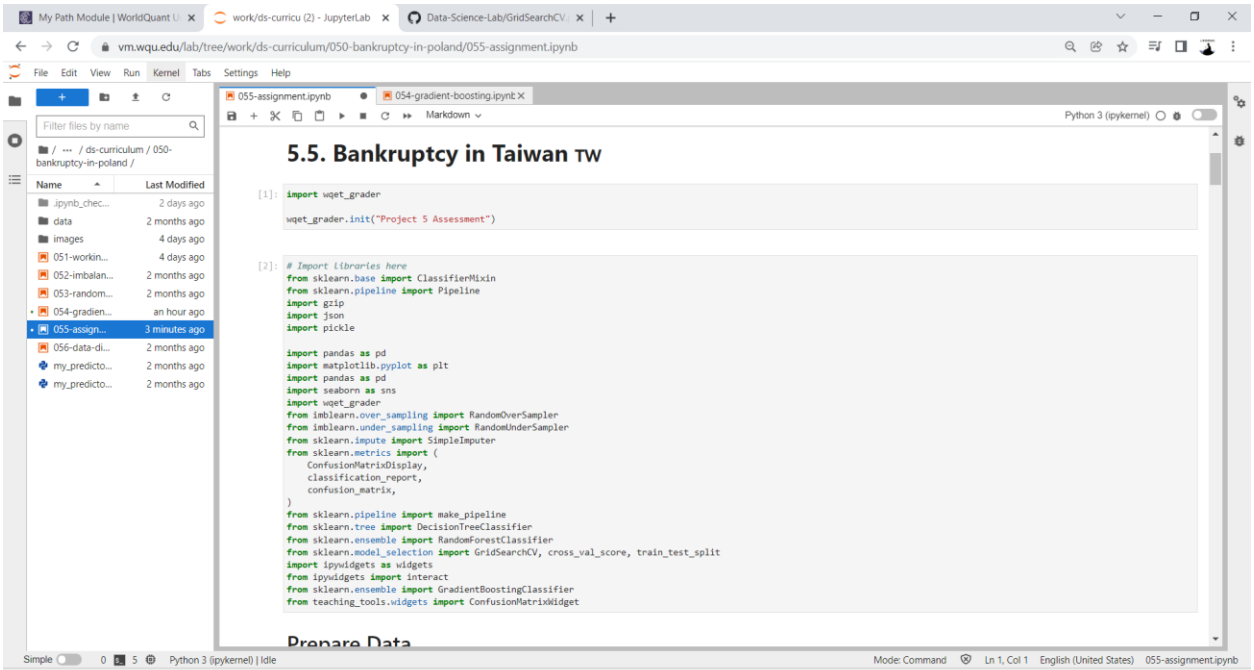
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5.5. Bankruptcy in Taiwan TW
[1]:
import wqet_grader
wqet_grader.init("Project 5 Assessment")
[2]:
# Import libraries here
from sklearn.base import ClassifierMixin
from sklearn.pipeline import Pipeline
import gzip
import json
import pickle
import pandas as pd
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
import wqet_grader
from imblearn.over_sampling import RandomOverSampler
from imblearn.under_sampling import RandomUnderSampler
from sklearn.impute import SimpleImputer
from sklearn.metrics import (
ConfusionMatrixDisplay,
classification_report,
confusion_matrix,
)
from sklearn.pipeline import make_pipeline
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import GridSearchCV, cross_val_score, train_test_split
import ipywidgets as widgets
from ipywidgets import interact
from sklearn.ensemble import GradientBoostingClassifier
from teaching_tools.widgets import ConfusionMatrixWidget
Prepare Data
Simple 0 5 Python 3 (ipykernel) | Idle
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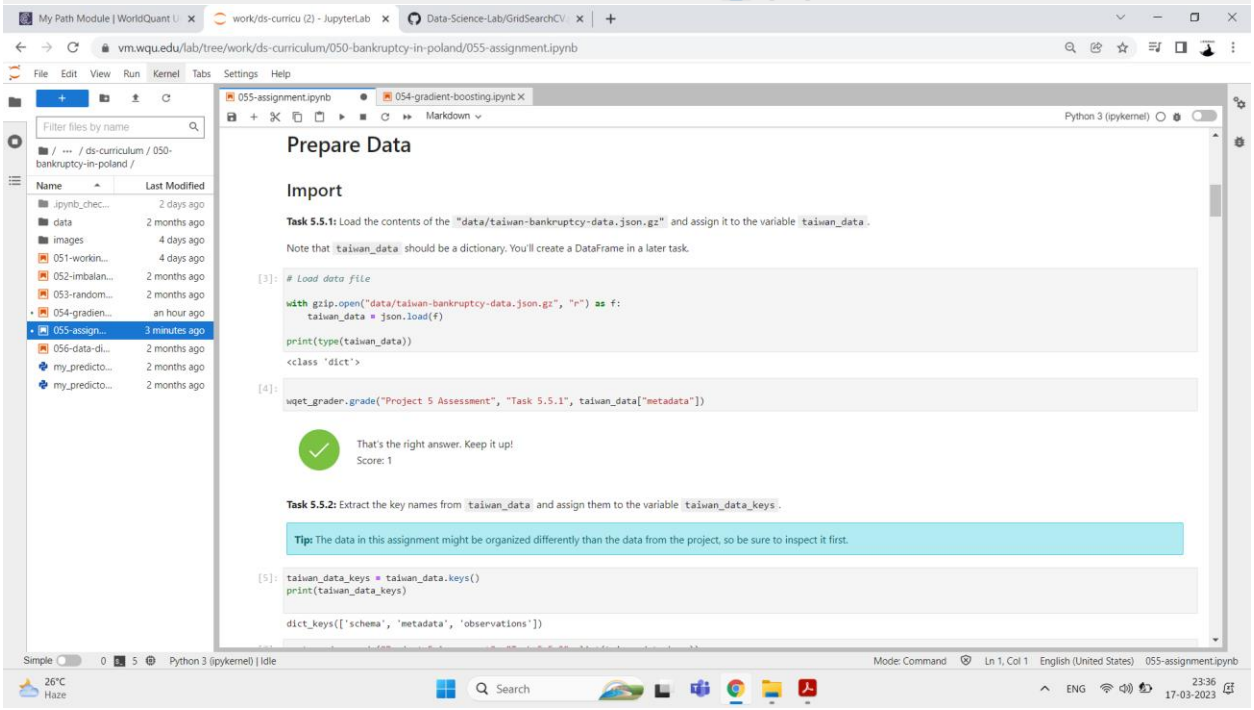
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Prepare Data
Import
Task 5.5.1: Load the contents of the "data/taiwan-bankruptcy-data.json.gz" and assign it to the variable taiwan_data.
Note that taiwan_data should be a dictionary. You'll create a DataFrame in a later task.
[3]:
Load data file
with gzip.open("data/taiwan-bankruptcy-data.json.gz", "r") as f:
taiwan_data = json.load(f)
print(type(taiwan_data))
<class 'dict'>
[4]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.1", taiwan_data["metadata"])
That's the right answer. Keep it up!
Score: 1
Task 5.5.2: Extract the key names from taiwan_data and assign them to the variable taiwan_data_keys.
Tip: The data in this assignment might be organized differently than the data from the project, so be sure to inspect it first.
[5]:
taiwan_data_keys = taiwan_data.keys()
print(taiwan_data_keys)
dict_keys(['schema', 'metadata', 'observations'])
Simple 0 5 Python 3 (ipykernel) | Idle
Mode: Command Ln 1, Col 1 English (United States) 055-assignment.ipynb
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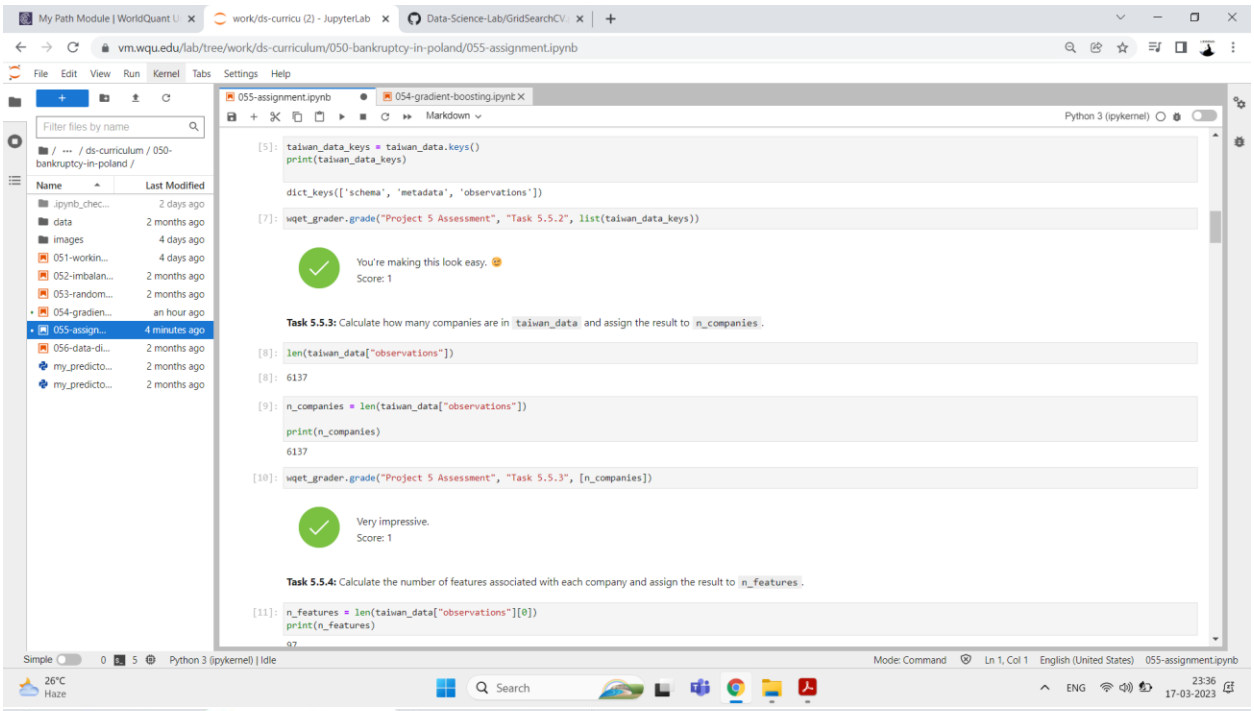
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Python 3 (ipykernel)
Filter files by name
/ ds-curriculum / 050-bankruptcy-in-poland /
Name
Last Modified
taiwan_data_keys = taiwan_data.keys()
print(taiwan_data_keys)
dict_keys(['schema', 'metadata', 'observations'])
wget_grader.grade("Project 5 Assessment", "Task 5.5.2", list(taiwan_data_keys))
You're making this look easy.
Score: 1
Task 5.5.3: Calculate how many companies are in taiwan_data and assign the result to n_companies.
len(taiwan_data["observations"])
6137
n_companies = len(taiwan_data["observations"])
print(n_companies)
6137
wget_grader.grade("Project 5 Assessment", "Task 5.5.3", [n_companies])
Very impressive.
Score: 1
Task 5.5.4: Calculate the number of features associated with each company and assign the result to n_features.
n_features = len(taiwan_data["observations"][0])
print(n_features)
97
Simple
Python 3 (ipykernel) | Idle
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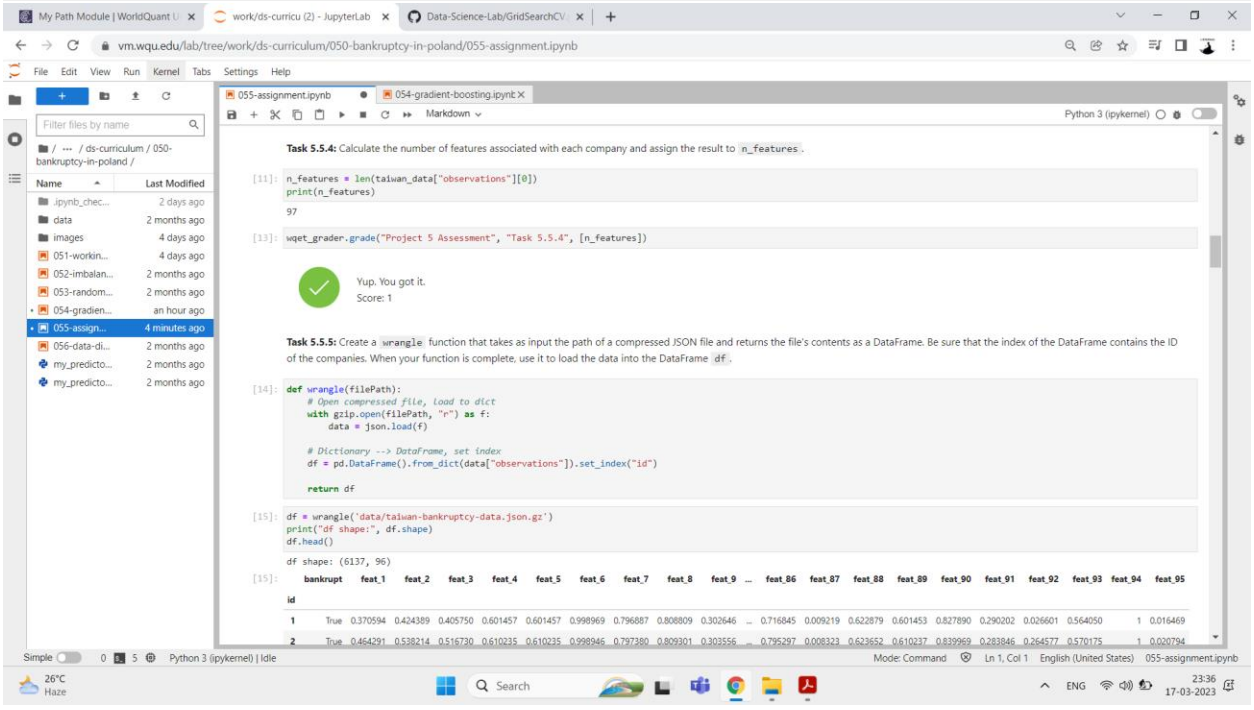
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Name
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Task 5.5.4: Calculate the number of features associated with each company and assign the result to n_features.
n_features = len(taiwan_data["observations"][0])
print(n_features)
97
wget_grader.grade("Project 5 Assessment", "Task 5.5.4", [n_features])
Yup. You got it.
Score: 1
Task 5.5.5: Create a wrangle function that takes as input the path of a compressed JSON file and returns the file's contents as a DataFrame. Be sure that the index of the DataFrame contains the ID of the companies. When your function is complete, use it to load the data into the DataFrame df.
def wrangle(filePath):
# Open compressed file, load to dict
with gzip.open(filePath, "r") as f:
data = json.load(f)
# Dictionary --> DataFrame, set index
df = pd.DataFrame().from_dict(data["observations"]).set_index("id")
