Pilot Success

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Background

The Leadership In Flight Training (LIFT) Academy offers pilot training programs including a direct classroom-to-cockpit opportunity. Working with Republic Airlines, LIFT Academy training has the potential to advance to Captain. The programs are tailored around each student's schedule.

"Without the pilot, there is no flying from one place to another."

- Lailah Gifty Akita.

Prediction and Goal

Using real data from Lift Academy to determine a student's flight hours based on days spent within the course. This will be used to predict time requirements for new students and cost per student for the company. In the future, additional information can be added to this to determine how much time it will take a multicourse student to complete all necessary training to become a trainer or move to domestic/national flight captain.

Prospects

In the future, exact monetary amounts per class can be added to better see the financial side of student commitment. In addition, more data can be compiled and added to the machine learning model to determine time dedication needed to fulfill the contract with Republic Airlines plus instructors needed to keep onboard at LIFT Academy.

Data and Cleaning

Start	Start with Graduate Roster
Add	Add columns: Course Count, Start Month, Target Hours, Target Days
Calculate	Calculate: Variance Hours, Variance Days
Initiate	Initiate machine learning

Machine Learning

Supervised Multiple Linear Regression

Features: Course Short Name, Start Month, Course Flight Hours, E2E Course Days Course Count

Target: Course Flight Hours

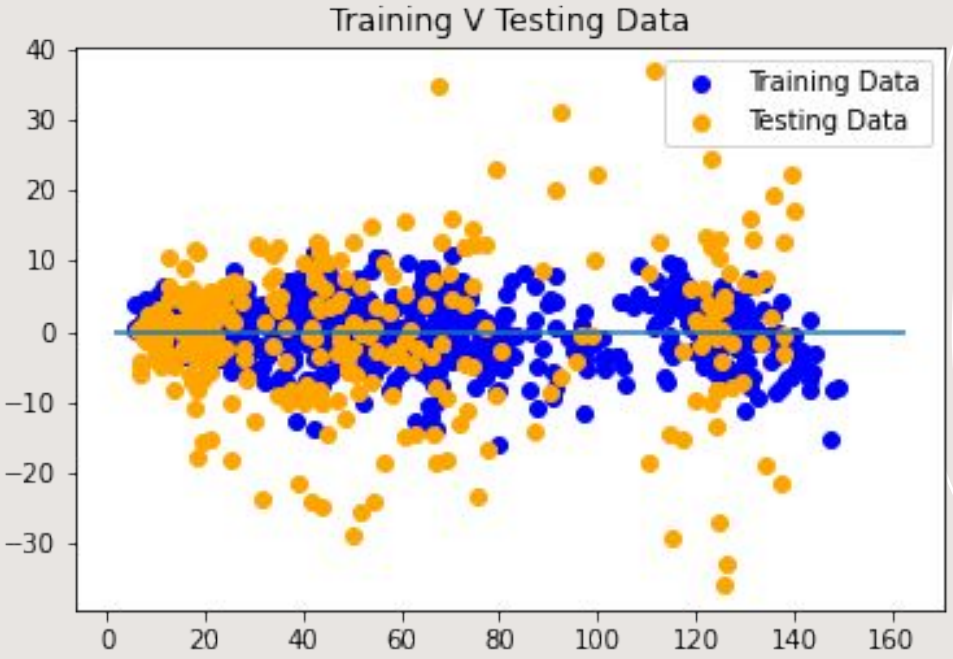
```
R2 Score: 0.9362763862935184
```

```
Root squared error (RMSE): 10.200794868173553
R-squared (R2): 0.9378150570515862
```

```
Model: LinearRegression
Train score: 0.37754311326632894
Test Score: 0.393088628486681

Model: KNeighborsRegressor
Train score: 0.8973797887059363
Test Score: 0.8141407807723654

Model: RandomForestRegressor
Train score: 0.9918421999092254
Test Score: 0.9380789518204734

Model: ExtraTreesRegressor
Train score: 0.9996304252378392
Test Score: 0.9329821578894522

Model: AdaBoostRegressor
Train score: 0.9348810088394996
Test Score: 0.9270588238161119

Model: SVR
Train score: 0.3770994547134604
Test Score: 0.3869759059667911
```

Machine Learning

Despite great R2 score on Linear Regression Model, get dummies lead to errors and different models were assessed to determine the best course of action.



