

Better modelling of aircraft taxi movements

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Explanation of the problem

- There are delays during the aircraft taxiing due to the inefficient way that the taxiways are operated.
- Taxiing can contribute on considerable fuel consumption which is a huge expenditure for airlines.
- Aircraft taxiing contributes in many environmental problems.
- Automated routing of the aircraft can improve taxiing efficiency, but this requires accurate computational modelling of taxi speeds and time.

Preliminary results

- Existing data set has 10222 aircraft movements
- 34 features including taxi distance, turns, airline, weather, and statistics related to other aircraft
- Data cleaning reduced this to 8000 movements
- 25 most important features were identified
- Preliminary runs found an accuracy of around 73%

Project aim and challenges

- Prediction of aircraft taxi time in Manchester's airport
- Use of advanced machine learning techniques to model taxi time
- Find the algorithm that best models the data
- Provide suitable visualisation

Machine Learning Techniques that were used

- Multiple Linear Regression
- Polynomial Regression
- Neural Networks
- Decision Trees
- Gaussian Processes



Cross industry standard process for data mining