return df
df = wrangle('data/taiwan-bankruptcy-data.json.gz')
print("df shape:", df.shape)
df.head()
df shape: (6137, 96)
bankrupt feat_1 feat_2 feat_3 feat_4 feat_5 feat_6 feat_7 feat_8 feat_9 ... feat_86 feat_87 feat_88 feat_89 feat_90 feat_91 feat_92 feat_93 feat_94 feat_95
id
1 True 0.370594 0.424389 0.405750 0.601457 0.601457 0.998969 0.796887 0.808809 0.302646 ... 0.716845 0.009219 0.622879 0.601453 0.827890 0.290202 0.026601 0.564050 1 0.016469
2 True 0.464291 0.538214 0.516730 0.610235 0.610235 0.998946 0.797380 0.809301 0.303556 ... 0.795297 0.008323 0.623652 0.610237 0.839969 0.283846 0.264577 0.570175 1 0.020794
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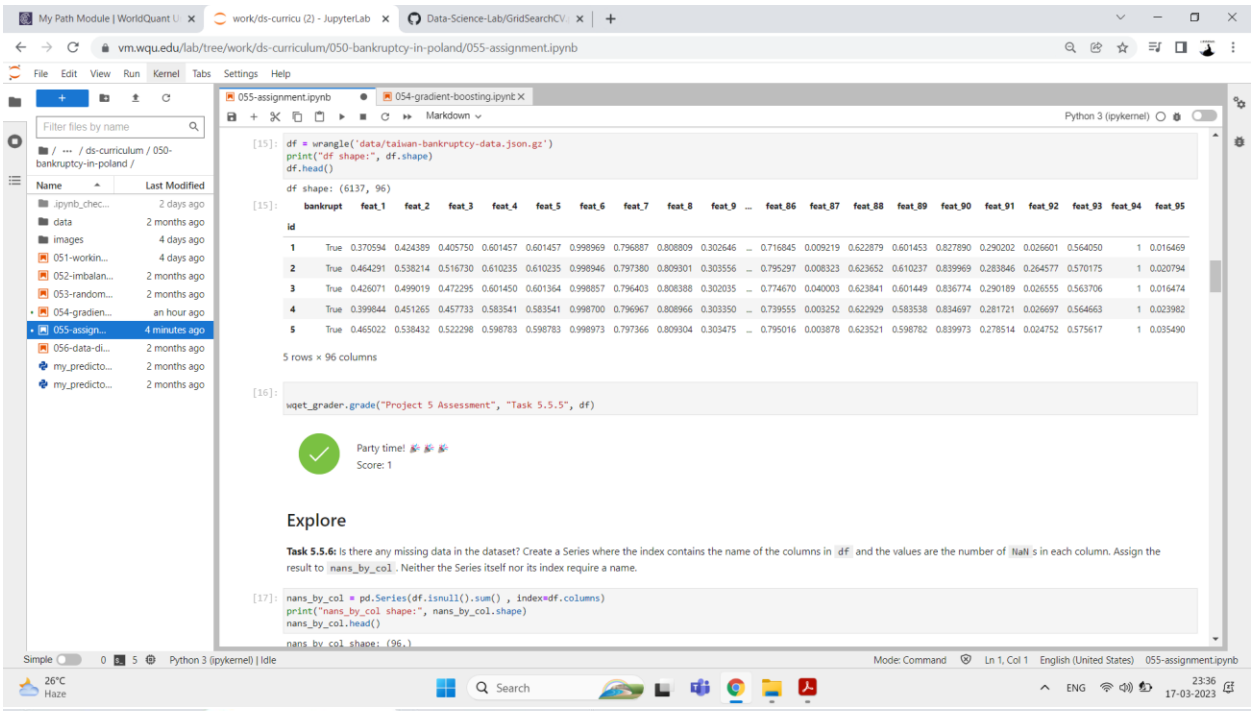
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055-assign... 4 minutes ago
056-data-di... 2 months ago
my_predicto... 2 months ago
my_predicto... 2 months ago
[15]:
df = wrangle('data/taiwan-bankruptcy-data.json.gz')
print("df shape:", df.shape)
df.head()
df shape: (6137, 96)
[15]:
bankrupt feat_1 feat_2 feat_3 feat_4 feat_5 feat_6 feat_7 feat_8 feat_9 ... feat_86 feat_87 feat_88 feat_89 feat_90 feat_91 feat_92 feat_93 feat_94 feat_95
id
1 True 0.370594 0.424389 0.405750 0.601457 0.601457 0.998969 0.796887 0.808809 0.302646 ... 0.716845 0.009219 0.622879 0.601453 0.827890 0.290202 0.026601 0.564050 1 0.016469
2 True 0.464291 0.538214 0.516730 0.610235 0.610235 0.998946 0.797380 0.809301 0.303556 ... 0.795297 0.008323 0.623652 0.610237 0.839969 0.283846 0.264577 0.570175 1 0.020794
3 True 0.426071 0.499019 0.472295 0.601450 0.601364 0.998857 0.796403 0.808388 0.302035 ... 0.774670 0.040003 0.623841 0.601449 0.836774 0.290189 0.026555 0.563706 1 0.016474
4 True 0.399844 0.451265 0.457733 0.583541 0.583541 0.998700 0.796967 0.808966 0.303350 ... 0.739555 0.003252 0.622929 0.583538 0.834697 0.281721 0.026697 0.564663 1 0.023982
5 True 0.465022 0.538432 0.522298 0.598783 0.598783 0.998973 0.797366 0.809304 0.303475 ... 0.795016 0.003878 0.623521 0.598782 0.839973 0.278514 0.024752 0.575617 1 0.035490
5 rows × 96 columns
[16]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.5", df)
Party time!
Score: 1
Explore
Task 5.5.6: Is there any missing data in the dataset? Create a Series where the index contains the name of the columns in df and the values are the number of NaN s in each column. Assign the result to nans_by_col . Neither the Series itself nor its index require a name.
[17]:
nans_by_col = pd.Series(df.isnull().sum() , index=df.columns)
print("nans_by_col shape:", nans_by_col.shape)
nans_by_col.head()
nans_by_col shape: (96,)
Simple 0 5 Python 3 (ipykernel) | Idle
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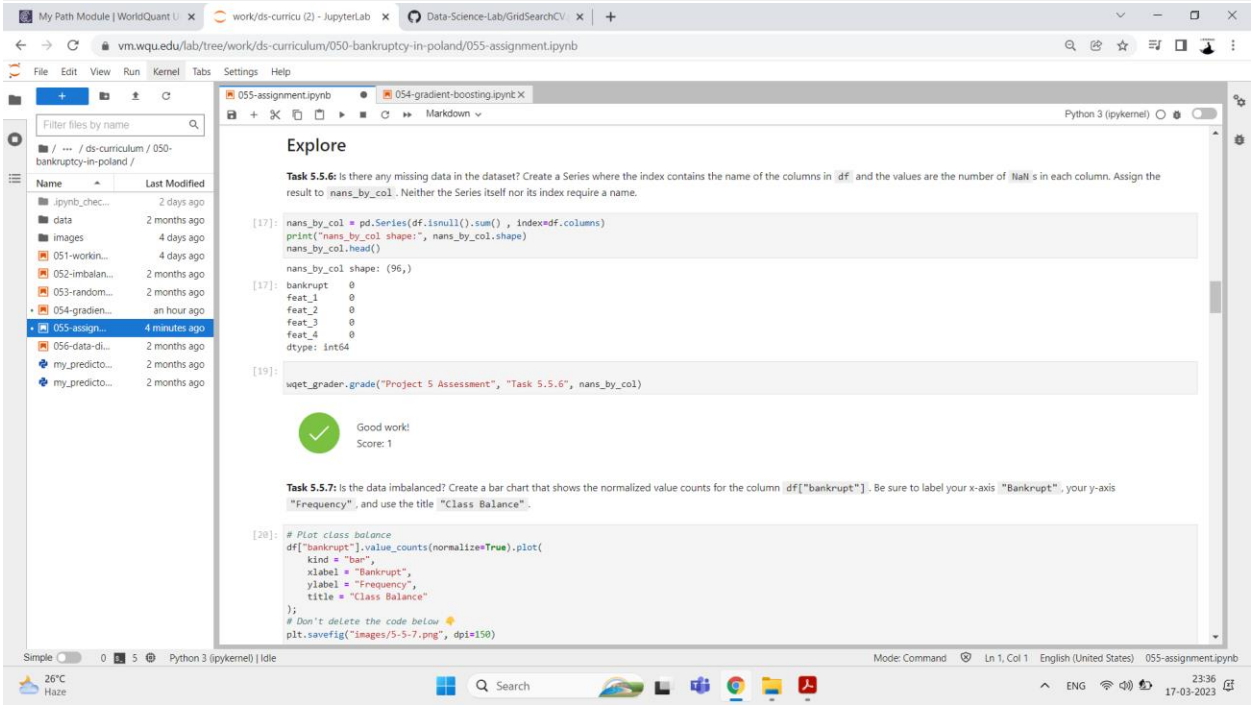
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055-assign... 4 minutes ago
056-data-di... 2 months ago
my_predicto... 2 months ago
my_predicto... 2 months ago
Explore
Task 5.5.6: Is there any missing data in the dataset? Create a Series where the index contains the name of the columns in df and the values are the number of NaN s in each column. Assign the result to nans_by_col . Neither the Series itself nor its index require a name.
[17]:
nans_by_col = pd.Series(df.isnull().sum() , index=df.columns)
print("nans_by_col shape:", nans_by_col.shape)
nans_by_col.head()
nans_by_col shape: (96,)
[17]:
bankrupt 0
feat_1 0
feat_2 0
feat_3 0
feat_4 0
dtype: int64
[19]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.6", nans_by_col)
Good work!
Score: 1
Task 5.5.7: Is the data imbalanced? Create a bar chart that shows the normalized value counts for the column df["bankrupt"] . Be sure to label your x-axis "Bankrupt" , your y-axis "Frequency" , and use the title "Class Balance" .
[20]:
Plot class balance
df["bankrupt"].value_counts(normalize=True).plot(
kind = "bar",
xlabel = "Bankrupt",
ylabel = "Frequency",
title = "Class Balance"
);
# Don't delete the code below
plt.savefig("images/5-5-7.png", dpi=150)
Simple 0 5 Python 3 (ipykernel) | Idle
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Markdown | Python 3 (ipykernel)

