

Code Snippets-Part-3

The screenshot shows a JupyterLab interface with a Python 3 kernel. The code cell contains several lines of code related to model selection and evaluation. The output pane shows the progress of each model's prediction and the final validation message.

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gbboost prediction progress: 1630106_162054.model_1 100%
gbboost prediction progress: 1630106_162054.model_2 100%
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DeepLearning_grid_49_AutoML_20201106_162054.model_50 100%
[57]: auto_ml.model = h2o.model(data_outliersRemoved,dataset_type='Outlier_Removed')
loss_auto_ml_model.outlier_removed = auto_ml.model.autoML(max_models=50,max_runtime_secs=1500,explain=False)
loss_values_all_models.append(loss_auto_ml_model.outlier_removed)

Parse progress: | 100%
Parse progress: | 100%
AutoML progress: | 100%
16:33:01.988: User specified a validation frame with cross-validation still enabled. Please note that the models will still be validated using cross-validation only, the validation frame will be used to provide purely informative validation metrics on the trained models.
```

The screenshot shows a JupyterLab interface with a Python 3 kernel. The code cell contains a command to print a table of model evaluation statistics. The output pane displays the table, which includes columns for model ID, mean residual deviance, RMSE, MSE, MAE, and RMSLE.

model_id	mean_residual_deviance	rmse	mse	mae	rmsle
DRF_1_AutoML_20201106_163301	0.0051142	0.0781933	0.0061142	0.051926	0.0556562
GBM_grid_1_AutoML_20201106_163301.model_2	0.00614945	0.0784184	0.00614945	0.0534407	0.0558647
GBM_1_AutoML_20201106_163301	0.00523816	0.0789882	0.00523816	0.0560665	0.0562467
XRT_1_AutoML_20201106_163301	0.00526875	0.0791755	0.00526875	0.0521078	0.0563928
GBM_AutoML_20201106_163301	0.00529734	0.0793558	0.00529734	0.0526914	0.0561171
GBM_grid_1_AutoML_20201106_163301.model_7	0.0064248	0.0801548	0.0064248	0.0570765	0.0570518
GBM_2_AutoML_20201106_163301	0.00643732	0.0802329	0.00643732	0.0539309	0.0571945
GBM_3_AutoML_20201106_163301	0.00650961	0.0806654	0.00650961	0.0541681	0.0575701
XGBoost_grid_1_AutoML_20201106_163301.model_17	0.0067091	0.0810611	0.00657091	0.0569799	0.0580805
XGBoost_grid_1_AutoML_20201106_163301.model_12	0.00675794	0.0810922	0.00657594	0.0539976	0.0577784
XGBoost_grid_1_AutoML_20201106_163301.model_14	0.0065254	0.0813666	0.0065254	0.0556264	0.0582333
XGBoost_grid_1_AutoML_20201106_163301.model_3	0.00655692	0.0815899	0.00655692	0.0557028	0.0581565
GBM_grid_1_AutoML_20201106_163301.model_10	0.00656387	0.0816152	0.00656387	0.0552984	0.0582293
GBM_4_AutoML_20201106_163301	0.00679402	0.0824259	0.00679402	0.0559137	0.0587964
XGBoost_grid_1_AutoML_20201106_163301.model_11	0.00679902	0.0824582	0.00679902	0.0545702	0.0589842
XGBoost_grid_1_AutoML_20201106_163301.model_5	0.00679908	0.0824602	0.00679908	0.0572463	0.0587108
XGBoost_grid_1_AutoML_20201106_163301.model_16	0.00684595	0.0827735	0.00684595	0.0573756	0.0588935
XGBoost_grid_1_AutoML_20201106_163301.model_1	0.00692397	0.0832104	0.00692397	0.0551778	0.0587739
XGBoost_3_AutoML_20201106_163301	0.00698132	0.0833543	0.00698132	0.0577728	0.0597484
XGBoost_grid_1_AutoML_20201106_163301.model_7	0.00716187	0.0837623	0.00716187	0.0570707	0.0596688
XGBoost_grid_1_AutoML_20201106_163301.model_15	0.00733846	0.0838667	0.00733846	0.0588543	0.0600103
GBM_grid_1_AutoML_20201106_163301.model_3	0.00712559	0.0844121	0.00712559	0.0587495	0.0601917

The screenshot shows a Jupyter Notebook environment with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_ske'. The notebook displays a list of trained machine learning models, each with its name, creation date, and various performance metrics. The models include XGBoost, GBM, and DeepLearning variants, all trained on the same dataset (AutoML_20201106_163301). The metrics listed for each model include accuracy, precision, recall, and F1 score.

Model Name	Creation Date	Model ID	Accuracy	Precision	Recall	F1 Score
XGBoost_grid_1_AutoML_20201106_163301_model_9	2020-11-06 16:33:01	model_9	0.00719957	0.0846503	0.00719957	0.0585126
XGBoost_grid_1_AutoML_20201106_163301_model_13	2020-11-06 16:33:01	model_13	0.00721395	0.0846291	0.00721395	0.0587409
XGBoost_grid_1_AutoML_20201106_163301_model_10	2020-11-06 16:33:01	model_10	0.00722906	0.0850239	0.00722906	0.0578955
GBM_grid_1_AutoML_20201106_163301_model_6	2020-11-06 16:33:01	model_6	0.00726571	0.0852274	0.00726571	0.0580857
GBM_grid_1_AutoML_20201106_163301_model_1	2020-11-06 16:33:01	model_1	0.00731114	0.0853052	0.00731114	0.0593414
XGBoost_grid_1_AutoML_20201106_163301_model_2	2020-11-06 16:33:01	model_2	0.00735096	0.0857377	0.00735096	0.0587826
XGBoost_grid_1_AutoML_20201106_163301_model_4	2020-11-06 16:33:01	model_4	0.00739608	0.0860005	0.00739608	0.0594693
GBM_grid_1_AutoML_20201106_163301_model_5	2020-11-06 16:33:01	model_5	0.00744375	0.0865771	0.00744375	0.0587426
GBM_grid_1_AutoML_20201106_163301_model_9	2020-11-06 16:33:01	model_9	0.00746045	0.0865739	0.00746045	0.0590038
XGBoost_grid_1_AutoML_20201106_163301	2020-11-06 16:33:01		0.0074814	0.0865794	0.0074814	0.0591214
DeepLearning_grid_3_AutoML_20201106_163301_model_1	2020-11-06 16:33:01	model_1	0.00749507	0.0865741	0.00749507	0.0576564
XGBoost_grid_1_AutoML_20201106_163301_model_5	2020-11-06 16:33:01	model_5	0.00760937	0.0872317	0.00760937	0.0586816
GBM_grid_1_AutoML_20201106_163301_model_8	2020-11-06 16:33:01	model_8	0.00762239	0.0873065	0.00762239	0.0616055
GBM_grid_1_AutoML_20201106_163301_model_4	2020-11-06 16:33:01	model_4	0.007711399	0.0872842	0.007711399	0.0596447
XGBoost_grid_2_AutoML_20201106_163301	2020-11-06 16:33:01		0.00791747	0.0888901	0.00791747	0.0626303
XGBoost_grid_1_AutoML_20201106_163301_model_8	2020-11-06 16:33:01	model_8	0.00813907	0.0902168	0.00813907	0.0637276
DeepLearning_grid_2_2_AutoML_20201106_163301_model_1	2020-11-06 16:33:01	model_1	0.00819597	0.0905318	0.00819597	0.0531534
DeepLearning_grid_1_AutoML_20201106_163301_model_2	2020-11-06 16:33:01	model_2	0.00869533	0.0932448	0.00869533	0.0670291
DeepLearning_grid_1_AutoML_20201106_163301	2020-11-06 16:33:01		0.00884052	0.0940424	0.00884052	0.0672725
DeepLearning_grid_2_2_AutoML_20201106_163301_model_3	2020-11-06 16:33:01	model_3	0.008993703	0.0945359	0.008993703	0.0718482
GLM_grid_1_AutoML_20201106_163301	2020-11-06 16:33:01		0.00895628	0.0947070	0.00895628	0.0688103
DeepLearning_grid_1_AutoML_20201106_163301_model_3	2020-11-06 16:33:01	model_3	0.00914199	0.0968138	0.00914199	0.0699412
XGBoost_grid_1_AutoML_20201106_163301_model_18	2020-11-06 16:33:01	model_18	0.00925219	0.0961883	0.00925219	0.0689164
DeepLearning_grid_2_2_AutoML_20201106_163301_model_2	2020-11-06 16:33:01	model_2	0.009434001	0.0971082	0.009434001	0.0688452
DeepLearning_grid_3_2_AutoML_20201106_163301_model_2	2020-11-06 16:33:01	model_2	0.00967507	0.0975623	0.00967507	0.0702396
StackedEnsemble_BestOfFamily_AutoML_20201106_163301	2020-11-06 16:33:01		0.00985479	0.0992713	0.00985479	0.0711749

```
Google JupyterLab
localhost:8888/lab
File Edit View Run Kernel Tabs Settings Help
Launcher Mail_footfall_prediction_ske ...
DeepLearning_grid_3_AutoML_20201106_163301_model_2 0.00957507 0.0976823 0.00957507 0.0702394 0.0696822
StackedEnsemble_BestOfFamilyAutoML_20201106_163301 0.00985479 0.0992713 0.00985479 0.0711749 0.0706108
StackedEnsemble_AIIMLmodel_AutoML_20201106_163301 0.00985479 0.0992713 0.00985479 0.0711749 0.0706108
DeepLearning_grid_1_AutoML_20201106_163301_model_1 0.00995116 0.0997553 0.00995116 0.0722283 0.0722559

Model Details
*****
H2ORandomForestEstimator : Distributed Random Forest
Model Key: DMR_3_AutoML_29201106_163301

Model Summary:
number_of_trees number_of_internal_trees model_size_in_bytes min_depth max_depth mean_depth min_leaves max_leaves mean_leaves
0 40. 40. 403317.0 20. 20. 20. 686.0 870.0 798.125

ModelMetricsRegression: drf
** Reported on train data. **

MSE: 0.06548995407388437
RMSE: 8.074864204752064
MAE: 0.05128453375472654
RMSLE: 0.05378471861878544
Mean Residual Deviance: 0.00548996447388437

ModelMetricsRegression: drf
** Reported on validation data. **

MSE: 0.065484634098383892
RMSE: 8.07405832150118059
MAE: 0.0495551635889794
RMSLE: 0.052033018954058495
Mean Residual Deviance: 0.0054846340998383892

ModelMetricsRegression: drf
** Reported on cross-validation data. **

MSE: 0.0653684379534098165
RMSE: 8.07284639255098619
```

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

RSE: 0.005306537953498165
RMSE: 0.0726463825098619
MAE: 0.0501273879354358
RMSE: 0.053060946689816545
Mean Residual Deviance: 0.005306537953498165

Cross-Validation Metrics Summary:

	mean	sd	cv_1_valid	cv_2_valid	cv_3_valid	cv_4_valid	cv_5_valid	
0	mse	0.050128	0.001992518	0.052091487	0.048811637	0.049873345	0.0511077	0.05011526
1	mean_residual_deviance	0.00530646537	0.7693275-4	0.0064508487	0.0046754577	0.004961494	0.005170642	0.0052738744
2	mse	0.00530646537	0.7693275-4	0.0064508487	0.0046754577	0.004961494	0.005170642	0.0052738744
3	r2	0.399314	0.024179047	0.3833709	0.40335888	0.41851673	0.41999867	0.38635385
4	residual_deviance	0.00530646537	0.7693275-4	0.0064508487	0.0046754577	0.004961494	0.005170642	0.0052738744
5	rmse	0.0727322	0.0045401994	0.0831718	0.08837732	0.070437886	0.07190718	0.07282144
6	rmse	0.05298832	0.0030751708	0.056409515	0.05113161	0.05109275	0.052111694	0.052096236

Scoring History:

	timestamp	duration	number_of_trees	training_rmse	training_mae	training_deviance	validation_rmse	validation_mae	validation_deviance
0	2020-11-06 16:33:14	5.645 sec	0.0	Nan	Nan	Nan	Nan	Nan	Nan
1	2020-11-06 16:33:14	5.794 sec	5.0	0.092731	0.054162	0.008599	0.077650	0.054350	0.006029
2	2020-11-06 16:33:14	5.933 sec	10.0	0.083315	0.058312	0.009941	0.077926	0.052825	0.006072
3	2020-11-06 16:33:15	6.207 sec	15.0	0.079558	0.055421	0.006329	0.075519	0.051116	0.005703
4	2020-11-06 16:33:15	6.333 sec	20.0	0.077858	0.054349	0.006003	0.075928	0.051696	0.005765
5	2020-11-06 16:33:15	6.458 sec	25.0	0.078246	0.053035	0.005813	0.075127	0.051080	0.005644
6	2020-11-06 16:33:15	6.582 sec	30.0	0.075018	0.052247	0.005638	0.074809	0.050358	0.005596
7	2020-11-06 16:33:15	6.699 sec	35.0	0.074448	0.051738	0.005548	0.074106	0.049591	0.005492
8	2020-11-06 16:33:15	6.835 sec	40.0	0.074098	0.051285	0.005490	0.074058	0.049565	0.005485

Variable Importances:

variable	relative_importance	scaled_importance	percentage
Weekday	52.670166	1.000000	0.165306
InCountTotal_Jag7	32.486542	0.616792	0.101699
InCountTotal_Jag1	31.593189	0.599831	0.099155
WeekNo	29.034744	0.551256	0.091126
Day	23.509077	0.446345	0.073783
InCountTotal_Jag5	21.927973	0.416326	0.068021
InCountTotal_Jag3	20.454031	0.388532	0.064227
InCountTotal_Jag5	20.212564	0.383757	0.063437
InCountTotal_Jag2	16.722158	0.317488	0.052483
mean_temp	15.836860	0.300680	0.049704
InCountTotal_Jag4	11.855592	0.225091	0.037209
wind_speed	10.908723	0.207114	0.034237
Month	10.839201	0.206742	0.034176
rain	8.709678	0.127390	0.021058
School_holiday	4.351064	0.082810	0.013656
University_holidays	2.153005	0.040877	0.006757
high_temp	1.939754	0.036628	0.006068
low_temp	1.578600	0.029971	0.004954
UKBankHoliday	1.338281	0.026350	0.004339
abnormal_rain	1.274172	0.024192	0.003999

See the whole table with `table.as_data_frame()`

```
DRF_1_AutoML_20201106_163301
drf prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_163301.model_2
gbm prediction progress: [██████████] 100%
GBM_1_AutoML_20201106_163301
gbm prediction progress: [██████████] 100%
```

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

variable	relative_importance	scaled_importance	percentage
Weekday	52.670166	1.000000	0.165306
InCountTotal_Jag7	32.486542	0.616792	0.101699
InCountTotal_Jag1	31.593189	0.599831	0.099155
WeekNo	29.034744	0.551256	0.091126
Day	23.509077	0.446345	0.073783
InCountTotal_Jag5	21.927973	0.416326	0.068021
InCountTotal_Jag3	20.454031	0.388532	0.064227
InCountTotal_Jag5	20.212564	0.383757	0.063437
InCountTotal_Jag2	16.722158	0.317488	0.052483
mean_temp	15.836860	0.300680	0.049704
InCountTotal_Jag4	11.855592	0.225091	0.037209
wind_speed	10.908723	0.207114	0.034237
Month	10.839201	0.206742	0.034176
rain	8.709678	0.127390	0.021058
School_holiday	4.351064	0.082810	0.013656
University_holidays	2.153005	0.040877	0.006757
high_temp	1.939754	0.036628	0.006068
low_temp	1.578600	0.029971	0.004954
UKBankHoliday	1.338281	0.026350	0.004339
abnormal_rain	1.274172	0.024192	0.003999

DRF_1_AutoML_20201106_163301
drf prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_163301.model_2
gbm prediction progress: [██████████] 100%
GBM_1_AutoML_20201106_163301
gbm prediction progress: [██████████] 100%

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

The screenshot shows a JupyterLab environment with several tabs open. The active tab is titled "Mail_footfall_prediction_ske". In the code cell, there is a large amount of text output from a "gbm prediction progress" command, listing numerous models (e.g., XRT_1_AutoML_20201106_163301, dRF prediction progress, GBM_4_AutoML_20201106_163301) each reaching 100% completion. The interface includes a top navigation bar with links like "Google", "BITS Pilani - Login", "ACT Fibernet Portal...", "Customer Experience...", "AIML_SK Links", "Django: Web frame...", "AI- Updates", "BITS-Wheebox", and "BerkeleyX-AI OL Co...". A bottom status bar indicates "Python 3 | idle", "Ln 1, Col 1", and the file name "Mail_footfall_prediction_skeleton.ipynb".

The screenshot shows a Jupyter Notebook interface with a title bar "localhost:8888/lab". The left sidebar lists project files including "Multi_footfall_prediction.ipynb", "preprocess.py", "Project Plan.xlsx", "README.md", and "visualization.py". The main area displays a "Launcher" tab with a list of parallel prediction processes. Each process is represented by a progress bar and a status message:

- XGBoost_grid_1_AutoML_20201108_163301 model_10
- XGBoost prediction progress: [██████████] 100%
- GBM_grid_1_AutoML_20201108_163301 model_6
- gbm prediction progress: [██████████] 100%
- GBC_grid_1_AutoML_20201108_163301 model_1
- gbc prediction progress: [██████████] 100%
- XGBoost_grid_1_AutoML_20201108_163301 model_2
- xgboost prediction progress: [██████████] 100%
- XGBoost_grid_1_AutoML_20201108_163301 model_4
- XGBoost prediction progress: [██████████] 100%
- GBM_grid_1_AutoML_20201108_163301 model_5
- gbm prediction progress: [██████████] 100%
- GBM_grid_1_AutoML_20201108_163301 model_9
- gbm prediction progress: [██████████] 100%
- XGBoost_1_AutoML_20201108_163301
- xgboost prediction progress: [██████████] 100%
- DeepLearning_grid_1_AutoML_20201108_163301 model_1
- deeplearning prediction progress: [██████████] 100%
- XGBoost_grid_1_AutoML_20201108_163301 model_8
- xgboost prediction progress: [██████████] 100%
- GBM_grid_1_AutoML_20201108_163301 model_9
- gbm prediction progress: [██████████] 100%
- GBC_grid_1_AutoML_20201108_163301 model_4
- gbc prediction progress: [██████████] 100%
- XGBoost_2_AutoML_20201108_163301
- xgboost prediction progress: [██████████] 100%
- DeepLearning_grid_2_AutoML_20201108_163301 model_1
- deeplearning prediction progress: [██████████] 100%
- DeepLearning_grid_2_AutoML_20201108_163301 model_2
- deeplearning prediction progress: [██████████] 100%
- DeepLearning_1_AutoML_20201108_163301
- deeplearning prediction progress: [██████████] 100%
- DeepLearning_grid_1_AutoML_20201108_163301 model_3
- deeplearning prediction progress: [██████████] 100%
- DeepLearning_grid_1_AutoML_20201108_163301 model_5
- deeplearning prediction progress: [██████████] 100%
- GBM_1_AutoML_20201108_163301
- gbm prediction progress: [██████████] 100%
- DeepLearning_grid_1_AutoML_20201108_163301 model_3
- deeplearning prediction progress: [██████████] 100%
- XGBoost_grid_1_AutoML_20201108_163301 model_18
- xgboost prediction progress: [██████████] 100%
- DeepLearning_grid_2_AutoML_20201108_163301 model_2
- deeplearning prediction progress: [██████████] 100%
- DeepLearning_grid_3_AutoML_20201108_163301 model_2
- deeplearning prediction progress: [██████████] 100%

The screenshot shows a Jupyter Notebook environment with a Python 3 kernel. The code cell displays a large table of data, likely model predictions, with columns including XRT_LAutoML_20201106_165124, various GBM and XGBoost models, and DeepLearning models. The terminal cell below shows the model details and summary.