Random Forest Regressor Model

The model is successful and can reasonably predict how profitable a student can be within a class.

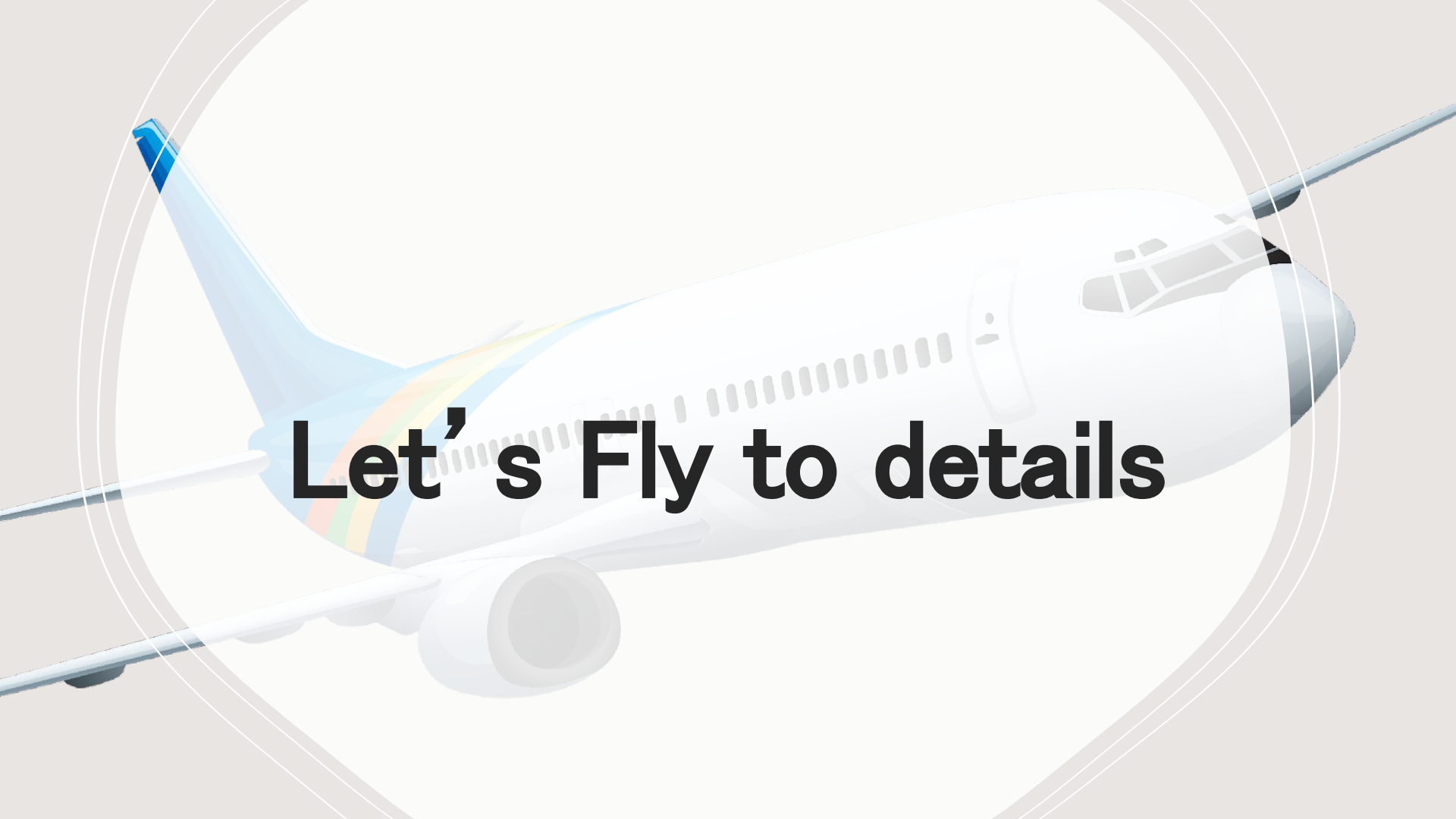
```
Root squared error (RMSE): 10.150098290767463
R-squared (R2): 0.9384316227026981
```

Code

Libraries Used

- Pandas
- numpy
- pickle
- HTML
- flask
- Matplotlib
- sklearn
- javascript
- CSS
- json

https://github.com/JakeRose689/Pilot-Success


Let’s Fly to details