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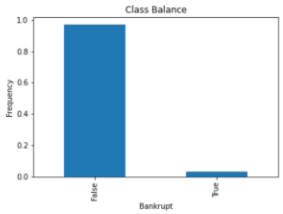
054-gradien...	an hour ago
055-assign...	in a few seconds
056-data-di...	2 months ago
my_predicto...	2 months ago
my_predicto...	2 months ago

[20]:
```
# Plot class balance
df["bankrupt"].value_counts(normalize=True).plot(
    kind = "bar",
    xlabel = "Bankrupt",
    ylabel = "Frequency",
    title = "Class Balance"
);
# Don't delete the code below 👇
plt.savefig("images/5-5-7.png", dpi=150)
```



[22]:
```
with open("images/5-5-7.png", "rb") as file:
    wqet_grader.grade("Project 5 Assessment", "Task 5.5.7", file)
```

Very impressive.
Score: 1

Split

Simple | 0 | 5 | Python 3 (ipykernel) | Idle

Mode: Command | Ln 1, Col 1 | English (United States) | 055-assignment.ipynb

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Markdown | Python 3 (ipykernel)

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056-data-di...	2 months ago
my_predicto...	2 months ago
my_predicto...	2 months ago

Split

Task 5.5.8: Create your feature matrix `X` and target vector `y`. Your target is `"bankrupt"`.

[23]:
```
target = "bankrupt"
X = df.drop(columns="bankrupt")
y = df[target]


print("X shape:", X.shape)
print("y shape:", y.shape)
```

```
X shape: (6137, 95)
y shape: (6137,)
```

[24]:
```
wqet_grader.grade("Project 5 Assessment", "Task 5.5.8a", X)
```

Correct.
Score: 1

[27]:
```
wqet_grader.grade("Project 5 Assessment", "Task 5.5.8b", y)
```

Good work!
Score: 1

Task 5.5.9: Divide your dataset into training and test sets using a randomized split. Your test set should be 20% of your data. Be sure to set `random_state` to `42`.