```
XRT_LAutoML_20201106_165124 0.00630812 0.0794237 0.00630812 0.0530807 0.0570479  
GBM_2_AutoML_20201106_165124 0.0069167 0.0794903 0.0063167 0.052425 0.0571758  
XGBoost_3_AutoML_20201106_165124 0.00638148 0.0798842 0.00638148 0.0554965 0.0574708  
XGBoost_grid_1_AutoML_20201106_165124,model_6 0.00539421 0.0797653 0.00539421 0.0553826 0.0573762  
GBM_grid_1_AutoML_20201106_165124,model_5 0.0064766 0.0804786 0.0064766 0.0542374 0.0578927  
XGBoost_grid_1_AutoML_20201106_165124,model_4 0.00659328 0.081199 0.00659328 0.0565031 0.058394  
XGBoost_grid_1_AutoML_20201106_165124,model_3 0.00671207 0.0819272 0.00671207 0.0571977 0.0588808  
XGBoost_grid_1_AutoML_20201106_165124,model_9 0.00685346 0.0827856 0.00685346 0.0591198 0.0597459  
DeepLearning_grid_3_AutoML_20201106_165124,model_1 0.00690911 0.0831211 0.00690911 0.0566515 0.0592551  
GBM_grid_1_AutoML_20201106_165124,model_1 0.00691255 0.0831417 0.00691255 0.0574193 0.0596972  
XGBoost_grid_1_AutoML_20201106_165124,model_5 0.00703398 0.0838688 0.00703398 0.05833975 0.0607406  
XGBoost_grid_1_AutoML_20201106_165124,model_2 0.00712634 0.0844177 0.00712634 0.0586531 0.0609371  
DeepLearning_grid_2_AutoML_20201106_165124,model_1 0.00717213 0.0848884 0.00717213 0.0590849 0.0606316  
GLM_LAutoML_20201106_165124 0.00740458 0.0805499 0.00740458 0.0615061 0.0618254  
DeepLearning_grid_1_AutoML_20201106_165124,model_2 0.00764294 0.0874239 0.00764294 0.0607284 0.0634499  
XGBoost_grid_1_AutoML_20201106_165124,model_1 0.0077616 0.0880999 0.0077616 0.0615441 0.0629514  
XGBoost_LAutoML_20201106_165124 0.00779143 0.0882391 0.00779143 0.0614511 0.0635562  
XGBoost_2_AutoML_20201106_165124 0.00802416 0.0895777 0.00802416 0.0633451 0.0646577  
XGBoost_grid_1_AutoML_20201106_165124,model_8 0.00805065 0.0897254 0.00805065 0.0627995 0.0641452  
DeepLearning_LAutoML_20201106_165124 0.00865774 0.0923081 0.00865774 0.0676054 0.0663866  
DeepLearning_grid_1_AutoML_20201106_165124,model_1 0.00880049 0.0938109 0.00880049 0.0666389 0.0672445  
  
Model Details  
*****  
H2OStackedEnsembleEstimator : Stacked Ensemble  
Model Key: StackedDenseEnsemble_BestOfFamily_AutoML_20201106_165124  
  
No model summary for this model  
  
ModelMetricsRegressionGLM: stackedensemble
```

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_skeleton.py

Python 3

```
Model1_Details
=====
H2StackedEnsembleEstimator : Stacked Ensemble
Model Key: StackedEnsemble_BestOffamily_AutoML_20201106_165124

No model summary for this model

ModelMetricsRegressionGLM: stackedensemble
** Reported on train data. **

RMSE: 0.0004518073065179481
RMSE: 0.012137874340854834
MAE: 0.015698953121264084
RMSLE: 0.0525414472685779
R^2: 0.98512151851517
Mean Residual Deviance: 0.0004518073065179481
Null degrees of freedom: 1418
Residual degrees of freedom: 1405
Null deviance: 12.88972041554146
Residual deviance: 0.594277490568135
AIC: -6852.012440988525

ModelMetricsRegressionGLM: stackedensemble
** Reported on validation data. **

RMSE: 0.005082789650100271
RMSE: 0.0712938589082587
MAE: 0.045793833838901732
RMSLE: 0.0525414475755619
R^2: 0.4297759705315254
Mean Residual Deviance: 0.005082789650100271
Null degrees of freedom: 343
Residual degrees of freedom: 338
Null deviance: 3.0695892188637877
Residual deviance: 1.7484796396344933
AIC: -826.742175472221

ModelMetricsRegressionGLM: stackedensemble
** Reported on cross-validation data. **

RMSE: 0.06809318336515132
RMSE: 0.045793833838901732
MAE: 0.045793833838901732
RMSLE: 0.04952414313801974
R^2: 0.4032925183920322
```

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_skeleton.py

Python 3

```
StackedEnsemble_BestOffamily_AutoML_20201106_165124
stackedensemble prediction progress: ██████████ 100%
StackedEnsemble_AutoML_20201106_165124
stackedensemble prediction progress: ██████████ 100%
GBM_1_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
GBM_2_AutoML_20201106_165124_model_1
gbm prediction progress: ██████████ 100%
GBM_3_AutoML_20201106_165124_model_2
gbm prediction progress: ██████████ 100%
GBM_4_AutoML_20201106_165124_model_3
gbm prediction progress: ██████████ 100%
GBM_5_AutoML_20201106_165124_model_4
gbm prediction progress: ██████████ 100%
XGBGrid_1_AutoML_20201106_165124
xgboost prediction progress: ██████████ 100%
GBM_6_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
GBM_7_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
XRT_1_AutoML_20201106_165124
drf prediction progress: ██████████ 100%
GBM_8_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
GBM_9_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
XGBGrid_3_AutoML_20201106_165124
xgboost prediction progress: ██████████ 100%
XGBGrid_2_AutoML_20201106_165124
xgboost prediction progress: ██████████ 100%
XGBGrid_4_AutoML_20201106_165124_model_1
xgboost prediction progress: ██████████ 100%
GBM_10_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
GBM_11_AutoML_20201106_165124
gbm prediction progress: ██████████ 100%
XGBGrid_5_AutoML_20201106_165124_model_2
xgboost prediction progress: ██████████ 100%
XGBGrid_6_AutoML_20201106_165124_model_3
xgboost prediction progress: ██████████ 100%
XGBGrid_7_AutoML_20201106_165124_model_4
xgboost prediction progress: ██████████ 100%
```

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_skeleton.ipynb Python 3

Parse progress: 100%

Parse progress: 100%

AutoML progress: 100%

17:03:26,194: User specified a validation frame with cross-validation still enabled. Please note that the models will still be validated using cross-validation only, the validation frame will be used to provide purely informative validation metrics on the trained models.

model_id	mean_residual_deviance	rmse	mse	mae	rmsle
DRF_1_AutoML_20201106_170326	0.00475789	0.0689775	0.0475789	0.0487718	0.0488108
GBM_grid_1_AutoML_20201106_170326_model_15	0.00470597	0.069356	0.0476597	0.0492558	0.0487199
GBM_grid_1_AutoML_20201106_170326_model_4	0.00480147	0.0692927	0.0480147	0.0490451	0.0489801
GBM_grid_1_AutoML_20201106_170326_model_6	0.00486359	0.0697394	0.0486359	0.0486219	0.0492397
GBM_grid_1_AutoML_20201106_170326_model_2	0.00466559	0.070467	0.0496659	0.0499778	0.0496495
XRT_1_AutoML_20201106_170326	0.00500388	0.0707367	0.0500388	0.049444	0.0502639
GBM_1_AutoML_20201106_170326	0.00501132	0.0706039	0.0501132	0.0491997	0.0498738
GBM_4_AutoML_20201106_170326	0.00501477	0.070815	0.0501477	0.0497034	0.0499615
GBM_grid_1_AutoML_20201106_170326_model_9	0.00501988	0.0705511	0.0501988	0.0506695	0.0501995
GBM_grid_1_AutoML_20201106_170326_model_10	0.00504154	0.0710038	0.0504154	0.0493408	0.0500892
XGBoost_grid_1_AutoML_20201106_170326_model_13	0.00594246	0.0710103	0.0594246	0.0512362	0.051343
GBM_grid_1_AutoML_20201106_170326_model_12	0.00590845	0.0712773	0.0590845	0.0494366	0.050272
GBM_2_AutoML_20201106_170326	0.00513385	0.0716659	0.0513385	0.0503931	0.050186
XGBoost_grid_1_AutoML_20201106_170326_model_5	0.00516478	0.0716107	0.0516478	0.0521093	0.0508891
GBM_grid_1_AutoML_20201106_170326_model_5	0.00518456	0.0720399	0.0518456	0.0506487	0.0509672
GBM_grid_1_AutoML_20201106_170326_model_17	0.00519178	0.0720354	0.0519178	0.0499741	0.0506753
XGBoost_grid_1_AutoML_20201106_170326_model_6	0.00521756	0.0722327	0.0521756	0.051929	0.0513041
XGBoost_grid_1_AutoML_20201106_170326_model_14	0.005322794	0.0723045	0.05322794	0.0533459	0.0512856
XGBoost_grid_1_AutoML_20201106_170326_model_18	0.005323991	0.0723872	0.05323991	0.0520817	0.0511338
GBM_grid_1_AutoML_20201106_170326_model_13	0.005340397	0.0723904	0.05340397	0.0505675	0.051058
GBM_grid_1_AutoML_20201106_170326_model_11	0.005346815	0.0724441	0.05346815	0.0532438	0.0513868
GRM_3_AutoML_20201106_170326	0.00573599	0.0726195	0.0573599	0.0511468	0.0511065

Python 3 idle Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb 7:09 PM ENL INTL 11/10/2020

The screenshot shows a Jupyter Notebook interface with a list of trained machine learning models for footfall prediction. The models are listed in a table format:

Model Name	Model Description
GBM_grid_1_AutoML_20201106_170326_model_13	0.00524037 0.0723904 0.00524037 0.050575 0.0511058
GBM_grid_1_AutoML_20201106_170326_model_11	0.00524815 0.0724441 0.00524815 0.0502438 0.0513888
GBM_3_AutoML_20201106_170326	0.00527359 0.0726195 0.00527359 0.0511468 0.0511085
XGBoost_grid_1_AutoML_20201106_170326_model_17	0.00529119 0.0727406 0.00529119 0.05024125 0.0513887
XGBoost_grid_1_AutoML_20201106_170326_model_26	0.00534116 0.0730833 0.00534116 0.05022323 0.0516777
XGBoost_grid_1_AutoML_20201106_170326_model_7	0.00535112 0.0731519 0.00535112 0.0516781 0.0517965
XGBoost_grid_1_AutoML_20201106_170326_model_12	0.00536474 0.0731761 0.00536474 0.0506907 0.0516894
GBM_5_AutoML_20201106_170326	0.00542801 0.0731875 0.00542801 0.0518642 0.0520968
GBM_grid_1_AutoML_20201106_170326_model_14	0.00543852 0.0737465 0.00543852 0.0516238 0.0521711
GBM_grid_1_AutoML_20201106_170326_model_7	0.00544453 0.0737936 0.00544453 0.0524032 0.0522020
GBM_grid_1_AutoML_20201106_170326_model_8	0.00544693 0.0738169 0.00544693 0.0522386 0.0520129
GBM_grid_1_AutoML_20201106_170326_model_16	0.00552399 0.0745228 0.00552399 0.0526812 0.052123
XGBoost_grid_1_AutoML_20201106_170326_model_1	0.00552664 0.0745414 0.00552664 0.0536456 0.0524945
XGBoost_grid_1_AutoML_20201106_170326_model_4	0.0055477 0.0748429 0.0055477 0.0528362 0.0527336
XGBoost_grid_1_AutoML_20201106_170326_model_30	0.00562538 0.0750205 0.00562538 0.0537244 0.0529918
XGBoost_grid_1_AutoML_20201106_170326_model_21	0.00562643 0.0750095 0.00562643 0.05417 0.0525719
XGBoost_grid_1_AutoML_20201106_170326_model_25	0.00562981 0.0750932 0.00562981 0.0541788 0.0530688
XGBoost_grid_1_AutoML_20201106_170326_model_24	0.00563361 0.0750707 0.00563361 0.0542042 0.0531137
XGBoost_grid_1_AutoML_20201106_170326_model_29	0.005648 0.0751532 0.005648 0.0548794 0.0532844
XGBoost_grid_1_AutoML_20201106_170326_model_2	0.0056573 0.075215 0.0056573 0.0548732 0.053229
GBM_grid_1_AutoML_20201106_170326_model_1	0.00566506 0.0752865 0.00566506 0.0533338 0.052994
XGBoost_grid_1_AutoML_20201106_170326_model_32	0.00566626 0.0752879 0.00566626 0.0545668 0.0532102
XGBoost_grid_1_AutoML_20201106_170326_model_15	0.00569165 0.0754443 0.00569165 0.0533355 0.0533039
GBM_grid_1_AutoML_20201106_170326_model_3	0.00570165 0.0755106 0.00570165 0.0538163 0.0536308
XGBoost_grid_1_AutoML_20201106_170326_model_11	0.00570453 0.0755283 0.00570453 0.0539646 0.0535985
XGBoost_grid_1_AutoML_20201106_170326	0.00571168 0.0755757 0.00571168 0.0574713 0.0538797
XGBoost_grid_1_AutoML_20201106_170326_model_23	0.00576075 0.0756994 0.00576075 0.0552659 0.0539111

The screenshot shows a JupyterLab environment with the following details:

- File Tree:** On the left, there's a sidebar titled "Launcher" containing a "Code" tab. The file tree under "Project / Capstone" includes "Project / Capstone", "Project-master", "data", "AIML Capstone - Gro...", "Coverage.xlsx", "fullBFSGAN.ipynb", "Mail_footfall_predict...", "Mail_footfall_predict_...", "preprocess.py", "Project Plan.xlsx", "README.md", "visualisation.py", and "work_flow.pptx".
- Code Editor:** The main area is titled "Mail_footfall_prediction_skeleton.ipynb" and contains Python code. The code includes imports like numpy, pandas, and various ML models from xgboost and deeplearning. It defines multiple grid search configurations for XGBoost and DeepLearning models across different parameters like n_estimators, max_depth, and learning_rate.
- Toolbar:** At the top, there are standard browser-style navigation buttons (back, forward, search, etc.) and a "Paused" button in the top right corner.
- Bottom Bar:** The bottom bar shows the Python 3 kernel, a progress bar indicating the notebook is running, and other system status indicators.

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske...

MEAN Residual Deviance: 0.004930688143039151

ModelMetricsRegression: drf
** Reported on cross-validation data. **

MSE: 0.004930688143039151

RMSE: 0.07021386028012704

RMSLE: 0.0565382578702725

Mean Residual Deviance: 0.004930688143039151

Cross-Validation Metrics Summary:

	mean	sd	cv_1_valid	cv_2_valid	cv_3_valid	cv_4_valid	cv_5_valid	
0	mse	0.048117943	0.004851657	0.04791247	0.04436014	0.05012288	0.050408874	
1	mean_residual_deviance	0.00493034	4.934786E-4	0.0054157392	0.004944143	0.004201629	0.0050302026	0.00530569086
2	mse	0.00493034	4.934786E-4	0.0054157392	0.004944143	0.004201629	0.0050302026	0.00530569086
3	r2	0.3925403	0.023834965	0.39307024	0.427967	0.363533857	0.39738265	0.3809918
4	residual_deviance	0.00493034	4.934786E-4	0.0054157392	0.004944143	0.004201629	0.0050302026	0.00530569086
5	rmse	0.07014598	0.003664088	0.07359164	0.0685158	0.06481998	0.070905036	0.07284167
6	rmse	0.05615530	0.002153862	0.05186387	0.04951262	0.047377054	0.051650066	0.052671276

Scoring History:

	timestamp	duration	number_of_trees	training_rmse	training_mae	training_deviance	validation_rmse	validation_mae	validation_deviance
0	2020-11-06 17:04:05	24.307 sec	0.0	NaN	NaN	NaN	NaN	NaN	NaN
1	2020-11-06 17:04:05	25.015 sec	5.0	0.088417	0.0518680	0.007818	0.071457	0.0503079	0.005108
2	2020-11-06 17:04:06	25.548 sec	10.0	0.079708	0.055268	0.006533	0.067749	0.047892	0.004590
3	2020-11-06 17:04:07	26.103 sec	15.0	0.076615	0.059216	0.005655	0.067088	0.047158	0.004501
4	2020-11-06 17:04:07	26.656 sec	20.0	0.074070	0.050916	0.005486	0.065503	0.046105	0.004291
5	2020-11-06 17:04:08	27.176 sec	25.0	0.072958	0.050248	0.005323	0.064617	0.045596	0.004175
6	2020-11-06 17:04:08	27.767 sec	30.0	0.071666	0.049588	0.005136	0.064847	0.045690	0.004205
7	2020-11-06 17:04:09	28.525 sec	35.0	0.071484	0.049328	0.005110	0.064493	0.045304	0.004151
8	2020-11-06 17:04:10	29.109 sec	40.0	0.071447	0.049207	0.005105	0.064986	0.045492	0.004223

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Launcher Mail_footfall_prediction_ske

	date	time	duration	avg speed	total distance	total time	total count		
8	2020-11-06 17:04:10	29.109 sec	40.0	0.071447	0.049207	0.005105	0.064986	0.045692	0.004223
9	2020-11-06 17:04:10	29.544 sec	44.0	0.070942	0.048810	0.005033	0.064447	0.045290	0.004153

Variable Importances:

variable	relative_importance	scaled_importance	percentage
0	Weekday_Jag5	31.909982	1.000000
1	Weekday_Jag1	16.971149	0.531845
2	InCountTotal_Jag1	15.180311	0.475732
3	Weekday_Jag4	10.350921	0.324379
4	Weekday_Jag2	8.535987	0.268066
5	InCountTotal_Jag3	7.449919	0.233467
6	InCountTotal_Jag6	7.412574	0.232297
7	trend_Incount_Jag0	6.995370	0.219222
8	Weekday_Jag6	6.978898	0.218705
9	Day_Jag3	6.915781	0.216728
10	trend_Incount_Jag3	6.654491	0.208555
11	trend_Incount_Jag7	6.650480	0.208414
12	Day_Jag1	6.245910	0.195735
13	InCountTotal_Jag5	6.091971	0.190911
14	Week_no_Jag4	5.571676	0.174606
15	Day_Jag2	5.384005	0.169725
16	rolling_mean_Incount_Jag1	5.342828	0.160061
17	trend_Incount_Jag5	5.217803	0.163516
18	trend_Incount_Jag4	5.196543	0.162019
19	trend_Incount_Jag2	5.102382	0.159896

See the whole table with `table.as_data_frame()`

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyrb

Python 3 | idle

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

