# Lufan Yang

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## Education

**Zhejiang Univerisity** MSc in Navigation, Guidance and Control Sep.2020 - present

- Advisor: Prof. Zheng Chen
- Topic: Optimal Control, Path Optimization, Machine Learning, Assignment Problem

**Dalian Univerisity of Technology** BSc in Aeronautical and Astronautical Sep.2016 - Jun.2020

- GPA: **87.73/100 (ranking: 5/50)**

## Publication

Yang, L., Chen, Z. "Dynamic Weapon-Target Assignment for Active Protection of Aircraft", Proceedings of 2021 5th Chinese Conference on Swarm Intelligence and Cooperative Control, 2022, pp 1214–1224.

Yang, L., Chen, Z.2023. "Online Nonlinear Optimal Guidance for UAV Cooperative Active Defense", CN Pattern Application ZL-2023-1-05382, filed November 2023. Patent Pending.

## Research Experience

**Research on Cooperative Missile-Aircraft Active Defense Strategies** 2021.06-2023.05

Department of Aeronautics & Astronautics, Zhejiang Univerisity Advisor: Prof. Zheng Chen

In short: ML improved nonlinear optimal guidance & assignment for UAV

- Improving Hungarian Algorithms with Random Forest: using random forest to fit the mapping from flight states to the designed indicator so that the computation time for the corresponding dynamic weapon-target assignment problem is saved(from 40s to 0.5s)
- Proposed a neural network-based online guidance method for UAV: Based on the Pontryagin maximum principle, a parametric system is constructed to build a dataset of optimal trajectories by traversing the covariate states. Based on the obtained dataset, a neural network is trained to fit the flight state and optimal guidance command mapping.
- Proposed a neural network-based online guidance algorithm for UAV active defense: using neural network to fit the nonlinear cooperative guidance command and the flight states.

**Survey of the Online Adaptive Technology for the Asent Phase of Space Aircraft** 2019.10-2020.06

Department of Aeronautics & Astronautics, Dalian Univerisity of Technology Advisor: Prof. Kai Liu

In short: Iterative Guidance, Sequential Convex Optimization

- Developing a Newton iteration-based method to calculate a feasible guidance law and engine shutdown time as an initial guess for convex optimization.
- Developing a sequential convex optimization based guidance algorithm to generate guidance command for ascent rockets.

## Industrial Experience

**CyberServal** **NLP Algorithm intern** 2022.04-2022.06

Keyword: text similarity, anomaly detection

- Implemented different preprocessing and text similarity calculation methods (simHash, word2vec, etc).
- Implemented different clustering algorithms(DBSCAN, CFTree, etc) based on the calculated similarity. Results showed that CFTree is most suitable for these massive URLs.

**Didi Chuxing** **Data Analysis Intern** 2021.09-2021.11

- Using SQL for Data Retrieval to Support Business Operations & Tabular Analysis of Business Requirements

## Selected Hornors and Awards

- **China National Scholarship（2/364）** 2017.10
- Outstanding Grauduates of Dalian （10%） 2020.06

## Skills

- Programming: Python(Advanced), Matlab(Advanced), C++(Intermediate), R(Intermediate)
- Tools: Pytorch, Numpy, Pandas, Git
- Proficient English - TOEFL: 106(S:23, W:23, R:30, L:30)