[28]:
```
X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.2, random_state=42
)
```

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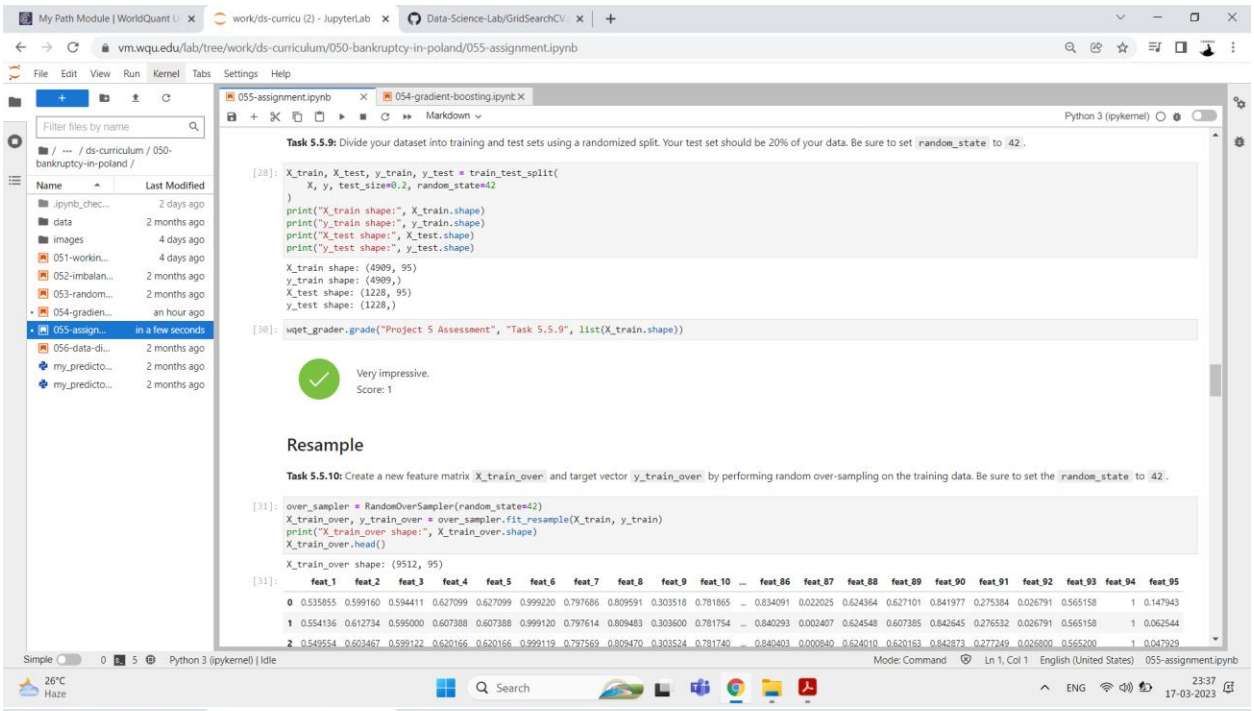
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055-assign... in a few seconds
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my_predicto... 2 months ago
Task 5.5.9: Divide your dataset into training and test sets using a randomized split. Your test set should be 20% of your data. Be sure to set random_state to 42.
[28]:
X_train, X_test, y_train, y_test = train_test_split(
X, y, test_size=0.2, random_state=42
)
print("X_train shape:", X_train.shape)
print("y_train shape:", y_train.shape)
print("X_test shape:", X_test.shape)
print("y_test shape:", y_test.shape)
X_train shape: (4909, 95)
y_train shape: (4909,)
X_test shape: (1228, 95)
y_test shape: (1228,)
[30]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.9", list(X_train.shape))
Very impressive.
Score: 1
Resample
Task 5.5.10: Create a new feature matrix X_train_over and target vector y_train_over by performing random over-sampling on the training data. Be sure to set the random_state to 42.
[31]:
over_sampler = RandomOverSampler(random_state=42)
X_train_over, y_train_over = over_sampler.fit_resample(X_train, y_train)
print("X_train_over shape:", X_train_over.shape)
X_train_over.head()
X_train_over shape: (9512, 95)
[31]:
feat_1 feat_2 feat_3 feat_4 feat_5 feat_6 feat_7 feat_8 feat_9 feat_10 ... feat_86 feat_87 feat_88 feat_89 feat_90 feat_91 feat_92 feat_93 feat_94 feat_95
0 0.535855 0.599160 0.594411 0.627099 0.627099 0.999220 0.797686 0.809591 0.303518 0.781865 ... 0.834091 0.022025 0.624364 0.627101 0.841977 0.275384 0.026791 0.565158 1 0.147943
1 0.554136 0.612734 0.595000 0.607388 0.607388 0.999120 0.797614 0.809483 0.303600 0.781754 ... 0.840293 0.002407 0.624548 0.607385 0.842645 0.276532 0.026791 0.565158 1 0.062544
2 0.549554 0.603467 0.599122 0.620166 0.620166 0.999119 0.797569 0.809470 0.303524 0.781740 ... 0.840403 0.000840 0.624010 0.620163 0.842873 0.277249 0.026800 0.565200 1 0.047929
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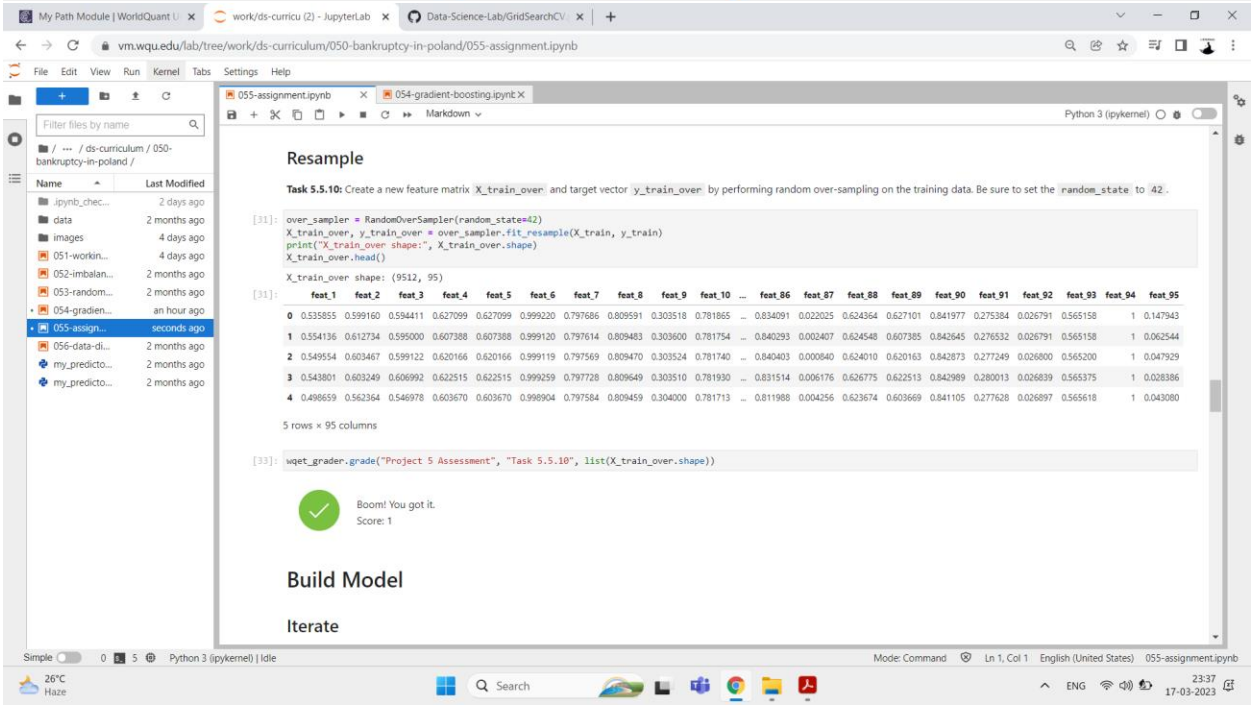
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Resample
Task 5.5.10: Create a new feature matrix X_train_over and target vector y_train_over by performing random over-sampling on the training data. Be sure to set the random_state to 42.
[31]:
over_sampler = RandomOverSampler(random_state=42)
X_train_over, y_train_over = over_sampler.fit_resample(X_train, y_train)
print("X_train_over shape:", X_train_over.shape)
X_train_over.head()
X_train_over shape: (9512, 95)
[31]:
feat_1 feat_2 feat_3 feat_4 feat_5 feat_6 feat_7 feat_8 feat_9 feat_10 ... feat_86 feat_87 feat_88 feat_89 feat_90 feat_91 feat_92 feat_93 feat_94 feat_95
0 0.535855 0.599160 0.594411 0.627099 0.627099 0.999220 0.797686 0.809591 0.303518 0.781865 ... 0.834091 0.022025 0.624364 0.627101 0.841977 0.275384 0.026791 0.565158 1 0.147943