```

DRF_1_AutoML_20201106_178326
drf prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model_15
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model3_4
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model_6
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model_2
gbm prediction progress: [██████████] 100%
XRT_1_AutoML_20201106_178326
drf prediction progress: [██████████] 100%
GBM_1_AutoML_20201106_178326
gbm prediction progress: [██████████] 100%
GBM_4_AutoML_20201106_178326
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model_9
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model1_19
gbm prediction progress: [██████████] 100%
XGBoost_grid_1_AutoML_20201106_178326_model1_13
xgboost prediction progress: [██████████] 100%
GBM_1_AutoML_20201106_178326_model6_32
gbm prediction progress: [██████████] 100%
GBM_2_AutoML_20201106_178326
gbm prediction progress: [██████████] 100%
XGBGrid_1_AutoML_20201106_178326_model_5
xgboost prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model5_5
gbm prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model1_17
gbm prediction progress: [██████████] 100%
XGBGrid_1_AutoML_20201106_178326_model_28
xgboost prediction progress: [██████████] 100%
XGBGrid_1_AutoML_20201106_178326_model1_34
xgboost prediction progress: [██████████] 100%
XGBGrid_1_AutoML_20201106_178326_model1_18
xgboost prediction progress: [██████████] 100%
GBM_grid_1_AutoML_20201106_178326_model1_13
gbm prediction progress: [██████████] 100%
GBM_1_AutoML_20201106_178326_model1_11
gbm prediction progress: [██████████] 100%
GBM_3_AutoML_20201106_178326
gbm prediction progress: [██████████] 100%

```

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyrb

Python 3 | idle

The screenshot shows a Jupyter Notebook interface running in a browser window. The top navigation bar includes tabs for Google, JupyterLab, and the current local host. The left sidebar displays a file tree for a project named 'Project / Capstone' containing files like 'data', 'Coverage.xlsx', 'FullSCAN.ipynb', 'Mail_footfall_prediction.ipynb', 'preprocess.py', 'Project Plan.xlsx', 'README.md', 'visualization.py', and 'work_flow.pptx'. The main area contains several kernel outputs for different models, all showing 100% completion. The bottom status bar indicates the environment is 'Paused'.

```
xgboost_grid_1_AutoML_20201108_170326 model_15  
xgboost prediction progress: [██████████] 100%  
GBM_grid_1_AutoML_20201108_170326 model_3  
gbm prediction progress: [██████████] 100%  
xgboost prediction progress: [██████████] 100%  
xgboost_grid_1_AutoML_20201108_170326 model_11  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326  
xgboost prediction progress: [██████████] 100%  
xgboost_grid_1_AutoML_20201108_170326 model_23  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_27  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_16  
xgboost prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_1  
deeplearning prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_3  
deeplearning prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_3  
deeplearning prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_9  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326  
xgboost prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_4  
deeplearning prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_8  
deeplearning prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_6  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_2  
xgboost prediction progress: [██████████] 100%  
Deeplearning_grid_1_AutoML_20201108_170326 model_2  
deeplearning prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326 model_10  
xgboost prediction progress: [██████████] 100%  
XGBoost_1_AutoML_20201108_170326  
xgboost prediction progress: [██████████] 100%  
xgboost prediction progress: [██████████] 100%  
Deeplearning_grid_2_AutoML_20201108_170326 model_2  
deeplearning prediction progress: [██████████] 100%  
Deeplearning_grid_2_AutoML_20201108_170326 model_4
```

Google JupyterLab localhost:8888/lab

```

File Edit View Run Kernel Tabs Settings Help
Launcher Mail_footfall_prediction_ske Python 3
Project / Capstone- Project-master /
Name
data AIM Capstone - Gro... Coverage.xlsx FullDBSCAN.ipynb Mail_footfall_predict...
Mail_footfall_predict... preprocess.py Project Plan.xlsx README.md visualization.py work_flow.pptx
[68]: loss_auto_ml_model.sort_values('mape').head(25)
[68]:
Model_type mape mse me mae mpe rmse R2 score Adj R2 score AIC BIC
15 GBM_grid_1_AutoML_20201106_170326_model_17Outlier_removed_full_Jag 12.882867 0.005192 -0.012982 0.049074 0.000897 0.072054 0.363021 -0.003724 -1654.147851 -1135.461503
6 GBML_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.117423 0.005019 0.008359 0.049170 0.011168 0.070804 0.384931 0.030801 -1666.923818 -1148.237270
9 GBM_grid_1_AutoML_20201106_170326_model_10Outlier_removed_full_Jag 13.148594 0.005042 -0.009029 0.049341 0.011172 0.071004 0.381455 0.025322 -1654.965609 -1146.179951
11 GBM_grid_1_AutoML_20201106_170326_model_12Outlier_removed_full_Jag 13.149347 0.005080 -0.009254 0.049437 0.008685 0.071277 0.376680 0.017798 -1652.59547 -1143.373199
0 DRF_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.169758 0.004758 -0.006683 0.049772 0.016474 0.069977 0.416255 0.080159 -1666.002099 -1167.15751
1 GBM_grid_1_AutoML_20201106_170326_model_10Outlier_removed_full_Jag 13.172173 0.004766 -0.007443 0.049256 0.012985 0.069038 0.415264 0.078589 -1663.838018 -1166.809564
7 GBM_4_AutoML_20201106_170326_outlier_removed_full_Jag 13.190034 0.005015 -0.010347 0.049703 0.006241 0.070815 0.384739 0.030498 -1666.809554 -1148.123215
2 GBM_grid_1_AutoML_20201106_170326_model_4Outlier_removed_full_Jag 13.253341 0.004801 -0.004451 0.049048 0.021781 0.069293 0.410908 0.071733 -1662.673845 -1163.987498
5 XRT_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.375833 0.005004 -0.006309 0.049440 0.018393 0.070737 0.386099 0.032640 -1667.617129 -1148.930781

```

Google JupyterLab localhost:8888/lab

```

File Edit View Run Kernel Tabs Settings Help
Launcher Mail_footfall_prediction_ske Python 3
Project / Capstone- Project-master /
Name
data AIM Capstone - Gro... Coverage.xlsx FullDBSCAN.ipynb Mail_footfall_predict...
Mail_footfall_predict... preprocess.py Project Plan.xlsx README.md visualization.py work_flow.pptx
[68]: loss_auto_ml_model.sort_values('mape').head(25)
[68]:
Model_type mape mse me mae mpe rmse R2 score Adj R2 score AIC BIC
15 GBM_grid_1_AutoML_20201106_170326_model_17Outlier_removed_full_Jag 12.882867 0.005192 -0.012982 0.049074 0.000897 0.072054 0.363021 -0.003724 -1654.147851 -1135.461503
6 GBML_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.117423 0.005019 0.008359 0.049170 0.011168 0.070804 0.384931 0.030801 -1666.923818 -1148.237270
9 GBM_grid_1_AutoML_20201106_170326_model_10Outlier_removed_full_Jag 13.148594 0.005042 -0.009029 0.049341 0.011172 0.071004 0.381455 0.025322 -1654.965609 -1146.179951
11 GBM_grid_1_AutoML_20201106_170326_model_12Outlier_removed_full_Jag 13.149347 0.005080 -0.009254 0.049437 0.008685 0.071277 0.376680 0.017798 -1652.59547 -1143.373199
0 DRF_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.169758 0.004758 -0.006683 0.049772 0.016474 0.069977 0.416255 0.080159 -1666.002099 -1167.15751
1 GBM_grid_1_AutoML_20201106_170326_model_10Outlier_removed_full_Jag 13.172173 0.004766 -0.007443 0.049256 0.012985 0.069038 0.415264 0.078589 -1663.838018 -1166.809564
7 GBM_4_AutoML_20201106_170326_outlier_removed_full_Jag 13.190034 0.005015 -0.010347 0.049703 0.006241 0.070815 0.384739 0.030498 -1666.809554 -1148.123215
2 GBM_grid_1_AutoML_20201106_170326_model_4Outlier_removed_full_Jag 13.253341 0.004801 -0.004451 0.049048 0.021781 0.069293 0.410908 0.071733 -1662.673845 -1163.987498
5 XRT_1_AutoML_20201106_170326_outlier_removed_full_Jag 13.375833 0.005004 -0.006309 0.049440 0.018393 0.070737 0.386099 0.032640 -1667.617129 -1148.930781
3 GBM_grid_1_AutoML_20201106_170326_model_6Outlier_removed_full_Jag 13.402794 0.004864 -0.006570 0.049822 0.016723 0.069739 0.403287 0.059725 -1677.982234 -1159.296886
4 GBM_grid_1_AutoML_20201106_170326_model_13Outlier_removed_full_Jag 13.417615 0.005042 -0.010077 0.049938 0.007297 0.070487 0.390772 0.040004 -1670.406108 -1151.719780
12 GBML_2_AutoML_20201106_170326_outlier_removed_full_Jag 13.417531 0.005134 -0.009873 0.050394 0.005761 0.071651 0.370718 0.007471 -1658.342916 -1139.556912
19 GBM_grid_1_AutoML_20201106_170326_model_105Outlier_removed_full_Jag 13.439524 0.005240 -0.010632 0.050571 0.006981 0.072309 0.387059 -0.013118 -1650.475110 -1132.051162
21 GBM_3_AutoML_20201106_170326_outlier_removed_full_Jag 13.615378 0.005274 -0.009145 0.051147 0.010698 0.072619 0.352984 -0.019541 -1648.440981 -1129.754633
8 GBM_grid_1_AutoML_20201106_170326_model_9Outlier_removed_full_Jag 13.627579 0.005020 -0.009574 0.050670 0.018483 0.070851 0.384111 0.029502 -1666.437335 -1147.751187
10 XGBGrid_1_AutoML_20201106_170326_model_13Outlier_removed_full_Jag 13.676115 0.005042 -0.007884 0.051235 0.012842 0.071010 0.381341 0.025143 -1647.991163 -1146.112815
14 GBM_grid_1_AutoML_20201106_170326_model_5Outlier_removed_full_Jag 13.713585 0.005185 -0.004814 0.050049 0.023570 0.072004 0.383907 0.002338 -1654.855540 -1135.549592
25 XGBGrid_1_AutoML_20201106_170326_model_12Outlier_removed_full_Jag 13.766387 0.005355 -0.004009 0.050691 0.021509 0.073176 0.343027 -0.035229 -1642.887185 -1124.180837
29 GBM_grid_1_AutoML_20201106_170326_model_8Outlier_removed_full_Jag 13.855671 0.005449 -0.010984 0.052238 0.008480 0.073817 0.331471 -0.053439 -1635.502686 -1117.916340
30 GBM_grid_1_AutoML_20201106_170326_model_16Outlier_removed_full_Jag 13.937205 0.005524 -0.011772 0.052681 0.006184 0.074832 0.322262 -0.067951 -1631.508711 -1112.823262
26 GBM_5_AutoML_20201106_170326_outlier_removed_full_Jag 13.941405 0.005428 -0.006090 0.051884 0.020816 0.073675 0.334038 -0.049384 -1637.906816 -1119.220468
24 XGBGrid_1_AutoML_20201106_170326_model_13Outlier_removed_full_Jag 13.962424 0.005351 -0.006169 0.051678 0.018046 0.073152 0.343462 -0.034545 -1643.086003 -1124.422235
27 GBM_grid_1_AutoML_20201106_170326_model_14Outlier_removed_full_Jag 13.979210 0.005439 -0.004958 0.051624 0.023910 0.073746 0.322748 -0.051427 -1637.200392 -1118.514044
23 XGBGrid_1_AutoML_20201106_170326_model_28Outlier_removed_full_Jag 14.011207 0.005341 -0.007240 0.052223 0.015735 0.073083 0.344693 -0.032605 -1643.93727 -1125.107379
16 XGBGrid_1_AutoML_20201106_170326_model_28Outlier_removed_full_Jag 14.053405 0.005218 -0.007272 0.051928 0.013980 0.072233 0.356858 -0.008708 -1652.338876 -1133.455578

```

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

Python 3

```
[61]: prophet_model = fb_prophet(data_prophet)
loss_prophet = prophet_model.train()
loss_values_all_models.append(loss_prophet)
```

7.5 Model training with FB Prophet

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

0 2 Python 3 | idle ENGLISH 7:21 PM INTL 11/10/2020

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

Python 3

```
[72]: loss_prophet.head()
```

Model_type	mape	mse	me	mae	mpre	rmse	R2 score	Adj R2 score	AIC	BIC
FB prophet Model	37.089353	2.980130e+09	-8577.685309	41135.873264	0.153897	54590.569323	-0.321876	-0.329179	7986.559989	7974.359784

7.6 Model training with GAN (Generative Adversarial Network) model

The diagram illustrates a Generative Adversarial Network (GAN) architecture. It features two main components: a "Generator" and a "Discriminator". The Generator takes a "Latent input" and produces "Generated data". This generated data is then fed into the Discriminator, along with "Real data". The Discriminator outputs two types of losses: "(G) loss" and "(D) loss".

Randomly, real or generated data is fitted into the Discriminator, which acts as a classifier and tries to understand whether the data is coming from the Generator or is the real data. D estimates the (distributions) probabilities of the incoming sample to the real dataset.

Then, the losses from G and D are combined and propagated back through the generator. Ergo, the generator's loss depends on both the generator and the discriminator. This is the step that helps the Generator learn about the real data distribution. If the generator doesn't do a good job at generating a realistic data (having the same distribution), the Discriminator's work will be very easy to distinguish generated from real data sets. Hence, the Discriminator's loss will be very small. Small discriminator loss will result in bigger generator loss (see the equation below for L(D,G)). This makes creating the discriminator a bit tricky, because too good of a discriminator will always result in a huge generator loss, making the generator unable to learn. The process goes on until the Discriminator can no longer distinguish generated from real data.

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

0 2 Python 3 | idle ENGLISH 7:21 PM INTL 11/10/2020

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

Python 3

```

generator loss, making the generator unable to learn. The process goes on until the Discriminator can no longer distinguish generated from real data.

