned two ways to query the database(SQL query and Python API).

RESEARCH EXPERIENCE

Criteria selection and multi-objective optimization for ALP
July 2018 - July 2019

- Criteria selection, reduction and model development of Multi-Objective Optimization.
- Algorithm design to solve the problem.
- Demonstration about the relationship between arrival flight tightness and computation time

Multi-objective optimization under CDO
March 2019 - July 2019

- Modeling based on the KPIs of terminal operation under CDO context.
- Experimented use public data and real case.

Composite Dispatching Rule-Based Method for Multi-Objective ALP
January 2018 - September 2018

- Adopted two stage methods for sequencing and scheduling
  - First, using composite dispatching rule (CDR) to decide the sequence.
  - Then using CPLEX to calculate to scheduled time of arrival.

Sequencing of arrival and departure flights on parallel runways
March 2017 - June 2017

- Algorithm based on Tabu search is implemented on single and parallel runways with arrival and departure flights.

PUBLICATIONS

Zhang, Junfeng,**Pengli Zhao**, Yu Zhang, Ximei Dai, and Dong Sui. "Criteria selection and multi-objective optimization of aircraft landing problem." Journal of Air Transport Management 82 (2020): 101734.

Zhao, Pengli, Junfeng Zhang,Songwei Liu,Dong Sui and Rong Hu. "Scheduling Landing Aircraft with Multiple Objectives under Continuous Descent Operation" In TRB 2020(Poster Presentation)

Zhao, Pengli, Junfeng Zhang, and Lubao You. "A Composite Dispatching Rule-Based Method for Multi-Objective Aircraft Landing Problem." In CICTP 2019, pp. 4902-4913. 2019.

Zhang, Junfeng, Zhixiang Zheng, **Pengli Zhao**, and Rong Hu. "Multi-objective integrated arrival departure aircraft sequencing under the influence of sequential flights." In 2018 Integrated Communications, Navigation, Surveillance Conference (ICNS), pp. 3B3-1. IEEE, 2018.

SKILLS

Programming Language	C++;MATLAB;Python
Tools	Qt;Git;Google Earth;LaTeX;
Opearating System	Windows;Linux

LANGUAGE

Chinese & **English**
TOEFL 93 (R28 \ L23 \ S20 \ R22)
GRE V142 \Q168 \AW3.0

FELLOWSHIPS & AWARDS

Foundation of Graduate Innovation Center in NUAA *2019*
Third-class Scholarship for Graduate Freshmen *2017*

COURSE TAKEN

Flight Procedure Design, Air Navigation Study, Human Factors, Aeronautical Meteorology, etc.
Mathematical Optimization Modeling, Operations Research, etc.

PERSONAL TRAITS

Highly Motivated and eager to learn new thing
Strong determination and enforcement
A stable personality and high sense of responsibility