1 0.554136 0.612734 0.595000 0.607388 0.607388 0.999120 0.797614 0.809483 0.303600 0.781754 ... 0.840293 0.002407 0.624548 0.607385 0.842645 0.276532 0.026791 0.565158 1 0.062544
2 0.549554 0.603467 0.599122 0.620166 0.620166 0.999119 0.797569 0.809470 0.303524 0.781740 ... 0.840403 0.000840 0.624010 0.620163 0.842873 0.277249 0.026800 0.565200 1 0.047929
3 0.543801 0.603249 0.606992 0.622515 0.622515 0.999259 0.797728 0.809649 0.303510 0.781930 ... 0.831514 0.006176 0.626775 0.622513 0.842989 0.280013 0.026839 0.565375 1 0.028386
4 0.498659 0.562364 0.546978 0.603670 0.603670 0.998904 0.797584 0.809459 0.304000 0.781713 ... 0.811988 0.004256 0.623674 0.603669 0.841105 0.277628 0.026897 0.565618 1 0.043080
5 rows × 95 columns
[33]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.10", list(X_train_over.shape))
Boom! You got it.
Score: 1
Build Model
Iterate
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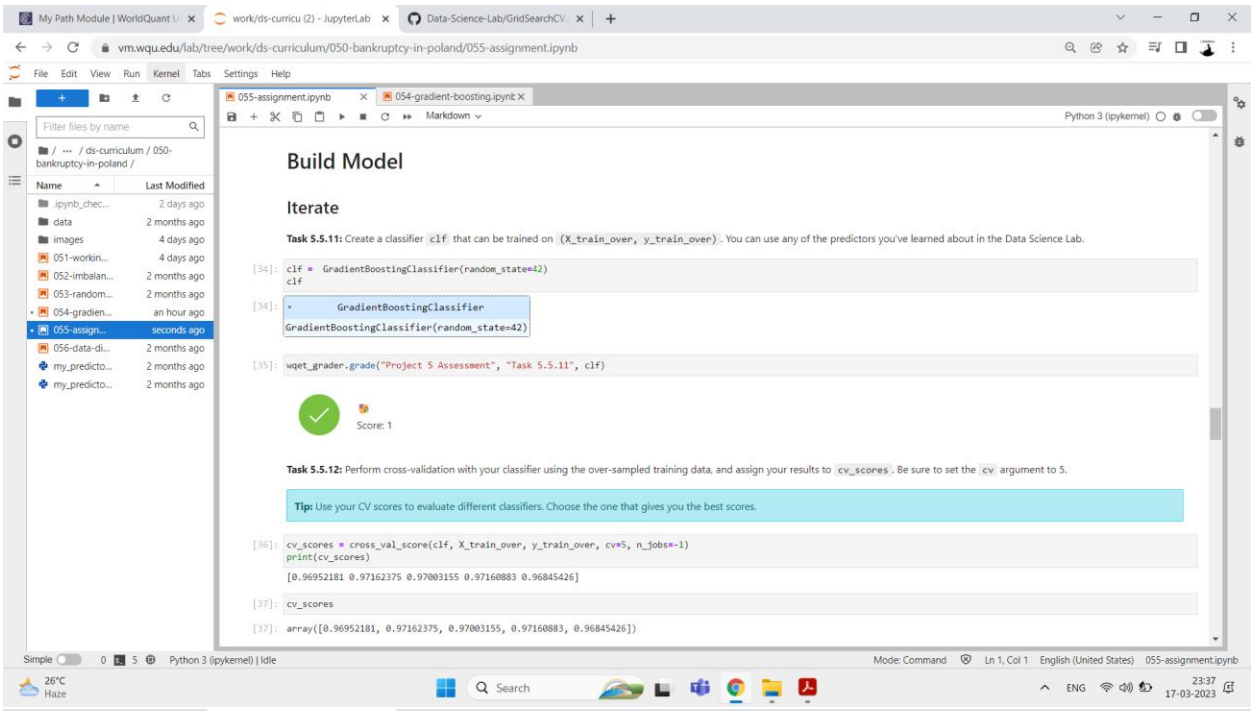
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Data-Science-Lab/GridSearchCV
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Build Model
Iterate
Task 5.5.11: Create a classifier clf that can be trained on (X_train_over, y_train_over). You can use any of the predictors you've learned about in the Data Science Lab.
[34]: clf = GradientBoostingClassifier(random_state=42)
clf
[34]: GradientBoostingClassifier
GradientBoostingClassifier(random_state=42)
[35]: wqet_grader.grade("Project 5 Assessment", "Task 5.5.11", clf)
Score: 1
Task 5.5.12: Perform cross-validation with your classifier using the over-sampled training data, and assign your results to cv_scores. Be sure to set the cv argument to 5.
Tip: Use your CV scores to evaluate different classifiers. Choose the one that gives you the best scores.
[36]: cv_scores = cross_val_score(clf, X_train_over, y_train_over, cv=5, n_jobs=-1)
print(cv_scores)
[0.96952181 0.97162375 0.97003155 0.97160883 0.96845426]
[37]: cv_scores
[37]: array([0.96952181, 0.97162375, 0.97003155, 0.97160883, 0.96845426])
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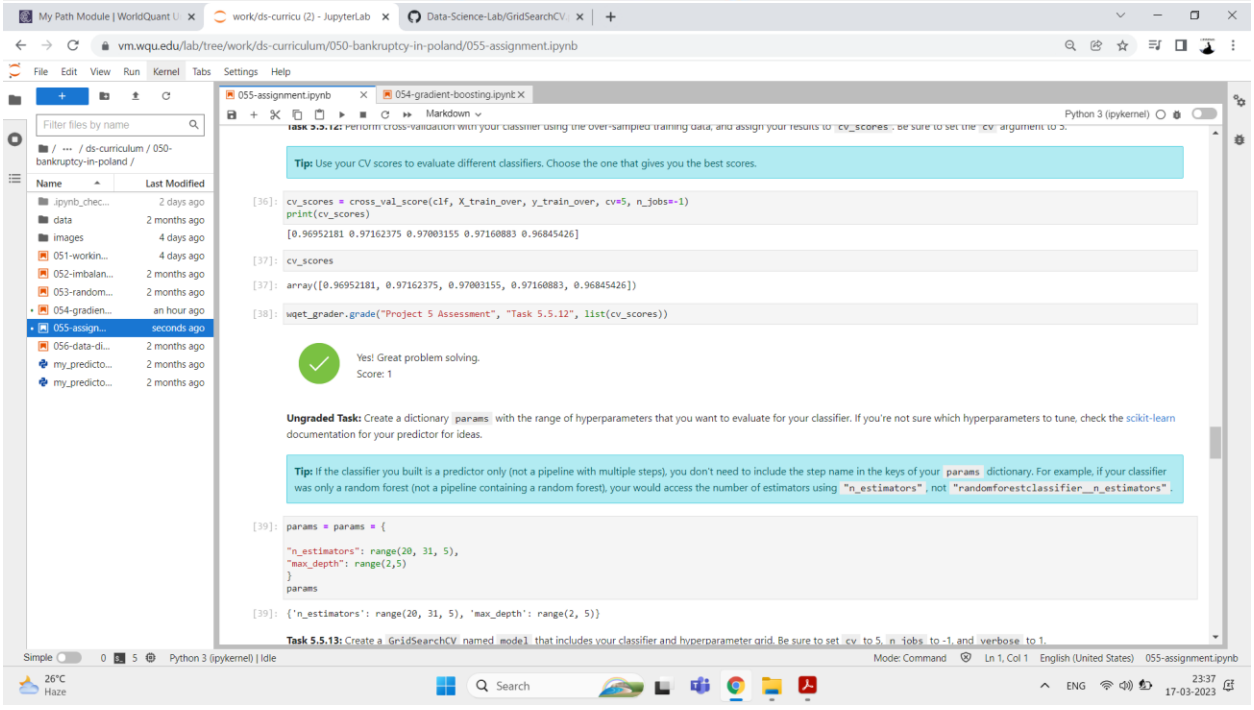
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Tip: Use your CV scores to evaluate different classifiers. Choose the one that gives you the best scores.
[36]: cv_scores = cross_val_score(clf, X_train_over, y_train_over, cv=5, n_jobs=-1)
print(cv_scores)
[0.96952181 0.97162375 0.97003155 0.97160883 0.96845426]
[37]: cv_scores
[37]: array([0.96952181, 0.97162375, 0.97003155, 0.97160883, 0.96845426])
[38]: wqet_grader.grade("Project 5 Assessment", "Task 5.5.12", list(cv_scores))
Yes! Great problem solving.
Score: 1
Ungraded Task: Create a dictionary params with the range of hyperparameters that you want to evaluate for your classifier. If you're not sure which hyperparameters to tune, check the scikit-learn documentation for your predictor for ideas.