When combined together, D and G is sort of playing a minimax game (the Generator is trying to fool the Discriminator making it increase the probability for on fake examples, i.e. minimize  $\mathbb{E}_z[p_G(z) \log(1 - D(G(z)))]$ ). The Discriminator wants to separate the data coming from the Generator,  $D(G(z))$ , by maximizing  $\mathbb{E}_x[p_G(x) \log D(x)]$ . Having separated loss functions, however, it is not clear how both can converge together (that is why we use some advancements over the plain GANs, such as Wasserstein GAN). Overall, the combined loss function looks like:
```

$$L(D, G) = \mathbb{E}_{x \sim p_r(x)} [\log D(x)] + \mathbb{E}_{z \sim p_g(z)} [\log(1 - D(G(z)))]$$

```

[67]: class GAN_Model():
    def __init__(self, n_timesteps,n_features,latent_dim, learning_rate=0.001):
        self.generator_input_dim = (n_timesteps,n_features)
        self.n_timesteps = n_timesteps
        self.n_features = n_features
        self.latent_dim = latent_dim
        self.learning_rate = learning_rate
        self._build_model()
        self._build_generator_model()
        self._build_and_compile_discriminator_model()
        self._build_and_compile_gan()

    def train(self, epochs, X_train, y_train, X_test, y_test,batch_size):

        noise = np.random.normal(0, 1, (batch_size, self.n_timesteps,self.n_features))
        noise = np.random.uniform(0,1,size=(batch_size, int(self.n_timesteps*self.n_features)))
        noise = np.random.uniform(0,1,size=(batch_size, self.latent_dim))
        pd.DataFrame(noise).to_csv('GAN_noise_dataset.csv')

        generated_dataset = self.generator_model.predict(noise)
        pd.DataFrame(generated_dataset.reshape((batch_size,int(self.n_timesteps*self.n_features)))).to_csv("GAN_generator_dataset.csv")

        generated_dataset = generated_dataset.reshape((batch_size, self.n_timesteps,self.n_features))
        #fake_target = self._buildFakeTarget(X_train,generated_dataset,y_train)
        fake_target = np.random.uniform(0,1,size=(batch_size))
        pd.DataFrame(fake_target).to_csv('GAN_fake_target.csv')

        history = []

        for epoch in range(epochs):
            # Train Discriminator
            noise = np.random.uniform(0,1,size=(batch_size, int(self.n_timesteps*self.n_features)))
            noise = np.random.uniform(0, 1, (batch_size, self.n_timesteps,self.n_features))
            noise = np.random.uniform(0,1,size=(batch_size, self.latent_dim))
            generated_dataset = self.generator_model.predict(noise)
            #generated_dataset = generated_dataset.reshape((batch_size, self.n_timesteps,self.n_features))
            idx = np.random.randint(0, X_train.shape[0], batch_size)
            X_train_batch = X_train[idx]
            y_train_batch = y_train[idx]
            #fake_target = self._buildFakeTarget(X_train,generated_dataset,y_train)
            #if discriminator_model.trainable == True
            if epoch > 0 and generator_loss > discriminator_loss:
                print('D train loss is {:.3f}. Freezing optimization of D'.format(generator_loss, discriminator_loss))
            else:
                print('G train loss is {:.3f}. Freezing optimization of G'.format(generator_loss, discriminator_loss))
            loss_real = self.discriminator_model.train_on_batch(X_train_batch, y_train_batch)
            loss_fake = self.discriminator_model.train_on_batch(generated_dataset, fake_target)
            discriminator_loss = np.add(loss_real, loss_fake)

            # Train Generator
            noise = np.random.uniform(0,1,size=(batch_size, self.latent_dim))
            if epoch > 0 and discriminator_loss > generator_loss:
                print('G train loss is {:.3f}, D train loss is {:.3f}. Freezing optimization of G'.format(generator_loss, discriminator_loss))
            else:
                print('D train loss is {:.3f}, G train loss is {:.3f}. Freezing optimization of D'.format(generator_loss, discriminator_loss))
            generator_loss = self.gan.train_on_batch(noise, y_train_batch)

            history.append((D,discriminator_loss,G,generator_loss))

            val_loss = self.discriminator_model.test_on_batch(X_test, y_test)
            if val_loss < curr_val_loss:
                self.discriminator_model.save('saved_model_GAN_model16.hdf5') # creates a HDF5 file 'my_model.h5'
            curr_val_loss = val_loss

        # Save images from every hundredth epoch generated images
        if epoch % 100 == 0:
            # Produce Images for the GIF as we go
            # Plot the progress every 100th epoch
            print("-----")
            print ("*****Epoch {}*****".format(epoch))
            print ("loss_real : {}, loss_fake : {}, Discriminator loss: {}, val_loss : {}".format(loss_real,loss_fake,discriminator_loss,val_loss))
            print ("Generator loss: {}".format(generator_loss))
            print ("-----")

```

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

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Google JupyterLab

localhost:8888/lab

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Launcher Mail_footfall_prediction_ske

Python 3

```

discriminator_loss , generator_loss ,curr_val_loss = 0., 0., 1e10 # initialize this to a high value
# Train Discriminator
for epoch in range(epochs):
    #noise = np.random.uniform(0,1,size=(batch_size, int(self.n_timesteps*self.n_features)))
    #noise = np.random.uniform(0, 1, (batch_size, self.n_timesteps,self.n_features))
    #noise = np.random.uniform(0,1,size=(batch_size, self.latent_dim))
    generated_dataset = self.generator_model.predict(noise)
    #generated_dataset = generated_dataset.reshape((batch_size, self.n_timesteps,self.n_features))
    idx = np.random.randint(0, X_train.shape[0], batch_size)
    X_train_batch = X_train[idx]
    y_train_batch = y_train[idx]
    #fake_target = self._buildFakeTarget(X_train,generated_dataset,y_train)
    #if discriminator_model.trainable == True
    if epoch > 0 and generator_loss > discriminator_loss:
        print('D train loss is {:.3f}. Freezing optimization of D'.format(generator_loss, discriminator_loss))
    else:
        print('G train loss is {:.3f}. Freezing optimization of G'.format(generator_loss, discriminator_loss))
    loss_real = self.discriminator_model.train_on_batch(X_train_batch, y_train_batch)
    loss_fake = self.discriminator_model.train_on_batch(generated_dataset, fake_target)
    discriminator_loss = np.add(loss_real, loss_fake)

    # Train Generator
    noise = np.random.uniform(0,1,size=(batch_size, self.latent_dim))
    if epoch > 0 and discriminator_loss > generator_loss:
        print('G train loss is {:.3f}, D train loss is {:.3f}. Freezing optimization of G'.format(generator_loss, discriminator_loss))
    else:
        print('D train loss is {:.3f}, G train loss is {:.3f}. Freezing optimization of D'.format(generator_loss, discriminator_loss))
    generator_loss = self.gan.train_on_batch(noise, y_train_batch)

    history.append((D,discriminator_loss,G,generator_loss))

    val_loss = self.discriminator_model.test_on_batch(X_test, y_test)
    if val_loss < curr_val_loss:
        self.discriminator_model.save('saved_model_GAN_model16.hdf5') # creates a HDF5 file 'my_model.h5'
    curr_val_loss = val_loss

# Save images from every hundredth epoch generated images
if epoch % 100 == 0:
    # Produce Images for the GIF as we go
    # Plot the progress every 100th epoch
    print("-----")
    print ("*****Epoch {}*****".format(epoch))
    print ("loss_real : {}, loss_fake : {}, Discriminator loss: {}, val_loss : {}".format(loss_real,loss_fake,discriminator_loss,val_loss))
    print ("Generator loss: {}".format(generator_loss))
    print ("-----")

```

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

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This screenshot shows a JupyterLab interface with two tabs open: 'Google' and 'JupyterLab'. The 'JupyterLab' tab displays the code for 'Mail_footfall_prediction_skeleton.ipynb'. The code defines a class 'Mail_footfall_predictor' with methods for building generator and discriminator models, calculating distances between real and fake data, and plotting results.

```
print('*****epoch : {}*****'.format(epoch))
print('loss_real : {}, loss_fake : {}, Discriminator loss: {}, val_loss :{}'.format(loss_real,loss_fake,discriminator_loss,val_loss))
print('Generator loss: {}'.format(generator_loss))
print('...')

print("Best val loss : {}".format(curr_val_loss))
self._plot_loss(history)

def _build_generator_model(self):
    generator_input = Input(shape=(self.latent_dim))

    x = Dense(256)(generator_input)
    x = LeakyReLU(alpha=0.2)(x)
    x = BatchNormalization(momentum=0.8)(x)
    x = Dense(512)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = BatchNormalization(momentum=0.8)(x)
    x = Dense(256)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = BatchNormalization(momentum=0.8)(x)
    x = Dense(units = (int(self.n_timesteps)*self.n_features), activation='relu')(x)
    outputs = Reshape((self.n_timesteps,self.n_features))(x)

    self.generator_model = Model(generator_input, outputs)
    self.generator_model.summary()

def _buildFakeTarget(self, real_data, fake_data, real_target, K=5):
    # calculate distance between fake and real data.
    distance = np.zeros((fake_data.shape[0], real_data.shape[0]))
    fake_target = np.zeros((fake_data.shape[0]))
    fake_data_reshaped = np.reshape(fake_data,(fake_data.shape[0],int(self.n_timesteps*self.n_features)))
    real_data_reshaped = np.reshape(real_data,(real_data.shape[0],int(self.n_timesteps*self.n_features)))
    real_target = real_target.reshape(-1)
    for i in range(fake_data_reshaped.shape[0]):
        for j in range(real_data_reshaped.shape[0]):
            distance[i][j] = np.linalg.norm(fake_data_reshaped[i]-real_data_reshaped[j])

    # print(distance[0:3])
    # do weighted KNN regressor to calculate the fake target values
    for i in range(fake_data_reshaped.shape[0]):
        sum_dist = 0
        idx = np.argpartition(distance[i], K)
        for j in range(K):
            fake_target[i] += distance[i][idx[j]]*real_target[idx[j]]
            sum_dist += distance[i][idx[j]]
        fake_target[i] = fake_target[i]/sum_dist
    sum_dist = 0

    return fake_target.reshape(-1,1)

def _build_and_compile_discriminator_model(self):
    discriminator_input = Input(shape=(self.n_timesteps,self.n_features))
    x = LSTM(512, return_sequences=True)(discriminator_input)
    x = Bidirectional(LSTM(512))(x)
    x = Dense(256)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = Dense(256)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = Dense(1, activation='relu')(x)
    outputs = Dense(1, activation='relu')(x)

    self.discriminator_model = Model(discriminator_input, outputs)
    self.discriminator_model.compile(loss = 'mse', optimizer=Adam(learning_rate=0.0002, beta_1=0.5))

    self.discriminator_model.summary()

def _build_and_compile_gan(self, optimizer=None):
    # a straight-through model
    self.discriminator_model.trainable = False
    self.gan = Sequential()
    self.gan.add(self.generator_model)
    self.gan.add(self.discriminator_model)
    self.gan.compile(loss = 'mse', optimizer=Adam(learning_rate=0.0002, beta_1=0.5))

    self.gan.summary()

def plot_loss(self, history):
    ...
```

This screenshot shows a JupyterLab interface with two tabs open: 'Google' and 'JupyterLab'. The 'JupyterLab' tab displays the code for 'Mail_footfall_prediction_skeleton.ipynb'. The code defines a class 'Mail_footfall_predictor' with methods for building generator and discriminator models, calculating distances between real and fake data, and plotting results.

```
for i in range(fake_data_reshaped.shape[0]):
    for j in range(real_data_reshaped.shape[0]):
        distance[i][j] = np.linalg.norm(fake_data_reshaped[i]-real_data_reshaped[j])

    # print(distance[0:3])
    # do weighted KNN regressor to calculate the fake target values
    for i in range(fake_data_reshaped.shape[0]):
        sum_dist = 0
        idx = np.argpartition(distance[i], K)
        for j in range(K):
            fake_target[i] += distance[i][idx[j]]*real_target[idx[j]]
            sum_dist += distance[i][idx[j]]
        fake_target[i] = fake_target[i]/sum_dist
    sum_dist = 0

    return fake_target.reshape(-1,1)

def _build_and_compile_discriminator_model(self):
    discriminator_input = Input(shape=(self.n_timesteps,self.n_features))
    x = LSTM(512, return_sequences=True)(discriminator_input)
    x = Bidirectional(LSTM(512))(x)
    x = Dense(256)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = Dense(256)(x)
    x = LeakyReLU(alpha=0.2)(x)
    x = Dense(1, activation='relu')(x)
    outputs = Dense(1, activation='relu')(x)

    self.discriminator_model = Model(discriminator_input, outputs)
    self.discriminator_model.compile(loss = 'mse', optimizer=Adam(learning_rate=0.0002, beta_1=0.5))

    self.discriminator_model.summary()

def _build_and_compile_gan(self, optimizer=None):
    # a straight-through model
    self.discriminator_model.trainable = False
    self.gan = Sequential()
    self.gan.add(self.generator_model)
    self.gan.add(self.discriminator_model)
    self.gan.compile(loss = 'mse', optimizer=Adam(learning_rate=0.0002, beta_1=0.5))

    self.gan.summary()

def plot_loss(self, history):
    ...
```

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Launcher Mail_footfall_prediction_ske

Python 3

```
def plot_hist(history):
    hist = pd.DataFrame(history)
    plt.figure(figsize=(20,5))
    for colm in hist.columns:
        plt.plot(hist[colm],label=colm)
    plt.legend()
    plt.title("loss")
    plt.xlabel("epochs")
    plt.show()

# create the LSTM data set with outlier removed data
LSTM_model_dataset = train_test_validation_data_set(data_outliersremoved)
X_train, y_train, _, X_test, y_test, _, n_features = LSTM_model_dataset.prepare_LSTM_datasets(n_timesteps=7, n_forecast_steps = 1,
                                                                                           input_cols = global_parameters['input_cols'][0:N], deterministic_features=global_parameters['deterministic_features'], validation=False,shuffle=False)

gan_lstm_model = GAN_Model(7,n_features, 100)
```

Model: "functional_15"

Layer (type)	Output Shape	Param #
InputLayer	(None, 100)	0
Dense_43	(None, 256)	25856
LeakyReLU_2	(None, 256)	0
BatchNormalization_2	(None, 256)	1024
Dense_44	(None, 512)	131584
LeakyReLU_3	(None, 512)	0
BatchNormalization_3	(None, 512)	2048
Dense_45	(None, 1024)	525312
LeakyReLU_4	(None, 1024)	0

0 2 Python 3 | idle

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyb

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Python 3

```
leakyReLU_4 (LeakyReLU) (None, 1024) 0
BatchNormalization_4 (Batch Normalization) (None, 1024) 4996
Dense_46 (Dense) (None, 56) 57408
Reshape_2 (Reshape) (None, 7, 8) 0
=====
Total params: 747,326
Trainable params: 743,736
Non-trainable params: 3,598
Model: "functional_17"
```

Layer (type)	Output Shape	Param #
InputLayer	(None, 7, 8)	0
LSTM_12 (LSTM)	(None, 7, 512)	1067088
Bidirectional_1 (Bidirectional)	(None, 1024)	4198400
Dense_47 (Dense)	(None, 512)	524800
LeakyReLU_5 (LeakyReLU)	(None, 512)	0
Dense_48 (Dense)	(None, 256)	131328
LeakyReLU_6 (LeakyReLU)	(None, 256)	0
Dense_49 (Dense)	(None, 1)	257

```
total_params: 5,924,793
trainable_params: 5,157,793
non_trainable_params: 8
```

```
[78]: gan_lstm_model.train(30000,X_train,y_train,X_test, y_test, 100)
...
loss_real : 0.12962171737515, loss_fake : 0.28513869643211365, Discriminator loss: 0.40910886788786514, val_loss :0.07587463488708572
Generator loss: 0.0366407111287117
...
```

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Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyb

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The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_ske'. Below the tabs, there's a 'Launcher' section with a 'Code' dropdown. The main area contains a terminal window with the following text:

```
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+ - × Mail_footfall_prediction_ske ×
Python 3
Epoch 1000
loss_real : 0.0993486400693655, loss_fake : 0.09041878581047058, Discriminator loss: 0.0993486400693655, val_loss : 0.00881902169883251
Generator loss: 0.019882245594121333

Epoch 1001
loss_real : 0.09788656527180186, loss_fake : 0.0788086565863798, Discriminator loss: 0.08576721837744117, val_loss : 0.00874178484082222
Generator loss: 0.025194828556346893

Epoch 1002
loss_real : 0.09371558558536875, loss_fake : 0.08371305954091376, Discriminator loss: 0.09408525191247463, val_loss : 0.008565139025449753
Generator loss: 0.024263969104849968

Epoch 400
loss_real : 0.087928445244371891, loss_fake : 0.0899082506275177, Discriminator loss: 0.088911951519548889, val_loss : 0.008748762399551239
Generator loss: 0.02292381510083876

Epoch 500
loss_real : 0.0868481178922912085, loss_fake : 0.08018272370100921, Discriminator loss: 0.087930841503229232, val_loss : 0.009367692284286822
Generator loss: 0.01835883873836994

Epoch 600
loss_real : 0.0868390790958351185, loss_fake : 0.08058868340859848, Discriminator loss: 0.08742866339161992, val_loss : 0.00908622331017288
Generator loss: 0.019118438092938704

Epoch 700
loss_real : 0.08750810519844584, loss_fake : 0.08241599853144455, Discriminator loss: 0.0899160960889187, val_loss : 0.008452863432466984
Generator loss: 0.01795108218444580

Epoch 800
loss_real : 0.08954880396803438663, loss_fake : 0.08233854919672012, Discriminator loss: 0.09188694500015879, val_loss : 0.009162777103483677
Generator loss: 0.0219202134758223402

Epoch 900
loss_real : 0.08795459747854233, loss_fake : 0.08004260841688047, Discriminator loss: 0.0888972016393471, val_loss : 0.009063110686838627
Generator loss: 0.0223675444613185
```

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Launcher Mail_footfall_prediction_ske Python 3

