File - C:\Users\geoff\Desktop\FlyOx Concept\Python\API\aircrafttypeAPI.py

```
1
2  # coding: utf-8
3
4  __author__ = 'Geoffrey Nyaga'
5
6  import sys
7  sys.path.append('../')
8  from API.db_API import write_to_db, read_from_db
9
10 import numpy as np
11 from sklearn import tree
12 import pandas as pd
13 import random
14
15 # In[5]:
16
17 def aircraft_type(number_of_aircraft,mydict):
18
19     finaldp = []
20
21     LSA = number_of_aircraft
22
23     def dpLSA():
24         grossweight = random.randint(400,1430)
25         emptyweight = random.randint(200,880)
26         wingarea = random.randint(75,160)
27         wingspan = random.randint(17,35)
28         row = [grossweight,emptyweight,wingarea,wingspan,0]
29         return row
30
31     for x in range(LSA):
32         temp = dpLSA()
33         finaldp.append(temp,)
34
35     sailplanes = number_of_aircraft
36
37     def dpSailplanes():
38         grossweight = random.randint(280,1700)
39         emptyweight = random.randint(100,1100)
40         wingarea = random.randint(120,150)
41         wingspan = random.randint(35,101)
42         row = [grossweight,emptyweight,wingarea,wingspan,1]
43         return row
44
45     for x in range(sailplanes):
46         temp = dpSailplanes()
47         finaldp.append(temp,)
48
49     GA = number_of_aircraft
50
51     def dpGA():
52         grossweight = random.randint(1500,12500)
53         emptyweight = random.randint(800,3000)
54         wingarea = random.randint(150,400)
55         wingspan = random.randint(30,45)
56         row = [grossweight,emptyweight,wingarea,wingspan,2]
57         return row
58
59     for x in range(GA):
60         temp = dpGA()
61         finaldp.append(temp,)
62
63     # In[10]:
64     mydata = finaldp
65
66     # print(finaldp,"finaldp")
67     df = pd.DataFrame(mydata, columns = ["grossweight","emptyweight","wingarea","wingspan","target"])
68     #training data
69     train_target = np.array(df.target)
70     # print(train_target, "train_target")
71     # print(train_target)
72     c = np.array(finaldp)
73     train_data = np.delete(c,[4], axis =1 )
74     # print(train_data,"train_data")
75     clf = tree.DecisionTreeClassifier()
76     clf = clf.fit(train_data,train_target)
77     prediction = clf.predict([mydict])
```

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```
78      # prediction = prediction[0]
79      # print(prediction,"prediction")
80      return prediction[0]
81
82
```