Tip: If the classifier you built is a predictor only (not a pipeline with multiple steps), you don't need to include the step name in the keys of your params dictionary. For example, if your classifier was only a random forest (not a pipeline containing a random forest), your would access the number of estimators using "n_estimators", not "randomforestclassifier__n_estimators".
[39]: params = params = {
"n_estimators": range(20, 31, 5),
"max_depth": range(2,5)
}
params
[39]: {'n_estimators': range(20, 31, 5), 'max_depth': range(2, 5)}
Task 5.5.13: Create a GridSearchCV named model that includes your classifier and hyperparameter grid. Be sure to set cv to 5, n_jobs to -1, and verbose to 1.
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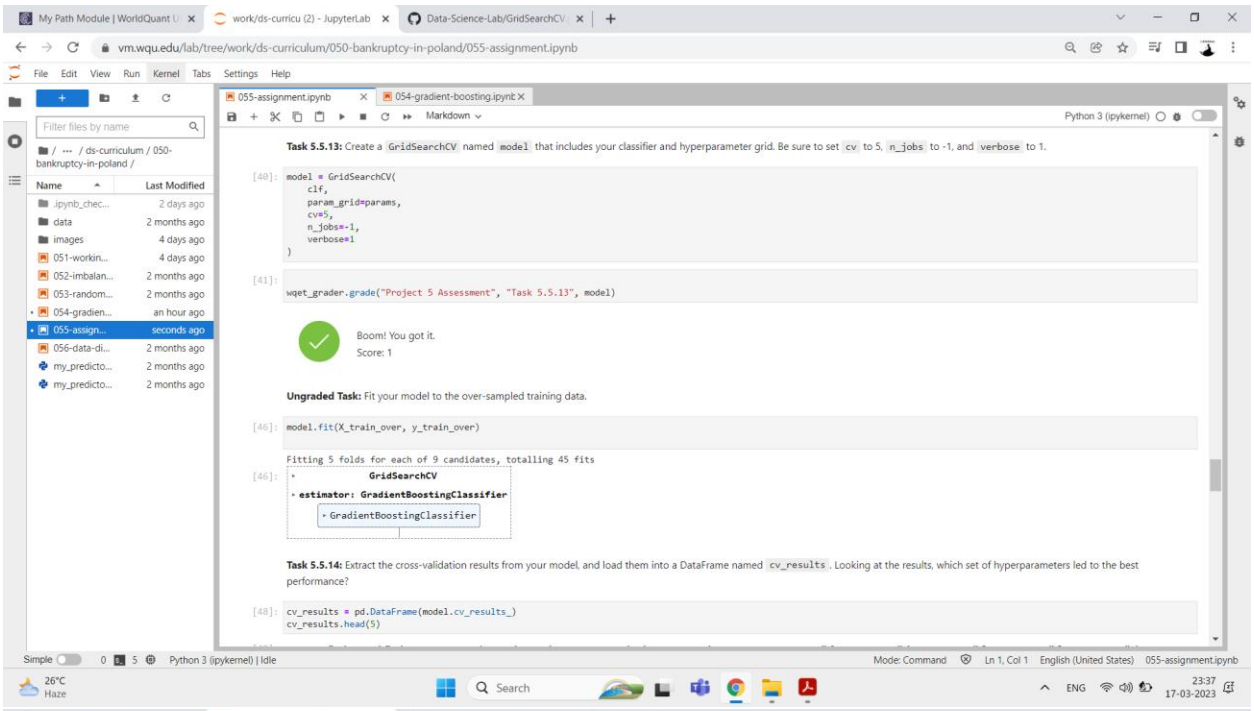
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Task 5.5.13: Create a GridSearchCV named model that includes your classifier and hyperparameter grid. Be sure to set cv to 5, n_jobs to -1, and verbose to 1.
[40]:
model = GridSearchCV(
clf,
param_grid=params,
cv=5,
n_jobs=-1,
verbose=1
)
[41]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.13", model)
Boom! You got it.
Score: 1
Ungraded Task: Fit your model to the over-sampled training data.
[46]:
model.fit(X_train_over, y_train_over)
Fitting 5 folds for each of 9 candidates, totalling 45 fits
[46]:
GridSearchCV
estimator: GradientBoostingClassifier
GradientBoostingClassifier
Task 5.5.14: Extract the cross-validation results from your model, and load them into a DataFrame named cv_results. Looking at the results, which set of hyperparameters led to the best performance?
[48]:
cv_results = pd.DataFrame(model.cv_results_)
cv_results.head(5)
Simple
Python 3 (ipykernel) | Idle
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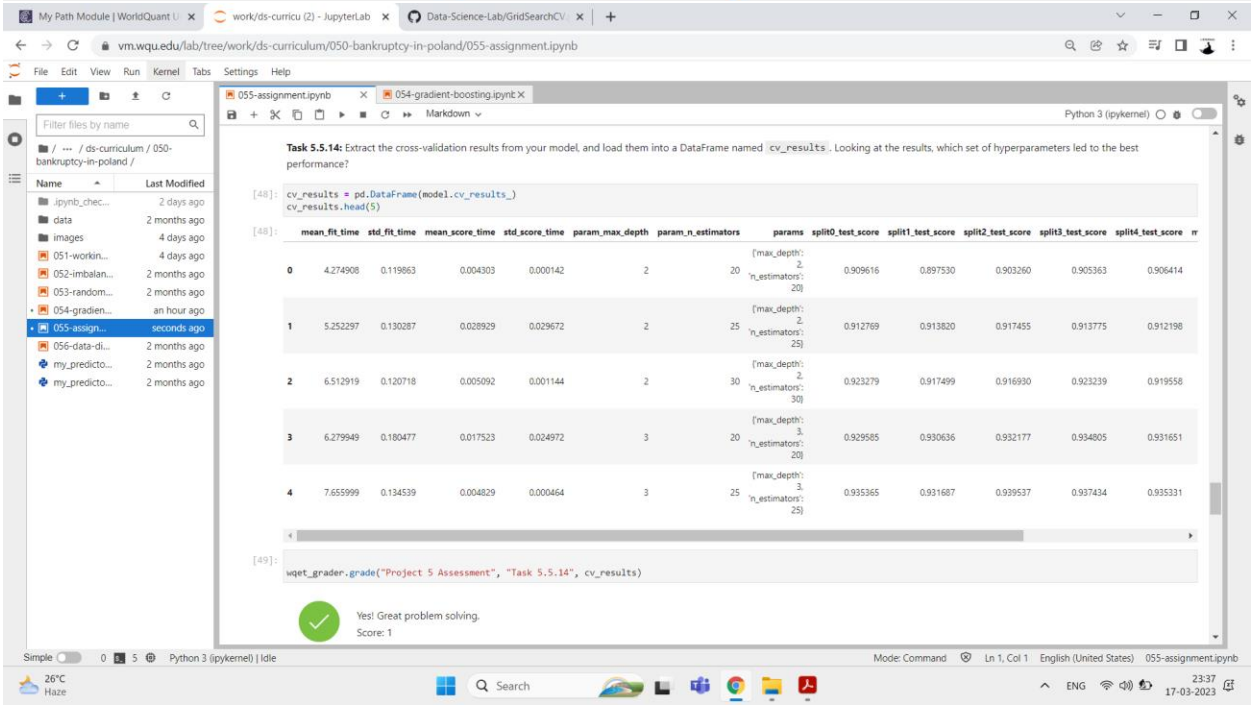
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my_predicto... 2 months ago
Task 5.5.14: Extract the cross-validation results from your model, and load them into a DataFrame named cv_results. Looking at the results, which set of hyperparameters led to the best performance?
[48]:
cv_results = pd.DataFrame(model.cv_results_)
cv_results.head(5)
[48]:
mean_fit_time std_fit_time mean_score_time std_score_time param_max_depth param_n_estimators params split0_test_score split1_test_score split2_test_score split3_test_score split4_test_score
0 4.274908 0.119863 0.004303 0.000142 2 20 {'max_depth': 2, 'n_estimators': 20} 0.909616 0.897530 0.903260 0.905363 0.906414
1 5.252297 0.130287 0.028929 0.029672 2 25 {'max_depth': 2, 'n_estimators': 25} 0.912769 0.913820 0.917455 0.913775 0.912198
2 6.512919 0.120718 0.005092 0.001144 2 30 {'max_depth': 2, 'n_estimators': 30} 0.923279 0.917499 0.916930 0.923239 0.919558
3 6.279949 0.180477 0.017523 0.024972 3 20 {'max_depth': 3, 'n_estimators': 20} 0.929585 0.930636 0.932177 0.934805 0.931651
4 7.655999 0.134539 0.004829 0.000464 3 25 {'max_depth': 3, 'n_estimators': 25} 0.935365 0.931687 0.939537 0.937434 0.935331
[49]:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.14", cv_results)
Yes! Great problem solving.
Score: 1
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055-assignment.ipynb | 054-gradient-boosting.ipynt