```
loss_real : 0.000775780222949878, loss_fake : 0.000750464524323807, Discriminator loss: 0.000050228705217394, Val_Loss : 0.000210581892707224
Generator loss: 0.019404561959385872
*****
*****Epoch 1800*****
loss_real : 0.00081227614242835617, loss_fake : 0.007979588839073181, Discriminator loss: 0.00780796453356743, val_loss : 0.0089444210752848481
Generator loss: 0.022336289286613464
*****
*****Epoch 1900*****
loss_real : 0.00084408032836953, loss_fake : 0.07804207689199448, Discriminator loss: 0.007385980412364, val_loss : 0.00795723472595215
Generator loss: 0.02015206831501293
*****
*****Epoch 2000*****
loss_real : 0.000971987634188436, loss_fake : 0.07933421432971954, Discriminator loss: 0.009006201364609998, val_loss : 0.007884860970079899
Generator loss: 0.021512454375624687
*****
*****Epoch 2100*****
loss_real : 0.0009665920242172656, loss_fake : 0.00862886446714401, Discriminator loss: 0.0056957673051667, val_loss : 0.00895629627406597
Generator loss: 0.017621253251274
*****
*****Epoch 2200*****
loss_real : 0.000954842847614, loss_fake : 0.07946955412626266, Discriminator loss: 0.00545769285410643, val_loss : 0.012878153233230114
Generator loss: 0.024496358927488327
*****
*****Epoch 2300*****
loss_real : 0.0009841979378261, loss_fake : 0.08115462826728821, Discriminator loss: 0.00722860226407647, val_loss : 0.007387963589288044
Generator loss: 0.019984197911218758
*****
*****Epoch 2400*****
loss_real : 0.00012535339909795, loss_fake : 0.08197277839289474, Discriminator loss: 0.0080090237928927, val_loss : 0.007329881897512245
Generator loss: 0.0198961310982794
*****
*****Epoch 2500*****
loss_real : 0.00045708746984601, loss_fake : 0.08166694641113281, Discriminator loss: 0.00872403388007982, val_loss : 0.007374635897576889
Generator loss: 0.01876635479468387
*****
*****Epoch 2600*****
loss_real : 0.000712535339909795, loss_fake : 0.08115462826728821, Discriminator loss: 0.00722860226407647, val_loss : 0.007387963589288044
Generator loss: 0.019984197911218758
```

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Launcher Mail_footfall_prediction_ske Python 3

```
loss_real : 0.0057012529569220, loss_fake : 0.07809381630659183, Discriminator loss: 0.00379566855728626, val_loss : 0.007546795997686485
Generator loss: 0.021270455693987356
*****
*****Epoch 2600*****
loss_real : 0.0057012529569220, loss_fake : 0.07809381630659183, Discriminator loss: 0.00379566855728626, val_loss : 0.007546795997686485
Generator loss: 0.021270455693987356
*****
*****Epoch 2700*****
loss_real : 0.006477635285126280, loss_fake : 0.08839316233634049, Discriminator loss: 0.0067807985214757, val_loss : 0.008873652666807175
Generator loss: 0.020118391141205433
*****
*****Epoch 2800*****
loss_real : 0.004556540472183642, loss_fake : 0.07945307957172394, Discriminator loss: 0.008411072364410758, val_loss : 0.007297612726688385
Generator loss: 0.019654322415598286
*****
*****Epoch 2900*****
loss_real : 0.00559268703111682, loss_fake : 0.0806509568380978394, Discriminator loss: 0.00831883701309562, val_loss : 0.0071987420955899715
Generator loss: 0.02034088751824234
*****
*****Epoch 3000*****
loss_real : 0.00641505829257369, loss_fake : 0.0801500803556633, Discriminator loss: 0.008629201864823699, val_loss : 0.007938230349302292
Generator loss: 0.01869272629364357
*****
*****Epoch 3100*****
loss_real : 0.00575533079724646, loss_fake : 0.08053681254386902, Discriminator loss: 0.00811236652359366, val_loss : 0.00737825967314638
Generator loss: 0.02165759841084842
*****
*****Epoch 3200*****
loss_real : 0.00657708739665831, loss_fake : 0.08708839874744415, Discriminator loss: 0.00576617948710918, val_loss : 0.00722251363368034
Generator loss: 0.02088086135668313
*****
*****Epoch 3300*****
loss_real : 0.00915218801421862, loss_fake : 0.088219241350880206, Discriminator loss: 0.0091521880142700672, val_loss : 0.009934009984135628
Generator loss: 0.018464559345722198
*****
*****Epoch 3400*****
loss_real : 0.00878675302879986, loss_fake : 0.08822046654701233, Discriminator loss: 0.00507723174989223, val_loss : 0.007121071219444275
Generator loss: 0.0174584584798438871
```

Google JupyterLab

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Launcher Mail_footfall_prediction_skele...

Python 3

```
Epoch 3489*****
loss_real : 0.08478576528237996, loss_fake : 0.08892946654781233, Discriminator loss: 0.08507723174989223, val_loss :0.087121071219444275
Generator loss: 0.0174585457868438873
*****
```

```
Epoch 3500*****
loss_real : 0.08485327374198921, loss_fake : 0.0884211335951973, Discriminator loss: 0.08527469073799822, val_loss :0.088446759544312054
Generator loss: 0.022536322474479675
*****
```

```
Epoch 3689*****
loss_real : 0.0848376284536969554, loss_fake : 0.08803438276052475, Discriminator loss: 0.085181d5659211745, val_loss :0.087591613102784287
Generator loss: 0.019368357956469454
*****
```

```
Epoch 3700*****
loss_real : 0.08338263274170479123, loss_fake : 0.08782026413679123, Discriminator loss: 0.08821289687840581, val_loss :0.088473590016365051
Generator loss: 0.022317493334412575
*****
```

```
Epoch 3800*****
loss_real : 0.0882088271155953, loss_fake : 0.088060738444328308, Discriminator loss: 0.08881621155887842, val_loss :0.0870113140749931335
Generator loss: 0.02495966654687583
*****
```

```
Epoch 3900*****
loss_real : 0.0882088271155953, loss_fake : 0.088638725736818, Discriminator loss: 0.085306688131994427, val_loss :0.089520265273749828
Generator loss: 0.0216115545814436
*****
```

```
Epoch 4000*****
loss_real : 0.088619121092396285, loss_fake : 0.088638725736818, Discriminator loss: 0.088667152374982834, val_loss :0.0869708561575144529
Generator loss: 0.019548581913113594
*****
```

```
Epoch 4100*****
loss_real : 0.0847498971247914883368, loss_fake : 0.0883255957680896, Discriminator loss: 0.0888066402273293, val_loss :0.08849530566483736
Generator loss: 0.013864977282565923
*****
```

```
Epoch 4200*****
loss_real : 0.08691247914883368, loss_fake : 0.0825314149260521, Discriminator loss: 0.0894439884354043, val_loss :0.08708314124494791
Generator loss: 0.02434734813886995
*****
```

```

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File Edit View Run Kernel Tabs Settings Help
Project / Capstone-Project-master/
Name
data
AIML Capstone - Gro...
Coverage.xlsx
FullDBSCAN.ipynb
Mail_footfall_predict...
Mail_footfall_predict...
preprocess.py
Project Plan.xlsx
README.md
visualisation.py
work_flow.pptx

Mail_footfall_prediction_ske
+ × Code Python 3
ipython-input-70-eed7e7f8c91a: In [modules()]
----> 1 gan_list_model.train(30000,X_train,y_train,X_test, y_test, batch_size)
ipython-input-67-9ebc5399ef7d6: In [train(self, epochs, X_train, y_train, X_test, y_test, batch_size)
----> 47     else:""
48         loss_real = self.discriminator_model.train_on_batch(X_train_batch, y_train_batch)
----> 49         loss_fake = self.discriminator_model.train_on_batch(generated_dataset, fake_target)
50         discriminator_loss = np.add(loss_real, loss_fake)
51         # Train Generator
1693     train_function = self._make_train_function()
1694     if reset_metrics:
1695         logit = train_function(iterator)
1696     if reset_metrics:
1697         if reset_metrics:
1698             # In this case we have created variables on the first call, so we run the
1699             # code again to make sure we never create variables
1700             self._stateless_fn(*args, **kwargs)
1701             return self._stateless_fn(*args, **kwargs) # pylint: disable=not-callable
1702         elif self._stateful_fn is not None:
1703             # Release the lock early so that multiple threads can perform the call
1704             with self._lock:
1705                 graph_function, args, kwargs = self._maybe_define_function(args, kwargs)
1706                 return graph_function._filtered_call(args, kwargs) # pylint: disable=protected-access
1707             #property
1708             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _call(self, *args, **kwargs)
1709             # In this case we have created variables on the first call, so we run the
1710             # code again to make sure we never create variables
1711             self._stateless_fn(*args, **kwargs)
1712             return self._stateless_fn(*args, **kwargs) # pylint: disable=not-callable
1713         elif self._stateful_fn is not None:
1714             # Release the lock early so that multiple threads can perform the call
1715             with self._lock:
1716                 captured_inputs=self._captured_inputs,
1717                 cancellation_manager=cancellation_manager)
1718             captured_inputs=captured_inputs,
1719             cancellation_manager=cancellation_manager)
1720             def _call_flat(self, args, captured_inputs, cancellation_manager=None):
1721
1722             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _filtered_call(self, args, kwargs, cancellation_manager)
1723             resource_variable_ops.BaseResourceVariable),
1724             captured_inputs=captured_inputs,
1725             cancellation_manager=cancellation_manager)
1726             captured_inputs=captured_inputs,
1727             cancellation_manager=cancellation_manager)
1728             def _call(self, args, kwargs, cancellation_manager=None):
1729
1730             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _call(self, args, kwargs, cancellation_manager)
1731             # No inference_fn provided; skip running the function.
1732             # Note: this is safe because self._inference_fn is None.
1733             return self._build_call_outputs(self._inference_function.call(
1734                 ctx, args, cancellation_manager=cancellation_manager))
1735             forward_backward = self._select_forward_and_backward_functions(
1736                 args,
1737
1738             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in call(self, ctx, args, cancellation_manager)
1739             inputs=args,
1740             attrs=attrs,
1741             >>> 550             ctx=ctx)
1742             else:
1743                 outputs = execute.execute_with_cancellation(
1744
1745             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/execute.py in quick_execute(op_name, num_outputs, inputs, attrs, ctx, name)
1746             ctx.ensure_initialized()
1747             tensors = pywrap_tf.TFE_Py_Execute(ctx.handle, device_name, op_name,
1748             inputs, attrs, num_outputs)
1749             >>> 60         except core._NotOkStatusException as e:
1750             if name is not None:
1751
1752             gan_model_trained = load_model('saved_model_GAN_models.hdf5')
1753             print("Model loaded")
1754             predictions, y_actual, loss_values['GAN Model'] = LSTM_model_train_and_evaluation().predict_model(gan_model_trained, X_test,y_test )
1755             loss_values_df = model.utility().convert_dict_dataframe[loss_values]
1756
1757             predictions = pd.DataFrame(predictions, columns=['Predicted'])
1758             y_test_df = pd.DataFrame(y_actual, columns=['Actual'])
1759             plot_data_set = pd.concat([predictions,y_test_df],axis=1)
1760             model.utility().plotly_graphs(plot_data_set,'GAN Model')
1761
1762             WARNING:tensorflow:Error in loading the saved optimizer state. As a result, your model is starting with a freshly initialized optimizer.
1763             WARNING:tensorflow:Error in loading the saved optimizer state. As a result, your model is starting with a freshly initialized optimizer.

```

```

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File Edit View Run Kernel Tabs Settings Help
Project / Capstone-Project-master/
Name
data
AIML Capstone - Gro...
Coverage.xlsx
FullDBSCAN.ipynb
Mail_footfall_predict...
Mail_footfall_predict...
preprocess.py
Project Plan.xlsx
README.md
visualisation.py
work_flow.pptx

Mail_footfall_prediction_ske
+ × Code Python 3
ipython-input-70-eed7e7f8c91a: In [modules()]
----> 1 gan_list_model.train(30000,X_train,y_train,X_test, y_test, batch_size)
ipython-input-67-9ebc5399ef7d6: In [train(self, epochs, X_train, y_train, X_test, y_test, batch_size)
----> 47     else:""
48         loss_real = self.discriminator_model.train_on_batch(X_train_batch, y_train_batch)
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1701             return self._stateless_fn(*args, **kwargs) # pylint: disable=not-callable
1702         elif self._stateful_fn is not None:
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1706                 return graph_function._filtered_call(args, kwargs) # pylint: disable=protected-access
1707             #property
1708             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _call(self, *args, **kwargs)
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1717                 cancellation_manager=cancellation_manager)
1718             captured_inputs=captured_inputs,
1719             cancellation_manager=cancellation_manager)
1720             def _call_flat(self, args, captured_inputs, cancellation_manager=None):
1721
1722             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _filtered_call(self, args, kwargs, cancellation_manager)
1723             resource_variable_ops.BaseResourceVariable),
1724             captured_inputs=captured_inputs,
1725             cancellation_manager=cancellation_manager)
1726             captured_inputs=captured_inputs,
1727             cancellation_manager=cancellation_manager)
1728             def _call(self, args, kwargs, cancellation_manager=None):
1729
1730             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in _call(self, args, kwargs, cancellation_manager)
1731             # No inference_fn provided; skip running the function.
1732             # Note: this is safe because self._inference_fn is None.
1733             return self._build_call_outputs(self._inference_function.call(
1734                 ctx, args, cancellation_manager=cancellation_manager))
1735             forward_backward = self._select_forward_and_backward_functions(
1736                 args,
1737
1738             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/function.py in call(self, ctx, args, cancellation_manager)
1739             inputs=args,
1740             attrs=attrs,
1741             >>> 550             ctx=ctx)
1742             else:
1743                 outputs = execute.execute_with_cancellation(
1744
1745             /usr/local/lib/python3.6/dist-packages/tensorflow/python/eager/execute.py in quick_execute(op_name, num_outputs, inputs, attrs, ctx, name)
1746             ctx.ensure_initialized()
1747             tensors = pywrap_tf.TFE_Py_Execute(ctx.handle, device_name, op_name,
1748             inputs, attrs, num_outputs)
1749             >>> 60         except core._NotOkStatusException as e:
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1758             y_test_df = pd.DataFrame(y_actual, columns=['Actual'])
1759             plot_data_set = pd.concat([predictions,y_test_df],axis=1)
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```

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Launcher Mail_footfall_prediction_skeleton

Code Python 3

[84]: loss_values_all_models.append(loss_values_df)

7.7 Show model results

```
[85]: loss_df = pd.concat([loss_each_model for loss_each_model in loss_values_all_models], axis=0).reset_index(drop=True)
```

```
[86]: print(tabulate(loss_df, headers="keys", floatfmt=".4f", tablefmt='fancy_grid'))
```

	Model_type	R2 score	Adj R2 score	AIC	BIC	mape	mse	me	mae	spe	rse
0	linear_regression_normal_shuffled_defaults_model	0.3237	0.2776	-1563.8193	-1414.6314	31.5971	0.0130	-0.0197	0.0860	0.0903	0.1141
1	linear_regression_normal_shuffled_rscv_model	0.3237	0.2776	-1563.8193	-1414.6314	31.5971	0.0130	-0.0197	0.0860	0.0903	0.1141
2	linear_regression_normal_shuffled_crosscv_model	0.2476	nan	nan	nan	25.4813	0.0069	0.0013	0.0590	12.8567	0.0819
3	linear_regression_normal_shuffled_rfecv_model	0.3433	0.2979	-1778.7668	-1689.1188	21.6798	0.0058	-0.0192	0.0547	0.0549	0.0776
4	lassoRegressor_normal_shuffled_default_model	-0.0486	-0.1125	-1614.3948	-1525.2089	27.2682	0.0095	-0.0193	0.0704	0.0915	0.0977
5	lassoRegressor_normal_shuffled_rscv_model	0.3363	0.2984	-1774.9342	-1685.1463	22.6256	0.0051	-0.0178	0.0548	0.0685	0.0781
6	lassoRegressor_normal_shuffled_crosscv_model					24.9137	0.0062	0.0007	0.0574	12.5932	0.0784

Python 3 idle Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyb ENG 7:33 PM INTEL 11/10/2020

The screenshot shows a Jupyter Notebook interface with a table of regression model results. The table has columns for index, model name, parameters, and various performance metrics.

	Model	Parameters	Score	RMSE	R2	AUC	Precision	Recall	F1
6	lassoRegressor_normal_shuffled_crosscv_model	0.3071 nan nan nan	24.9137	0.0062	0.0007	0.0574	12.5932	0.0784	
7	lassoRegressor_normal_shuffled_rfecv_model	0.3342 0.2882 -173.7894 -1684.8015	22.5899	0.0061	-0.0188	0.0552	0.0644	0.0782	
8	ridgeRegressor_normal_shuffled_default_model	0.2646 0.2138 -1561.2241 -1472.6362	29.6762	0.0111	-0.0157	0.0782	0.1024	0.1053	
9	ridgeRegressor_normal_shuffled_rscv_model	0.3261 0.2795 -1505.1876 -1415.9997	31.5537	0.0138	-0.0195	0.0859	0.0907	0.1139	
10	ridgeRegressor_normal_shuffled_crosscv_model	0.3056 nan nan nan	24.6074	0.0063	0.0009	0.0575	12.2579	0.0786	
11	ridgeRegressor_normal_shuffled_rfecv_model	0.3292 0.2828 -1771.1195 -1681.9316	21.9610	0.0062	-0.0203	0.0558	0.0525	0.0785	
12	elastic_net_normal_shuffled_default_model	-0.0496 -0.1125 -1614.3948 -1525.2069	27.2682	0.0096	-0.0193	0.0704	0.0915	0.0977	
13	elastic_net_normal_shuffled_rscv_model	0.3372 0.2916 -1775.4026 -1686.2147	22.6127	0.0061	-0.0177	0.0548	0.0685	0.0780	
14	elastic_net_normal_shuffled_crosscv_model	0.3869 nan nan nan	24.9136	0.0062	0.0007	0.0574	12.5804	0.0785	
15	elastic_net_normal_shuffled_rfecv_model	0.3356 0.2898 -1774.2192 -1685.6113	22.5549	0.0061	-0.0188	0.0552	0.0642	0.0781	
16	huberRegressor_normal_shuffled_default_model	0.3038 0.2549 -1757.4453 -1668.2774	23.2984	0.0064	-0.0178	0.0547	0.0738	0.0800	
17	huberRegressor_normal_shuffled_rscv_model	0.3344 0.2916 -1775.4026 -1686.2147	22.4420	0.0064	-0.0188	0.0552	0.0642	0.0781	

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_skeleton.ipynb". The table lists various regression models along with their performance metrics. The columns include model name, parameters, and values such as R-squared, RMSE, and AIC.

Model	Parameters	R-squared	RMSE	AIC		
huberRegressor_normal_shuffled_default_model	0.2988 0.2549 -157.4653 -1668.2774	0.0054	-0.0178	0.0547	0.0738	0.0880
huberRegressor_normal_shuffled_rscv_model	0.2998 0.2512 -175.8127 -1666.6239	0.0054	-0.0185	0.0547	0.0714	0.0882
huberRegressor_normal_shuffled_crosseye_model	0.3181 nan nan nan	0.0052	-0.0045	0.0555	11.6531	0.0783
huberRegressor_normal_shuffled_rfecv_model	0.2761 0.2261 -1743.9614 -1654.7775	0.0056	-0.0211	0.0561	0.0612	0.0815
passive_aggressor_normal_shuffled_default_model	0.0373 -0.0291 -1642.1835 -1552.9056	0.0088	-0.0464	0.0704	-0.0165	0.0948
passive_aggressor_normal_shuffled_rscv_model	0.3356 0.2897 -1774.5761 -1685.3882	0.0061	-0.0013	0.0576	0.1168	0.0781
passive_aggressor_normal_shuffled_crosseye_model	0.0588 nan nan nan	0.0148	0.0170	0.0929	14.8832	0.1160
passive_aggressor_normal_shuffled_rfecv_model	0.2095 0.2464 -1753.4587 -1664.2627	0.0065	0.0158	0.0590	0.1205	0.0884
sgd_normal_shuffled_default_model	0.0613 -0.0036 -1651.1751 -1561.9872	0.0086	-0.0124	0.0659	0.1134	0.0928
sgd_normal_shuffled_rscv_model	0.0892 0.0167 -1658.4397 -1659.2518	0.0084	-0.0087	0.0650	0.1266	0.0919
sgd_normal_shuffled_crosseye_model	0.0840 nan nan nan	0.0085	-0.0086	0.0664	15.0344	0.0926

The screenshot shows a JupyterLab interface with multiple tabs open. The active tab is 'Mail_footfall_prediction_sklearn.ipynb' in a code editor. The code displays a list of 37 different machine learning models, each with its name, parameters, and performance metrics. The models include various regressors like SGD, KNN, DecisionTree, and ExtraTree, both with and without shuffling features. The performance metrics include accuracy, precision, recall, and F1 score.

Model	Parameters	Accuracy	Precision	Recall	F1 Score		
sgd_normal_shuffled_rfecv_model	0.0884 -1670.1442 -1580.9563	26.3798	0.0082	-0.0125	0.0649	0.1888	0.0904
knn_regressor_normal_shuffled_default_model	0.1189 -1528.1719 -1438.3839	31.1252	0.0122	-0.0121	0.0826	0.1134	0.1183
knn_regressor_normal_shuffled_rfcv_model	0.0728 -1511.4388 -1422.2451	31.9268	0.0127	-0.0092	0.0849	0.1223	0.1129
knn_regressor_normal_shuffled_crosscv_model	0.2758 nan nan	24.6556	0.0064	-0.0036	0.0553	12.5268	0.8796
decisiontree_regressor_normal_shuffled_default_model	-0.0171 -0.0873 -1622.5588 -1533.3787	29.0238	0.0093	-0.0056	0.0689	0.1140	0.0966
decisiontree_regressor_normal_shuffled_rfcv_model	0.1348 0.0751 -1688.3884 -1591.1128	24.9768	0.0079	-0.0185	0.0613	0.0831	0.0891
decisiontree_regressor_normal_shuffled_crosscv_model	0.1144 nan nan nan	25.7008	0.0079	-0.0087	0.0631	13.8456	0.0886
decisiontree_regressor_normal_shuffled_rfecv_model	0.1580 0.0013 -1688.6239 -1597.4386	24.9508	0.0078	-0.0170	0.0617	0.0849	0.0883
extra_tree_regressor_normal_shuffled_default_model	-0.1176 -0.1048 -1588.8903 -1499.7023	32.1708	0.0103	-0.0165	0.0712	0.1160	0.1013
extra_tree_regressor_normal_shuffled_rfcv_model	0.1833 0.1268 -1708.8666 -1611.7871	23.6552	0.0075	-0.0217	0.0609	0.0565	0.0866
extra_tree_regressor_normal_shuffled_crosscv_model	-0.1088 nan nan nan	27.0406	0.0099	-0.0034	0.0684	11.4389	0.0998

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38	extra_trees_regressor_normal_shuffled_rfcv_model	0.1652	0.1076	-1693.0677	-1683.8798	26.3301	0.0077	-0.0185	0.0597	0.0922	0.0875
39	svm_regression_normal_shuffled_default_model	0.2397	0.1872	-1726.4362	-1637.3483	24.2394	0.0076	-0.0119	0.0609	0.0836	0.0835
40	svm_regression_normal_shuffled_rscv_model	0.2393	0.1868	-1726.2537	-1637.0658	24.2378	0.0076	-0.0119	0.0609	0.0836	0.0836
41	svm_regression_normal_shuffled_crosscv_model	0.8954	nan	nan	nan	27.4481	0.0081	0.0167	0.0661	16.2801	0.0898
42	adaBoost_normal_shuffled_default_model	0.3112	0.2647	-1762.2184	-1673.0305	22.6700	0.0063	0.0073	0.0601	0.1206	0.0795
43	adaBoost_normal_shuffled_rscv_model	0.4276	0.3881	-1827.7700	-1738.5820	28.4189	0.0053	-0.0054	0.0512	0.0867	0.0725
44	adaBoost_normal_shuffled_crosscv_model	0.3496	nan	nan	nan	23.8794	0.0058	0.0060	0.0531	13.3296	0.0759
45	adaBoost_normal_shuffled_rfcv_model	0.4295	0.3391	-1828.9923	-1739.8044	20.1243	0.0052	-0.0056	0.0510	0.0837	0.0724
46	bagging_normal_shuffled_default_model	0.4845	0.4489	-1865.1206	-1775.9416	19.5173	0.0047	-0.0124	0.0468	0.0665	0.0688
47	bagging_normal_shuffled_rscv_model	0.3942	0.3524	-1887.5536	-1718.3656	21.9514	0.0056	-0.0155	0.0517	0.0778	0.0745
48	bagging_normal_shuffled_crosscv_model	0.3443	nan	nan	nan	24.2677	0.0059	0.0084	0.0528	13.7470	0.0763

The screenshot shows a JupyterLab interface with a code editor displaying a table of data. The table has columns for index, model name, parameters, and various performance metrics. The code editor has tabs for 'Code' and 'Text'. A sidebar on the left lists project files including 'Mail_footfall_prediction.ipynb', 'preprocess.py', 'README.md', and 'visualization.py'. The top navigation bar shows tabs for Google, JupyterLab, and the current local host URL.

49	random_forest_normal_shuffled_default_model 0.4887 0.4449 -1862.5473 -1773.3594		19.4279	0.0048	-0.0124	0.0473	0.0643	0.0598				
50	random_forest_normal_shuffled_rscv_model 0.4385 0.3998 -1834.6623 -1745.4744		21.2785	0.0052	-0.0144	0.0485	0.0759	0.0718				
51	random_forest_normal_shuffled_crosscv_model 0.3887 nan nan nan		22.9025	0.0055	-0.0003	0.0498	12.7386	0.0736				
52	random_forest_normal_shuffled_rfrcv_model 0.4474 0.4093 -1849.3684 -1751.1895		21.0294	0.0051	-0.0139	0.0485	0.0744	0.0712				
53	extra_trees_regressor_normal_shuffled_default_model 0.4451 0.4068 -1838.8531 -1749.6652		19.9721	0.0051	-0.0148	0.0494	0.0587	0.0714				
54	extra_trees_regressor_normal_shuffled_rscv_model 0.4335 0.3943 -1831.4537 -1742.2658		20.8634	0.0052	-0.0151	0.0498	0.0658	0.0721				
55	extra_trees_regressor_normal_shuffled_crosscv_model 0.3708 nan nan nan		24.3706	0.0055	0.0041	0.0486	15.0849	0.0737				
56	extra_trees_regressor_normal_shuffled_rfrcv_model 0.4281 0.3886 -1828.1147 -1738.9268		21.8156	0.0052	-0.0152	0.0502	0.0732	0.0725				
57	gradient_boosting_regressor_normal_shuffled_default_model 0.3883 0.3468 -1804.0602 -1714.8722		18.6298	0.0056	-0.0194	0.0524	0.0278	0.0749				
58	gradient_boosting_regressor_normal_shuffled_rscv_model 0.3073 0.3557 -1809.3780 -1720.1908		20.8281	0.0055	-0.0180	0.0523	0.0556	0.0744				
59	gradient_boosting_regressor_normal_shuffled_crosscv_model 0.3093 nan nan nan		22.6250	0.0054	0.0011	0.0499	12.2689	0.0738				

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_sklearn

Python 3

0.3993	nan	nan	nan								
0.4082	gradient_boosting_regressor_normal_shuffled_rfcv_model 0.3573 -1815.8595 -1726.6716			19.8146	0.0054	-0.0172	0.0515	0.0486	0.0737		
0.3987	XGBoost_normal_shuffled_default_model 0.3572 -1818.1934 -1721.0854			19.6163	0.0055	-0.0175	0.0523	0.0447	0.0743		
0.4011	XGBoost_normal_shuffled_rscv_model 0.3598 -1811.6379 -1722.4499			22.6811	0.0055	-0.0181	0.0513	0.0575	0.0741		
0.3535	XGBoost_normal_shuffled_crosscv_model nan nan nan			24.6789	0.0058	0.0067	0.0527	15.4523	0.0756		
0.4027	XGBoost_normal_shuffled_rfcv_model 0.3514 -1812.5721 -1723.3842			22.5133	0.0055	-0.0180	0.0512	0.0573	0.0748		
0.4156	LightGradientBoosting_normal_shuffled_default_model 0.3752 -1828.3479 -1731.1686			28.1698	0.0054	-0.0151	0.0510	0.0550	0.0732		
0.4406	LightGradientBoosting_normal_shuffled_rscv_model 0.4928 -1835.9733 -1746.7853			20.1879	0.0051	-0.0158	0.0404	0.0592	0.0717		
0.3656	LightGradientBoosting_normal_shuffled_crosscv_model nan nan nan			23.0826	0.0057	0.0009	0.0538	11.7946	0.0750		
0.4554	CategoricalGradientBoosting_normal_shuffled_default_model 0.4178 -1845.5464 -1756.3585			19.3327	0.0050	-0.0144	0.0487	0.0551	0.0707		
0.4342	CategoricalGradientBoosting_normal_shuffled_rscv_model 0.3951 -1831.9311 -1742.7431			18.2635	0.0052	-0.0156	0.0497	0.0580	0.0721		
0.3883	CategoricalGradientBoosting_normal_shuffled_crosscv_model nan nan nan			23.8137	0.0054	0.0019	0.0504	13.7206	0.0733		

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_skeleton.ipynb" containing 81 rows of data. The columns represent various model configurations and their performance metrics. The table includes columns for model ID, name, parameters, and scores such as R^2, RMSE, and AUC.

	Model Name	Parameters	R^2	RMSE	AUC	Other Metrics		
0	NeuralNet_MLP_normal_default_model	0.3883 nan nan nan	0.278437	0.00024	0.00019	0.05304	0.372409	0.0733
1	NeuralNet_MLP_normal_shuffled_default_model	0.1155 0.0548 -1672.4212 -1583.2333	26.4775	0.0081	-0.0138	0.0648	0.1840	0.0981
2	NeuralNet_MLP_normal_shuffled_rscv_model	0.3495 0.3846 -1782.1202 -1692.9323	22.3146	0.0056	-0.0163	0.0551	0.0642	0.0773
3	NeuralNet_MLP_normal_shuffled_crossey_model	0.2072 nan nan nan	24.2802	0.0070	0.0005	0.0603	11.1323	0.0834
4	linear_regression_normal_default_model	0.2327 0.2776 -1768.2317 -1679.0438	22.0397	0.0062	-0.0197	0.0559	0.0547	0.0788
5	linear_regression_normal_rscv_model	0.1227 0.2776 -1768.2317 -1679.0438	22.0387	0.0062	-0.0197	0.0559	0.0547	0.0788
6	linear_regression_normal_crossey_model	0.2476 nan nan nan	25.4813	0.0069	0.0015	0.0598	12.8567	0.0819
7	lassoRegressor_normal_default_model	0.0486 -0.1125 -1614.3948 -1525.2069	27.2682	0.0096	-0.0193	0.0704	0.0915	0.0977
8	lassoRegressor_normal_rscv_model	0.3363 0.2904 -1774.9342 -1685.7463	22.6256	0.0061	-0.0178	0.0548	0.0685	0.0781
9	lassoRegressor_normal_crossey_model	0.3071 nan nan nan	24.9137	0.0062	0.0007	0.0574	12.5932	0.0784
10	ridgeRegressor_normal_default_model	0.2646 0.2138 -1738.2952 -1649.1073	24.0905	0.0058	-0.0157	0.0578	0.0875	0.0822
11	ridgeRegressor_normal_rscv_model	0.2213 nan nan nan	22.0123	0.0062	-0.0195	0.0557	0.0555	0.0787

The screenshot shows a Jupyter Notebook environment with a table titled "Mail_footfall_prediction_ske". The table contains 10 rows of data, each representing a different model configuration. The columns include model names, parameters, and performance metrics like R-squared and RMSE.

	Model	Parameters	R-squared	RMSE	Other Metrics
81	ridgeRegressor_normal_rscv_model	0.2795 -1769.4013 -1688.3834	22.0123	0.0052	-0.0195 0.0557 0.0555 0.0787
82	ridgeRegressor_normal_crosscv_model	0.2858 nan nan nan	24.6874	0.0063	0.0009 0.0575 12.2579 0.0786
83	elastic_net_normal_default_model	-0.0486 -0.1125 -1614.3948 -1525.2069	27.2682	0.0096	-0.0193 0.0704 0.0915 0.0977
84	elastic_net_normal_rscv_model	0.2914 -1775.4825 -1686.2147	22.6127	0.0061	-0.0177 0.0548 0.0685 0.0788
85	elastic_net_normal_crosscv_model	0.3069 nan nan nan	24.9136	0.0052	0.0007 0.0574 12.5804 0.0785
86	huberRegressor_normal_default_model	0.2524 -1756.2904 -1667.1025	23.2882	0.0064	-0.0183 0.0549 0.0719 0.0801
87	huberRegressor_normal_rscv_model	0.2587 -1759.3044 -1670.1165	22.5710	0.0064	-0.0203 0.0544 0.0607 0.0798
88	huberRegressor_normal_crosscv_model	0.2553 nan nan nan	25.1569	0.0068	-0.0050 0.0576 11.3202 0.0812
89	passive_aggressor_normal_default_model	0.2358 -1748.4245 -1659.2366	24.1660	0.0066	-0.0051 0.0588 0.1081 0.0810
90	passive_aggressor_normal_rscv_model	0.1516 -1715.3689 -1626.1810	25.0809	0.0072	-0.0110 0.0614 0.1022 0.0848
91	passive_aggressor_normal_crosscv_model	0.1481 nan nan nan	27.4450	0.0077	0.0046 0.0662 15.0874 0.0874
92	lassoLasso_normal_default_model	0.1534 -1714.1734 -1625.0000	25.0809	0.0072	-0.0110 0.0614 0.1022 0.0848

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_ske". The table contains 10 rows of data, each representing a different machine learning model's performance metrics. The columns include Model ID, Model Name, Parameters, and various evaluation metrics like F1 Score, Precision, Recall, and AUC.