Markdown | Python 3 (ipykernel)

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my_predicto...	2 months ago

Task 5.5.15: Extract the best hyperparameters from your model and assign them to `best_params`.

[51]:
```
best_params = model.best_params_
print(best_params)
```
```
{'max_depth': 4, 'n_estimators': 30}
```

[52]:
```
wqet_grader.grade(
    "Project 5 Assessment", "Task 5.5.15", [isinstance(best_params, dict)]
)
```

You = coding
Score: 1

Evaluate

Ungraded Task: Test the quality of your model by calculating accuracy scores for the training and test data.

[53]:
```
acc_train = model.score(X_train, y_train)
acc_test = model.score(X_test, y_test)

print("Model Training Accuracy:", round(acc_train, 4))
print("Model Test Accuracy:", round(acc_test, 4))
```
```
Model Training Accuracy: 0.9466
Model Test Accuracy: 0.9389
```

Task 5.5.16: Plot a confusion matrix that shows how your model performed on your test set.

[59]:
```
ConfusionMatrixDisplay.from_estimator(model, X_test, y_test);
# Don't delete the code below 👇
plt.savefig("images/5-5-16.png", dpi=150)
```

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My Path Module | WorldQuant U | work/ds-curricu (2) - JupyterLab | Data-Science-Lab/conf_matrix.py

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055-assignment.ipynb | 054-gradient-boosting.ipynt

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053-random...	2 months ago
054-gradien...	an hour ago
055-assign...	2 minutes ago
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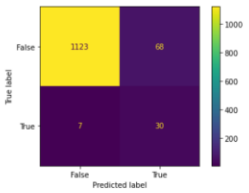
my_predicto...	2 months ago
my_predicto...	2 months ago

Task 5.5.16: Plot a confusion matrix that shows how your model performed on your test set.

[59]:
```
ConfusionMatrixDisplay.from_estimator(model, X_test, y_test);
# Don't delete the code below 👇
plt.savefig("images/5-5-16.png", dpi=150)
```



[60]:
```
with open("images/5-5-16.png", "rb") as file:
    wqet_grader.grade("Project 5 Assessment", "Task 5.5.16", file)
```

Way to go!
Score: 1

Task 5.5.17: Generate a classification report for your model's performance on the test data and assign it to `class_report`.

[ ]:
```
class_report = classification_report(y_test, model.predict(X_test))
print(class_report)
```

[ ]:
```
wqet_grader.grade("Project 5 Assessment", "Task 5.5.17", class_report)
```

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Markdown | Python 3 (ipykernel)

```
[60]: with open("images/5-5-16.png", "rb") as file:
          wqet_grader.grade("Project 5 Assessment", "Task 5.5.16", file)
```

Way to go!
Score: 1

Task 5.5.17: Generate a classification report for your model's performance on the test data and assign it to `class_report`.

```
[61]: class_report = classification_report(y_test, model.predict(X_test))
      print(class_report)
```

```
              precision    recall  f1-score   support

       False       0.99      0.94      0.97      1191
        True       0.31      0.81      0.44        37

    accuracy                           0.94      1228
   macro avg       0.65      0.88      0.71      1228
weighted avg       0.97      0.94      0.95      1228
```

```
[62]: wqet_grader.grade("Project 5 Assessment", "Task 5.5.17", class_report)
```

You = coding
Score: 1

Communicate

Task 5.5.18: Create a horizontal bar chart with the 10 most important features for your model. Be sure to label the x-axis `"Gini Importance"`, the y-axis `"Feature"`, and use the title `"Feature Importance"`.

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055-assignment.ipynb | 054-gradient-boosting.ipynt

Code | Python 3 (ipykernel)

Communicate

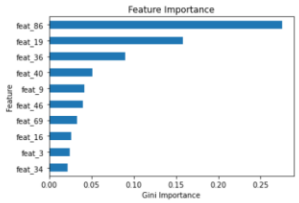
Task 5.5.18: Create a horizontal bar chart with the 10 most important features for your model. Be sure to label the x-axis `"Gini Importance"`, the y-axis `"Feature"`, and use the title `"Feature Importance"`.

```
[67]: features = X_train_over.columns

      # Extract importances from model
      importances = model.best_estimator_.feature_importances_

      # Create a series with feature names and importances
      feat_imp = pd.Series(importances, index=features).sort_values()

      # Plot 10 most important features
      feat_imp.tail(10).plot(kind="barh")
      plt.xlabel("Gini Importance")
      plt.ylabel("Feature")
      plt.title("Feature Importance");
      # Don't delete the code below 👇
      plt.savefig("images/5-5-17.png", dpi=150)
```