#	Model Name	Parameters	F1 Score	Precision	Recall	AUC	TPR	FPR
01	passive_aggressor_normal_crosscv_model	nan nan nan	27.4450	0.0077	0.0045	0.0662	15.0874	0.0874
02	sgd_normal_default_model	-0.0126 -1643.6009 -1554.4121	26.6371	0.0088	-0.0182	0.0664	0.0956	0.0938
03	sgd_normal_rscv_model	0.0176 0.0126 -1656.9811 -1567.7932	26.9191	0.0085	-0.0116	0.0656	0.1153	0.0921
04	sgd_normal_crosscv_model	0.0397 nan nan nan	28.4853	0.0087	0.0036	0.0673	16.2117	0.0928
05	knn_regressor_normal_default_model	0.1180 -1697.6361 -1608.4482	25.3911	0.0076	-0.0121	0.0615	0.0991	0.0870
06	knn_regressor_normal_rscv_model	0.1327 0.0728 -1679.4181 -1590.2301	26.5300	0.0088	-0.0092	0.0616	0.1169	0.0892
07	knn_regressor_normal_crosscv_model	0.2758 nan nan nan	24.6556	0.0064	-0.0036	0.0553	12.5268	0.0796
08	decisiontree_regressor_normal_default_model	-0.0475 -0.1199 -1612.0182 -1522.8383	29.2243	0.0096	-0.0026	0.0602	0.1225	0.0981
09	decisiontree_regressor_normal_rscv_model	0.2114 0.0067 -1674.7910 -1585.6893	25.5428	0.0081	-0.0194	0.0621	0.0844	0.0898
10	decisiontree_regressor_normal_crosscv_model	0.1536 nan nan nan	25.9842	0.0076	-0.0006	0.0610	13.5230	0.0864
11	extra_tree_regressor_normal_default_model	-0.0087 -0.0784 -1625.4012 -1536.3633	17.8975	0.0093	-0.0192	0.0681	-0.0259	0.0962

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

+ C Mail_footfall_prediction_ske

Python 3

-0.0887	-0.0784	-1625.4012	-1536.3833								
102 extra_tree_regressor_normal_rscv_model 0.2993 0.1548 -1712.4167 -1623.2288				24.6497	0.0073	-0.0189	0.0014	0.0745	0.0852		
103 extra_tree_regressor_normal_crosscv_model 0.1227 nan nan nan				25.3829	0.0078	-0.002	0.0639	12.6625	0.0881		
104 svm_regressor_normal_default_model 0.2397 0.1872 -1726.4362 -1637.2483				24.2394	0.0078	-0.0119	0.0009	0.0836	0.0835		
105 svm_regressor_normal_rscv_model 0.2397 0.1872 -1726.4362 -1637.2483				24.2394	0.0078	-0.0119	0.0009	0.0836	0.0835		
106 svm_regressor_normal_crosscv_model 0.0963 nan nan nan				27.4477	0.0081	0.0107	0.0061	16.2103	0.0898		
107 adaBoost_normal_default_mode 0.3234 0.2767 -1768.0617 -1678.8738				22.2785	0.0062	0.0049	0.0598	0.1112	0.0788		
108 adaBoost_normal_rscv_model 0.4243 0.3843 -1825.5605 -1736.3815				20.6592	0.0053	-0.0079	0.0013	0.0845	0.0722		
109 adaBoost_normal_crosscv_model 0.3386 nan nan nan				24.0264	0.0059	0.0009	0.0035	13.3741	0.0765		
110 bagging_normal_default_model 0.4724 0.4359 -1856.8633 -1767.6754				19.5312	0.0048	-0.0121	0.0072	0.0667	0.0696		
111 bagging_normal_rscv_model 0.3668 0.3444 -1803.1684 -1713.5885				22.3669	0.0056	-0.0150	0.0017	0.0832	0.0758		
112 bagging_normal_crosscv_model 0.3668 nan nan nan				24.3848	0.0060	-0.0003	0.0533	13.6146	0.0771		

The screenshot shows a Jupyter Notebook environment with a table titled "Mail_footfall_prediction_skeleton.ipynb" containing 123 rows of data. The columns represent various model configurations and their performance metrics. The table includes columns for index, model name, parameters, and scores such as R-squared, RMSE, and AIC.

	Model	Parameters	R-squared	RMSE	AIC	BIC	MAE	MAPE	MAPE (%)
0	bagging_normal_cv	None	0.3313	24.3848	8.0058	-0.0003	0.0535	15.6146	8.8771
1	random_forest_normal_default_model	None	0.4782	19.4367	8.0048	-0.0118	0.0471	0.0665	8.8692
2	random_forest_normal_rscv_model	None	0.4363	21.4063	8.0052	-0.0143	0.0488	0.0767	8.8719
3	random_forest_normal_crossv_model	None	0.3737	23.2400	8.0056	0.0019	0.0499	13.2140	8.8744
4	extra_trees_regressor_normal_default_model	None	0.4283	28.5531	8.0052	-0.0147	0.0503	0.0626	8.8724
5	extra_trees_regressor_normal_rscv_model	None	0.4314	28.4184	8.0052	-0.0156	0.0500	0.0596	8.8722
6	extra_trees_regressor_normal_crossv_model	None	0.3689	24.7316	8.0055	0.0042	0.0498	15.3440	8.8738
7	gradient_boosting_regressor_normal_default_model	None	0.3906	18.4289	8.0056	-0.0193	0.0522	0.0262	8.8748
8	gradient_boosting_regressor_normal_rscv_model	None	0.3909	28.4948	8.0056	-0.0167	0.0524	0.0556	8.8748
9	gradient_boosting_regressor_normal_crossv_model	None	0.3884	23.2810	8.0055	0.0005	0.0508	12.4534	8.8736
10	XGBoost_normal_default_model	None	0.3987	19.6163	8.0055	-0.0175	0.0523	0.0447	8.8743
11	XGBoost_normal_rscv_model	None	0.3572	22.4926	8.0055	-0.0097	0.0514	0.0975	8.8743

The screenshot shows a JupyterLab interface with a sidebar containing project files and a main area with a code editor and a terminal window.

Code Editor:

```
File Edit View Run Kernel Tabs Settings Help
+ - X Mail_footfall_prediction_skeleton.ipynb
Launcher Mail_footfall_prediction_skeleton.ipynb
Code Python 3
| 133 NeuralNet_MLP_normal_crosscv_model | 23.7890 | 0.0070 | 0.0008 | 0.0603 | 10.5814 | 0.0833 | |
| 0.2164 | nan | nan | nan |
| 134 linear_regression_detrend_default_model | 23.7471 | 0.0055 | -0.0012 | 0.0524 | 0.1117 | 0.0742 |
| 0.3080 | 0.3479 | -1811.1061 | -1721.9182 |
| 135 linear_regression_detrend_rscv_model | 23.7471 | 0.0055 | -0.0012 | 0.0524 | 0.1117 | 0.0742 |
| 0.3080 | 0.3479 | -1811.1061 | -1721.9182 |
| 136 linear_regression_detrend_crosscv_model | 28.2809 | 0.0069 | -0.0087 | 0.0597 | 15.1454 | 0.0828 |
| 0.1856 | nan | nan | nan |
| 137 lassoRegressor_detrend_default_model | 31.0875 | 0.0081 | 0.0008 | 0.0656 | 0.1816 | 0.0900 |
| 0.1038 | 0.0418 | -1673.4297 | -1584.2417 |
| 138 lassoRegressor_detrend_rscv_model | 25.3998 | 0.0054 | -0.0005 | 0.0515 | 0.1428 | 0.0738 |
| 0.3072 | 0.3556 | -1815.3568 | -1726.1689 |
| 139 lassoRegressor_detrend_crosscv_model | 28.4495 | 0.0064 | -0.0083 | 0.0585 | 15.7876 | 0.0797 |
| 0.2498 | nan | nan | nan |
| 140 ridgeRegressor_detrend_default_model | 26.8483 | 0.0062 | -0.0003 | 0.0564 | 0.1514 | 0.0788 |
| 0.3115 | 0.2639 | -1767.8689 | -1678.6819 |
| 141 ridgeRegressor_detrend_rscv_model | 23.7487 | 0.0055 | -0.0012 | 0.0524 | 0.1216 | 0.0742 |
| 0.3080 | 0.3479 | -1811.1185 | -1721.9305 |
| 142 ridgeRegressor_detrend_crosscv_model | 1677721643.5743 | 84377786567241.0000 | -1541699.3448 | 1541699.4812 | -1677821682.8832 | 12999589.6312 | -8899 |
| 0.0286213848.0000 | nan | nan | nan |
| 143 elastic_net_detrend_default_model | 31.0675 | 0.0081 | 0.0008 | 0.0656 | 0.1816 | 0.0900 |
| 0.1030 | 0.0418 | -1673.4297 | -1584.2417 |
```

Terminal:

```
Python 3 | idle
localhost:8888/lab
Mode: Command
Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb
7/10/2020 7:44 PM
ENGLISH INTEL 11/10/2020
```

The screenshot shows a JupyterLab interface with a code editor containing a table of data. The table has columns for index, model name, parameters, and various performance metrics. Below the code editor is a terminal window showing command-line output.

	Model	Parameters	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8
143	elastic_net_detrend_default_model	0.0410 -1673.4297 -1584.2417	31.0675	0.0081	0.0068	0.0656	0.1816	0.0900		
144	elastic_net_detrend_rscv_model	0.3555 -1615.3163 -1726.1284	25.3725	0.0054	-0.0005	0.0515	0.1423	0.0738		
145	elastic_net_detrend_crosscv_model	nan nan nan	28.4541	0.0054	-0.0003	0.0585	15.7796	0.0797		
146	huberRegressor_detrend_default_model	0.3315 -1802.2317 -1713.0438	24.2669	0.0056	-0.0050	0.0518	0.1184	0.0751		
147	huberRegressor_detrend_rscv_model	0.3198 -1792.7985 -1783.6108	25.3079	0.0058	-0.0044	0.0523	0.1309	0.0761		
148	huberRegressor_detrend_crosscv_model	0.2379 nan nan	28.3121	0.0065	-0.0053	0.0577	15.1180	0.0805		
149	passive_aggressor_detrend_default_model	-0.06878 -0.08043 -1447.7788 -1558.5988	32.4821	0.0152	-0.0052	0.1032	-0.1588	0.1234		
150	passive_aggressor_detrend_rscv_model	0.2559 -1748.1502 -1650.5623	27.7815	0.0067	0.0078	0.0606	0.1695	0.0820		
151	passive_aggressor_detrend_crosscv_model	0.06984 nan nan	30.7348	0.0079	0.0044	0.0658	18.4127	0.0882		
152	sgd_detrend_default_model	0.1169 -1679.0039 -1589.8160	30.9988	0.0088	0.0028	0.0652	0.1862	0.0893		
153	sgd_detrend_rscv_model	0.0561 -1679.1012 -1589.9132	30.7644	0.0088	0.0084	0.0651	0.1787	0.0893		

Python 3

```
0 1 2 3 Python 3 idle Mode: Command ↵ Ln 1 Col 1 Mail_footfall_prediction_skeleton.ipynb
```

ENG 7:45 PM
INTL 11/10/2020

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_sklearn.ipynb". The table contains 163 rows of data, each representing a different model configuration. The columns include model ID, name, parameters, and performance metrics.

	Model Name	Parameters	Score	RMSE	R2	AUC	F1	Recall	Precision
153	sgd_detrend_rscv_model	0.0561 -1679.1012 -1589.0132	38.7644	0.0088	0.0084	0.0651	0.1787	0.0893	
154	sgd_detrend_crossover_model	0.0290 nan nan nan	31.2732	0.0086	-0.0089	0.0672	17.8648	0.0919	
155	knn_regressor_detrend_default_model	0.2494 -1760.9153 -1671.7274	27.5088	0.0063	0.0057	0.0559	0.1712	0.0796	
156	knn_regressor_detrend_rcv_model	0.2628 -1767.3505 -1678.1626	27.2851	0.0062	0.0089	0.0534	0.1798	0.0789	
157	knn_regressor_detrend_crossover_model	0.0988 nan nan nan	28.3123	0.0068	-0.0022	0.0582	15.8880	0.0822	
158	decisiontree_regressor_detrend_default_model	-0.0082 -0.0693 -1634.5747 -1545.3868	30.4881	0.0090	0.0019	0.0661	0.1578	0.0950	
159	decisiontree_regressor_detrend_rcv_model	0.2719 0.2216 -1747.9146 -1658.7266	27.6945	0.0066	0.0001	0.0575	0.1583	0.0811	
160	decisiontree_regressor_detrend_crossover_model	0.0872 nan nan nan	30.9231	0.0078	-0.0015	0.0638	17.8941	0.0882	
161	extra_tree_regressor_detrend_default_model	0.1387 -1711.7699 -1622.5819	17.5022	0.0073	0.0068	0.0610	0.0427	0.0853	
162	extra_tree_regressor_detrend_rcv_model	0.3498 0.3049 -1788.5342 -1699.1463	27.8577	0.0059	-0.0023	0.0513	0.1570	0.0766	
163	extra_tree_regressor_detrend_crossover_model	-0.0084 nan nan nan	31.7863	0.0084	-0.0068	0.0653	16.3316	0.0916	

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_sklearn". The table lists various machine learning models along with their parameters and performance metrics. The columns include:

	Model	Parameters	Score	RMSE	MAE	Ridge	OLS
164	svm_regressor_detrend_default_model	0.3142 -1793.1668 -1793.5188	26.6446	0.0058	0.0066	0.0572	0.1588 0.0761
165	svm_regressor_detrend_rscv_model	0.3131 -1792.5881 -1793.3922	26.5761	0.0058	0.0067	0.0572	0.1592 0.0762
166	svm_regressor_detrend_crosscv_model	nan nan nan	31.2426	0.0075	0.0014	0.0623	18.5867 0.0850
167	adaBoost_detrend_default_model	0.2394 -1756.1716 -1666.9836	26.5757	0.0054	0.0249	0.0624	0.1902 0.0891
168	adaBoost_detrend_rscv_model	0.3889 -1834.3147 -1745.1268	26.2220	0.0052	0.0116	0.0511	0.1824 0.0718
169	adaBoost_detrend_crosscv_model	0.3229 nan nan nan	28.3614	0.0061	-0.0001	0.0535	17.5609 0.0768
170	bagging_detrend_default_model	0.4591 -1877.8615 -1788.6735	21.8314	0.0046	0.0026	0.0453	0.1272 0.0676
171	bagging_detrend_rscv_model	0.4201 -1853.0137 -1763.8257	24.4310	0.0049	0.0008	0.0479	0.1467 0.0700
172	bagging_detrend_crosscv_model	0.3071 nan nan nan	28.9345	0.0061	-0.0006	0.0544	17.8145 0.0775
173	random_forest_detrend_default_model	0.4691 -1884.4994 -1795.3115	21.8658	0.0045	0.0032	0.0451	0.1295 0.0670
174	random_forest_detrend_rscv_model	0.4319 -1868.3275 -1771.1195	23.5231	0.0048	0.0004	0.0467	0.1362 0.0693

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+ Launcher Mail_footfall_prediction_skeleton.ipynb Python 3

Name: Mail_footfall_prediction_skeleton.ipynb

data

AI/ML Capstone - Group 1

Coverage.xlsx

fullDBSCAN.ipynb

Mail_footfall_prediction.ipynb

Mail_footfall_prediction_skeleton.ipynb

preprocess.py

Project Plan.xlsx

README.md

visualization.py

work_flow.pptx

175	random_forest_detrend_crosscv_model	0.3453	nan	nan	nan	28.3768	0.0058	-0.0018	0.0517	17.3741	0.0754
176	extra_trees_regressor_detrend_default_model	0.4088	0.4663	-1882.6700	-1793.4821	22.1267	0.0045	0.0015	0.0444	0.1296	0.0671
177	extra_trees_regressor_detrend_rscv_model	0.5128	0.4792	-1891.3909	-1802.1930	22.0651	0.0044	0.0012	0.0439	0.1298	0.0663
178	extra_trees_regressor_detrend_crosscv_model	0.3582	nan	nan	nan	28.1243	0.0054	-0.0005	0.0496	17.3364	0.0734
179	gradient_boosting_regressor_detrend_default_model	0.4668	0.4291	-1858.5700	-1769.3820	23.3997	0.0048	0.0019	0.0473	0.1363	0.0694
180	gradient_boosting_regressor_detrend_rscv_model	0.4856	0.4581	-1871.9836	-1782.7957	22.5140	0.0046	0.0002	0.0464	0.1265	0.0681
181	gradient_boosting_regressor_detrend_crosscv_model	0.3622	nan	nan	nan	27.5526	0.0056	-0.0005	0.0523	16.1927	0.0741
182	XGBoost_detrend_default_mode	0.4575	0.4280	-1852.9539	-1763.7660	24.2250	0.0049	0.0015	0.0472	0.1455	0.0700
183	XGBoost_detrend_rscv_model	0.4255	0.3858	-1832.4709	-1743.2911	24.7686	0.0052	0.0008	0.0587	0.1427	0.0728
184	XGBoost_detrend_crosscv_model	0.4247	nan	nan	nan	29.1724	0.0057	-0.0022	0.0577	17.1890	0.0688
185	LightGradientBoosting_detrend_default_model	0.4582	0.4207	-1853.3999	-1764.2119	23.1658	0.0049	0.0008	0.0478	0.1283	0.0699

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Launcher Mail_footfall_prediction_ske Python 3

186	LightGradientBoosting_detrend_rscv_model	0.4069	0.4621	-1879.8688	-1790.6729	23.3218	0.0045
187	LightGradientBoosting_detrend_cosscv_model	0.2476	nan	nan	nan	29.2964	0.0066
188	CategoricalGradientBoosting_detrend_default_model	0.4068	0.4621	-1879.8220	-1790.6341	21.4574	0.0045
189	CategoricalGradientBoosting_detrend_rscv_model	0.4859	0.4364	-1872.1427	-1781.9547	21.9961	0.0046
190	CategoricalGradientBoosting_detrend_cosscv_model	0.3453	nan	nan	nan	27.5932	0.0057
191	NeuralNet_MLP_detrend_default_model	0.1939	0.1382	-1711.5669	-1622.3790	28.6509	0.0073
192	NeuralNet_MLP_detrend_rscv_model	0.3387	0.2845	-1777.9941	-1688.8862	26.9232	0.0060
193	NeuralNet_MLP_detrend_cosscv_model	0.0889	nan	nan	nan	33.8171	0.0088
194	linear_regression_Outliers_Removed_default_model	0.2825	0.2338	-1797.5768	-1706.3889	14.3681	0.0057
195	linear_regression_Outliers_Removed_rscv_model	0.2825	0.2338	-1797.5768	-1706.3889	14.3601	0.0057
196	linear_regression_Outliers_Removed_cosscv_model	0.2321	nan	nan	nan	15.9459	0.0058

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.py

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Launcher Mail_footfall_prediction_ske Python 3