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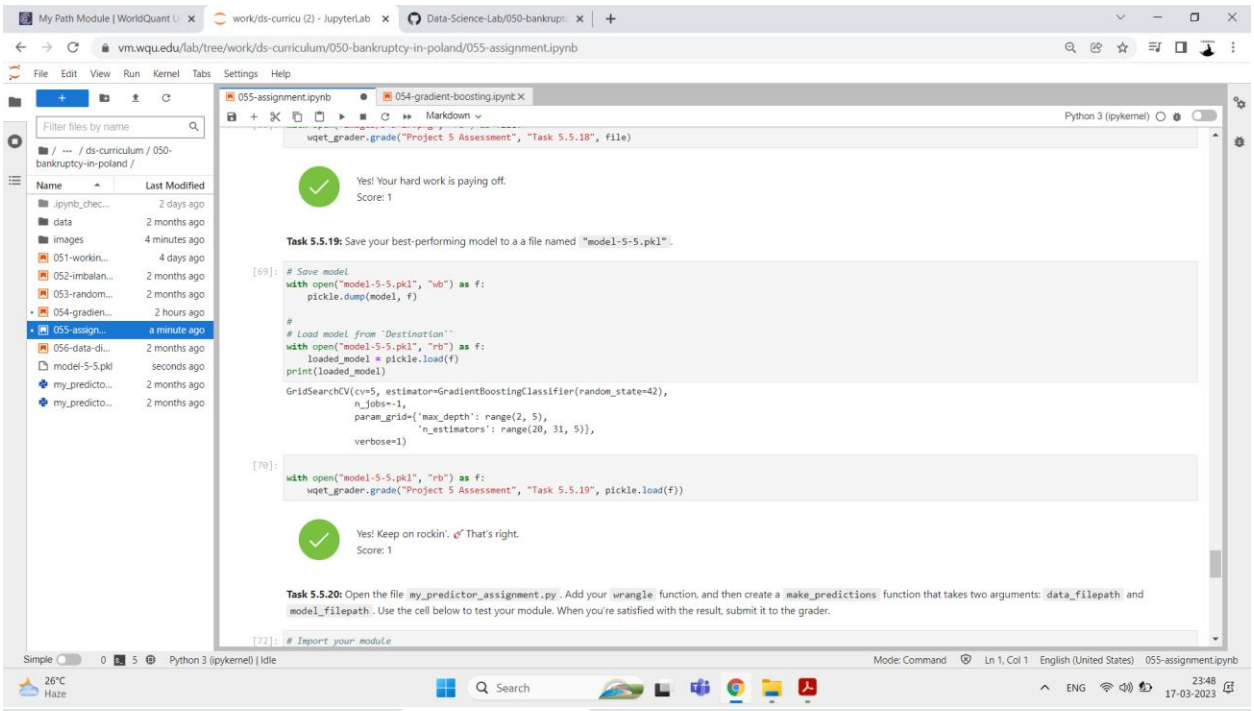
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055-assignment.ipynb
054-gradient-boosting.ipynb
Markdown
Python 3 (ipykernel)
wqet_grader.grade("Project 5 Assessment", "Task 5.5.18", file)
Yes! Your hard work is paying off.
Score: 1
Task 5.5.19: Save your best-performing model to a a file named "model-5-5.pkl".
[69]:
Save model
with open("model-5-5.pkl", "wb") as f:
pickle.dump(model, f)
#
Load model from `Destination`
with open("model-5-5.pkl", "rb") as f:
loaded_model = pickle.load(f)
print(loaded_model)
GridSearchCV(cv=5, estimator=GradientBoostingClassifier(random_state=42),
n_jobs=-1,
param_grid={'max_depth': range(2, 5),
'n_estimators': range(20, 31, 5)},
verbose=1)
[70]:
with open("model-5-5.pkl", "rb") as f:
wqet_grader.grade("Project 5 Assessment", "Task 5.5.19", pickle.load(f))
Yes! Keep on rockin'. 🎸 That's right.
Score: 1
Task 5.5.20: Open the file my_predictor_assignment.py. Add your wrangle function, and then create a make_predictions function that takes two arguments: data_filepath and model_filepath. Use the cell below to test your module. When you're satisfied with the result, submit it to the grader.
[72]:
Import your module
Filter files by name
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data
images
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052-imbalan...
053-random...
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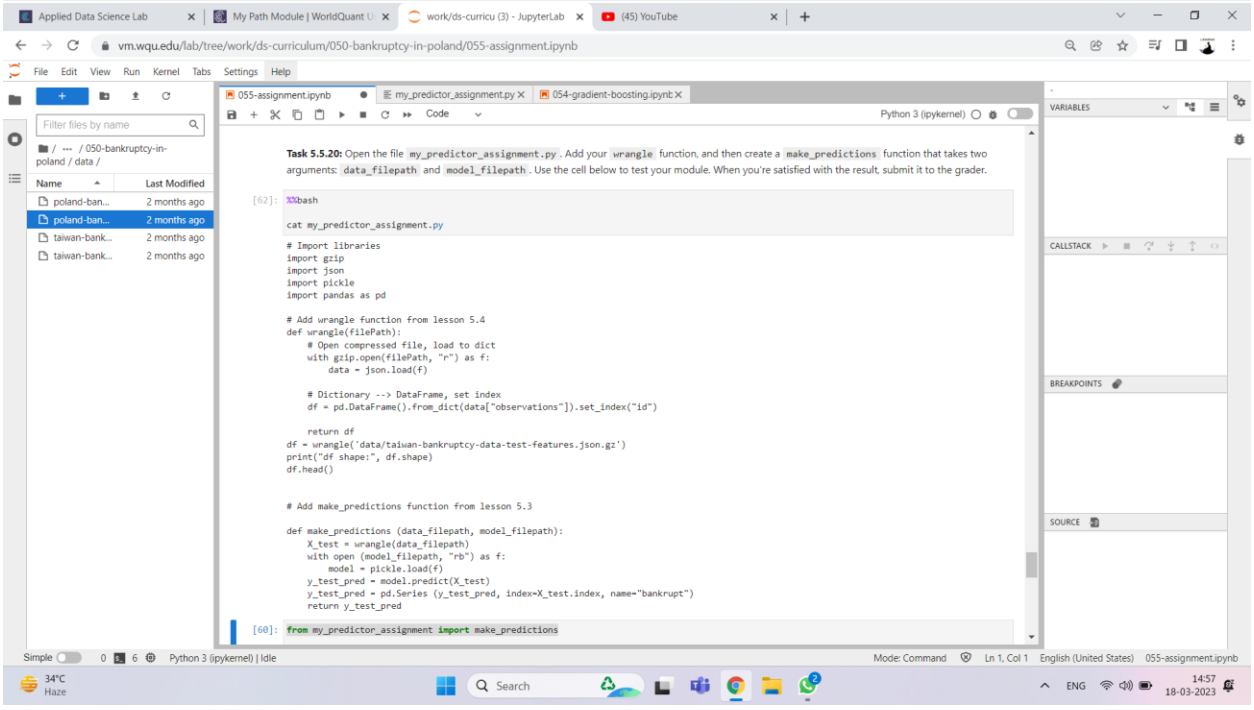
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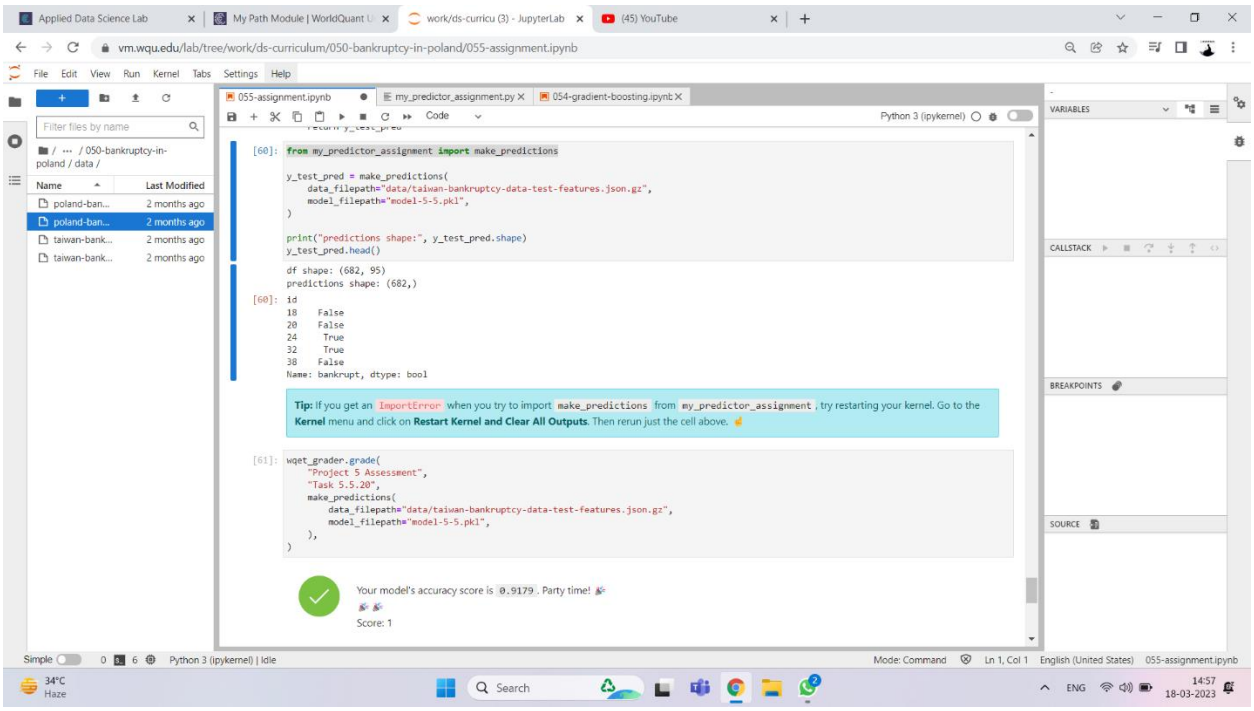
055-assignment.ipynb
my_predictor_assignment.py
054-gradient-boosting.ipynb
Code
Python 3 (ipykernel)
Task 5.5.20: Open the file my_predictor_assignment.py. Add your wrangle function, and then create a make_predictions function that takes two arguments: data_filepath and model_filepath. Use the cell below to test your module. When you're satisfied with the result, submit it to the grader.
[62]:
%%bash
cat my_predictor_assignment.py
# Import libraries
import gzip
import json
import pickle
import pandas as pd
# Add wrangle function from lesson 5.4
def wrangle(filePath):
# Open compressed file, load to dict
with gzip.open(filePath, "r") as f:
data = json.load(f)
# Dictionary --> DataFrame, set index
df = pd.DataFrame().from_dict(data["observations"]).set_index("id")
return df
df = wrangle('data/taiwan-bankruptcy-data-test-features.json.gz')
print("df shape:", df.shape)
df.head()
# Add make_predictions function from lesson 5.3
def make_predictions (data_filepath, model_filepath):
X_test = wrangle(data_filepath)
with open (model_filepath, "rb") as f:
model = pickle.load(f)
y_test_pred = model.predict(X_test)
y_test_pred = pd.Series (y_test_pred, index=X_test.index, name="bankrupt")
return y_test_pred
[60]:
from my_predictor_assignment import make_predictions
VARIABLES
CALLSTACK
BREAKPOINTS
SOURCE
Filter files by name
/ 050-bankruptcy-in-poland / data /
Name
Last Modified
poland-ban...
poland-ban...
taiwan-bank...
taiwan-bank...
Simple
Python 3 (ipykernel) | Idle
Mode: Command
Ln 1, Col 1
English (United States)
055-assignment.ipynb
34°C
Haze
Search
ENG
14:57
18-03-2023


Applied Data Science Lab
My Path Module | WorldQuant U
work/ds-curricu (3) - JupyterLab
(45) YouTube
vm.wqu.edu/lab/tree/work/ds-curriculum/050-bankruptcy-in-poland/055-assignment.ipynb
File Edit View Run Kernel Tabs Settings Help
055-assignment.ipynb
my_predictor_assignment.py
054-gradient-boosting.ipynb
Code
Python 3 (ipykernel)
Filter files by name
/ ... / 050-bankruptcy-in-poland / data /
Name
Last Modified
poland-ban... 2 months ago
poland-ban... 2 months ago
taiwan-bank... 2 months ago
taiwan-bank... 2 months ago
[60]:
from my_predictor_assignment import make_predictions
y_test_pred = make_predictions(
data_filepath="data/taiwan-bankruptcy-data-test-features.json.gz",
model_filepath="model-5-5.pkl",
)
print("predictions shape:", y_test_pred.shape)
y_test_pred.head()
df shape: (682, 95)
predictions shape: (682,)
[60]:
id
18 False
20 False
24 True
32 True
38 False
Name: bankrupt, dtype: bool
Tip: If you get an ImportError when you try to import make_predictions from my_predictor_assignment, try restarting your kernel. Go to the Kernel menu and click on Restart Kernel and Clear All Outputs. Then rerun just the cell above.
[61]:
wqet_grader.grade(
"Project 5 Assessment",
"Task 5.5.20",
make_predictions(
data_filepath="data/taiwan-bankruptcy-data-test-features.json.gz",
model_filepath="model-5-5.pkl",
),
)
Your model's accuracy score is 0.9179. Party time!
Score: 1
VARIABLES
CALLSTACK
BREAKPOINTS
SOURCE
Simple
Python 3 (ipykernel) | Idle
Mode: Command
Ln 1, Col 1
English (United States)
055-assignment.ipynb
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Search
ENG
14:57
18-03-2023