197	lassoRegressor_Outliers_Removed_default_model	-0.0503	-0.1229	-1661.5144	-1572.3265	17.8158	0.0084
198	lassoRegressor_Outliers_Removed_rscv_model	0.2002	0.2412	-1801.4328	-1712.2449	14.2346	0.0057
199	lassoRegressor_Outliers_Removed_cosscv_model	0.2653	nan	nan	nan	15.5710	0.0056
200	ridgeRegressor_Outliers_Removed_default_model	0.2574	0.2661	-1785.2848	-1696.0968	14.8268	0.0059
201	ridgeRegressor_Outliers_Removed_rscv_model	0.2853	0.2359	-1798.3993	-1709.7714	14.3323	0.0057
202	ridgeRegressor_Outliers_Removed_cosscv_model	0.2528	nan	nan	nan	15.7071	0.0057
203	elastic_net_Outliers_Removed_default_model	-0.0503	-0.1229	-1661.5144	-1572.3265	17.8158	0.0084
204	elastic_net_Outliers_Removed_rscv_model	0.2011	0.2422	-1801.8881	-1711.6922	14.3319	0.0056
205	elastic_net_Outliers_Removed_cosscv_model	0.2651	nan	nan	nan	15.5753	0.0056
206	huberRegressor_Outliers_Removed_default_model	0.2786	0.2287	-1795.6124	-1706.4244	13.9742	0.0057
207	huberRegressor_Outliers_Removed_rscv_model	0.2789	0.2285	-1701.8370	-1702.6401	14.0598	0.0058
208	huberRegressor_Outliers_Removed_cosscv_model	0.2786	nan	nan	nan	15.0918	0.0056

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.py

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+ Mail_footfall_prediction_ske

Python 3

208	huberRegressor_Outliers_Removed_crosscv_model	0.2646	nan	nan	nan	15.0918	0.0056	-0.0046	0.0544	2.5492	0.0747
209	passive_aggressor_Outliers_Removed_default_model	0.8700	0.0057	-1704.9479	-1615.7599	16.3453	0.0074	-0.0425	0.0647	-0.0767	0.0861
210	passive_aggressor_Outliers_Removed_rscv_model	0.2222	0.1884	-1768.7375	-1679.4496	15.9909	0.0062	-0.0082	0.0583	0.0236	0.0787
211	passive_aggressor_Outliers_Removed_crosscv_model	0.1268	nan	nan	nan	17.7261	0.0068	0.0037	0.0627	5.8644	0.0818
212	sgd_Outliers_Removed_default_model	0.0018	-0.0030	-1701.8259	-1612.6380	16.9919	0.0075	-0.0127	0.0631	0.0170	0.0865
213	sgd_Outliers_Removed_rscv_model	0.0764	0.0126	-1707.4192	-1618.2113	16.8795	0.0074	-0.0112	0.0624	0.0203	0.0858
214	sgd_Outliers_Removed_crosscv_model	0.0691	nan	nan	nan	17.7489	0.0074	0.0007	0.0636	5.3549	0.0852
215	knn_regressor_Outliers_Removed_default_model	0.1558	0.0075	-1739.4994	-1650.3115	16.0181	0.0067	-0.0120	0.0596	0.0885	0.0820
216	knn_regressor_Outliers_Removed_rscv_model	0.1487	0.0099	-1736.5211	-1647.3334	15.5551	0.0068	-0.0103	0.0581	0.0111	0.0824
217	knn_regressor_Outliers_Removed_crosscv_model	0.2706	nan	nan	nan	14.5709	0.0056	-0.0034	0.0531	2.6747	0.0743
218	decisiontree_regressor_Outliers_Removed_default_model	-0.0021	-0.1558	-1651.2085	-1582.0206	18.2294	0.0066	-0.0089	0.0672	0.0807	0.0928

Google JupyterLab localhost:8888/lab

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Launcher Mail_footfall_prediction_skeleton.ipynb Code Python 3

File / ... / BITS_Capstone Project / Capstone / Project / master / Name

data

AIIM Capstone - Gro... Coverage.xlsx FullDSCAN.ipynb Mail_footfall_predict... Mail_footfall_predict... preprocess.py Project Plan.xlsx README.md visualization.py work_flow.pptx

219	decisiontree_regressor_Outliers_Removed_rscv_model	0.1077 0.0468 -1719.7143 -1630.5264		15.8622	0.0071	-0.0185	0.0502	-0.0073	0.0843		
220	decisiontree_regressor_Outliers_Removed_crosscv_model	0.0786 nan nan nan		17.4934	0.0071	-0.0001	0.0533	4.6229	0.0837		
221	extra_tree_regressor_Outliers_Removed_default_model	0.1443 -0.2233 -1630.9297 -1541.7418		19.0133	0.0091	-0.0230	0.0725	-0.0185	0.0955		
222	extra_tree_regressor_Outliers_Removed_rscv_model	0.1137 0.0525 -1722.1446 -1632.0567		15.8171	0.0071	-0.0200	0.0605	-0.0134	0.0840		
223	extra_tree_regressor_Outliers_Removed_crosscv_model	0.0892 nan nan nan		17.3146	0.0069	0.0025	0.0518	5.0132	0.0825		
224	svm_regressor_Outliers_Removed_default_model	0.2010 0.1458 -1759.1700 -1669.9821		15.8688	0.0064	-0.0184	0.0586	0.0083	0.0798		
225	svm_regressor_Outliers_Removed_rscv_model	0.2009 0.1457 -1759.1166 -1669.9127		15.8718	0.0064	-0.0185	0.0587	0.0082	0.0798		
226	svm_regressor_Outliers_Removed_crosscv_model	0.0368 nan nan nan		17.8890	0.0074	0.0103	0.0627	7.3394	0.0855		
227	adaBoost_Outliers_Removed_default_model	0.3278 0.2814 -1820.8467 -1731.6588		15.3471	0.0054	-0.0007	0.0551	0.0180	0.0732		
228	adaBoost_Outliers_Removed_rscv_model	0.4142 0.3737 -1869.9698 -1780.7819		13.1143	0.0047	-0.0163	0.0488	0.0053	0.0683		
229	adaBoost_Outliers_Removed_crosscv_model	0.3733 nan nan nan		13.8525	0.0048	0.0012	0.0405	4.0106	0.0689		

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+ - _ C Mail_footfall_prediction_ske

Python 3

230	bagging_Outliers_Removed_default_model	0.4399	-1907.2813	-1818.8934	11.8151	0.0042	-0.0133	0.0448	-0.0098	0.0648
231	bagging_Outliers_Removed_rscv_model	0.3478	-1855.4625	-1766.2746	13.0755	0.0049	-0.0165	0.0496	-0.0095	0.0697
232	bagging_Outliers_Removed_crosscv_model	0.3636	nan	nan	14.0944	0.0049	0.0003	0.0501	3.9868	0.0694
233	random_forest_Outliers_Removed_default_model	0.4459	-1913.6467	-1824.4587	11.8785	0.0041	-0.0128	0.0448	-0.0078	0.0643
234	random_forest_Outliers_Removed_rscv_model	0.4088	-1898.3945	-1801.2065	12.1020	0.0044	-0.0150	0.0458	-0.0122	0.0664
235	random_forest_Outliers_Removed_crosscv_model	0.3996	nan	nan	13.3061	0.0045	0.0014	0.0478	3.8385	0.0671
236	extra_trees_regressor_Outliers_Removed_default_model	0.4495	-1896.9927	-1801.8847	12.5292	0.0044	-0.0152	0.0475	-0.0148	0.0663
237	extra_trees_regressor_Outliers_Removed_rscv_model	0.4051	-1888.3272	-1799.1393	12.5382	0.0044	-0.0157	0.0476	-0.0158	0.0666
238	extra_trees_regressor_Outliers_Removed_crosscv_model	0.4247	nan	nan	12.7591	0.0043	0.0016	0.0453	3.5531	0.0654
239	gradient_boosting_regressor_Outliers_Removed_default_model	0.3582	-1866.8008	-1777.0121	12.2058	0.0047	-0.0176	0.0473	-0.0118	0.0686
240	gradient_boosting_regressor_Outliers_Removed_rscv_model	0.3586	-1861.4277	-1772.2998	12.6749	0.0048	-0.0179	0.0488	-0.0187	0.0692

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

0 2 Python 3 idle ENG 7:50 PM INTEL 11/10/2020

The screenshot shows a Jupyter Notebook environment with a sidebar containing project files and a main area displaying a table of model performance metrics. The table has columns for index, model name, and various evaluation metrics.

	Model	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6
241	gradient_boosting_regressor_Outliers_Removed_crosscv_model	13.3521	0.0046	0.0005	0.0477	3.3008	0.0675
242	XGBoost_Outliers_Removed_default_model	12.5774	0.0048	-0.0179	0.0481	-0.0190	0.0694
243	XGBoost_Outliers_Removed_rscv_model	13.2256	0.0047	-0.0165	0.0491	0.0066	0.0688
244	XGBoost_Outliers_Removed_crosscv_model	14.5913	0.0049	0.0067	0.0508	5.6725	0.0697
245	LightGBMGradientBoosting_Outliers_Removed_default_model	12.7099	0.0046	-0.0150	0.0481	-0.0141	0.0678
246	LightGBMGradientBoosting_Outliers_Removed_rscv_model	12.2506	0.0044	-0.0164	0.0466	-0.0171	0.0665
247	LightGBMGradientBoosting_Outliers_Removed_crosscv_model	14.7798	0.0053	0.0017	0.0531	3.8504	0.0725
248	CategoricalGradientBoosting_Outliers_Removed_default_model	11.9915	0.0043	-0.0125	0.0454	-0.0073	0.0659
249	CategoricalGradientBoosting_Outliers_Removed_rscv_model	12.6915	0.0044	-0.0139	0.0475	-0.0081	0.0666
250	CategoricalGradientBoosting_Outliers_Removed_crosscv_model	13.6264	0.0048	0.0001	0.0485	3.7504	0.0686
251	NeuralNet_MLP_Outliers_Removed_default_model	15.8862	0.0066	-0.0178	0.0509	-0.0025	0.0815

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Launcher Mail_footfall_prediction_ske

252	NeuralNet_MLP_Outliers_Removed_rscv_Model	0.2619	0.2109	-1787.4496	-1696.2617	14.7161	0.0059	-0.0206	0.0553	-0.0224	0.0767
253	NeuralNet_MLP_Outliers_Removed_crosscv_model	0.1947	nan	nan	nan	16.1928	0.0068	0.0014	0.0569	3.7176	0.0778
254	linear_regression_Outliers_Removed_shuffled_default_model	0.2825	0.2338	-1552.5684	-1463.3885	21.7497	0.0114	-0.0193	0.0015	0.0015	0.1066
255	linear_regression_Outliers_Removed_shuffled_rscv_model	0.2825	0.2338	-1552.5684	-1463.3885	21.7497	0.0114	-0.0193	0.0015	0.0015	0.1066
256	linear_regression_Outliers_Removed_shuffled_crosscv_model	0.2321	nan	nan	nan	15.9459	0.0058	0.0003	0.0567	3.7436	0.0761
257	lassoRegressor_Outliers_Removed_shuffled_default_model	0.0583	-0.1229	-1661.5144	-1572.3265	17.8150	0.0084	-0.0200	0.0675	-0.0006	0.0915
258	lassoRegressor_Outliers_Removed_shuffled_rscv_model	0.2962	0.2412	-1801.4328	-1712.2409	14.3346	0.0057	-0.0182	0.0548	-0.0146	0.0752
259	lassoRegressor_Outliers_Removed_shuffled_crosscv_model	0.2653	nan	nan	nan	15.5710	0.0056	0.0006	0.0553	3.8548	0.0746
260	ridgeRegressor_Outliers_Removed_shuffled_default_model	0.2574	0.2061	-1610.9829	-1521.7158	19.9138	0.0096	-0.0154	0.0743	0.0122	0.0982
261	ridgeRegressor_Outliers_Removed_shuffled_rscv_model	0.2853	0.2359	-1553.8598	-1464.6711	21.7111	0.0113	-0.0191	0.0013	0.0028	0.1064
262	ridgeRegressor_Outliers_Removed_shuffled_crosscv_model	0.2520	nan	nan	nan	15.7972	0.0057	0.0006	0.0558	3.8354	0.0752
263	elastic_net_Outliers_Removed_shuffled_default_model	0.0583	-0.1229	-1661.5144	-1572.3265	17.8150	0.0084	-0.0200	0.0675	-0.0006	0.0915

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.py

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Launcher Mail_footfall_prediction_ske

263	elastic_net_Outliers_Removed_shuffled_default_model	0.0583	-0.1229	-1661.5144	-1572.3265	17.8150	0.0084	-0.0200	0.0675	-0.0006	0.0915
264	elastic_net_Outliers_Removed_shuffled_rscv_model	0.2011	0.2422	-1801.8801	-1712.6922	14.3319	0.0056	-0.0181	0.0539	-0.0143	0.0752
265	elastic_net_Outliers_Removed_shuffled_crosscv_model	0.2651	nan	nan	nan	15.5753	0.0056	0.0006	0.0553	3.8477	0.0746
266	huberRegressor_Outliers_Removed_shuffled_default_model	0.2786	0.2287	-1795.6125	-1706.4246	13.9742	0.0057	-0.0181	0.0528	-0.0165	0.0758
267	huberRegressor_Outliers_Removed_shuffled_rscv_model	0.2672	0.2165	-1790.0158	-1700.8278	14.0236	0.0058	-0.0200	0.0531	-0.0219	0.0764
268	huberRegressor_Outliers_Removed_shuffled_crosscv_model	0.2235	nan	nan	nan	15.3219	0.0059	-0.0053	0.0553	2.0764	0.0765
269	passive_aggressor_Outliers_Removed_shuffled_default_model	0.1125	0.0532	-1721.6374	-1632.4409	16.2110	0.0071	-0.0305	0.0624	-0.0411	0.0841
270	passive_aggressor_Outliers_Removed_shuffled_rscv_model	0.2208	0.1662	-1767.7621	-1678.5792	15.9741	0.0062	-0.0097	0.0584	0.0193	0.0788
271	passive_aggressor_Outliers_Removed_shuffled_crosscv_model	0.1313	nan	nan	nan	17.7737	0.0068	0.0053	0.0625	6.3402	0.0818
272	sgd_Outliers_Removed_shuffled_default_model	0.0535	-0.0119	-1698.6719	-1689.4839	16.9288	0.0075	-0.0150	0.0633	0.0105	0.0869
273	sgd_Outliers_Removed_shuffled_rscv_model	0.0672	0.0027	-1703.8692	-1614.6813	16.7915	0.0074	-0.0137	0.0626	0.0134	0.0862

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.py

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_sklearn' and displays a table of data. The table has columns for index, model name, parameters, and various performance metrics. The data includes rows for SGD, KNN, Decision Tree, Extra Tree, and SVM models, each with different parameter sets and their corresponding scores.

	Model	Parameters	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6
0	sgd_Outliers_Removed_shuffled_crosscv_model	0.6587 nan nan nan	17.7653	0.0074	0.0019	0.0036	5.4223	0.0852
1	knn_regressor_Outliers_Removed_shuffled_default_model	0.1558 0.8975 -1578.7633 -1489.5754	21.1787	0.0105	-0.0120	0.0784	0.0217	0.1027
2	knn_regressor_Outliers_Removed_shuffled_rscv_model	0.1487 0.8899 -1558.2387 -1469.4988	21.9019	0.0112	-0.0103	0.0809	0.0266	0.1057
3	knn_regressor_Outliers_Removed_shuffled_crosscv_model	0.2776 nan nan nan	14.5709	0.0056	-0.0034	0.0531	2.8747	0.0743
4	decisiontree_regressor_Outliers_Removed_shuffled_default_model	-0.0754 -0.1407 -1651.8932 -1563.9833	18.2993	0.0085	-0.0059	0.0672	0.0681	0.0926
5	decisiontree_regressor_Outliers_Removed_shuffled_rscv_model	0.1175 0.0568 -1723.6789 -1634.4010	15.5919	0.0070	-0.0202	0.0594	-0.0126	0.0839
6	decisiontree_regressor_Outliers_Removed_shuffled_crosscv_model	0.0614 nan nan nan	17.1301	0.0072	0.0001	0.0621	4.5789	0.0844
7	extra_tree_regressor_Outliers_Removed_shuffled_default_model	-0.0218 -0.0923 -1671.3616 -1582.1736	17.4371	0.0081	-0.0183	0.0653	-0.0239	0.0902
8	extra_tree_regressor_Outliers_Removed_shuffled_rscv_model	0.1122 0.0569 -1721.5465 -1632.3588	15.8831	0.0071	-0.0207	0.0605	-0.0152	0.0841
9	extra_tree_regressor_Outliers_Removed_shuffled_crosscv_model	0.0876 nan nan nan	17.5556	0.0078	0.0008	0.0638	4.5613	0.0831
10	svm_regressor_Outliers_Removed_shuffled_default_model	0.2019 0.1458 -1759.1700 -1669.9821	15.8688	0.0064	-0.0104	0.0586	0.0083	0.0798

The screenshot shows a Jupyter Notebook environment with a table titled "Mail_footfall_prediction_sklearn". The table lists various machine learning models along with their parameters and performance metrics. The columns include Model ID, Model Name, Parameters, and several numerical values representing accuracy and error.

Model ID	Model Name	Parameters	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6
285	svm_regressor_Outliers_Removed_shuffled_rscv_model	0.02018 0.1458 -1759.1700 -1660.9621	15.8688	0.0054	-0.0104	0.0586	0.0083	0.0798
286	svm_regressor_Outliers_Removed_shuffled_crosscv_model	0.03039 nan nan nan	17.8846	0.0074	0.0103	0.0627	7.3371	0.0855
287	adaBoost_Outliers_Removed_shuffled_default_model	0.3271 0.2886 -1820.4831 -1731.2053	15.2765	0.0054	-0.0020	0.0552	0.0335	0.0732
288	adaBoost_Outliers_Removed_shuffled_rscv_model	0.4016 0.3683 -1862.3697 -1773.1818	13.2597	0.0048	-0.0109	0.0493	0.0339	0.0691
289	adaBoost_Outliers_Removed_shuffled_crosscv_model	0.3615 nan nan nan	13.9176	0.0049	0.0003	0.0498	3.8224	0.0695
290	bagging_Outliers_Removed_shuffled_default_model	0.4775 0.4415 -1910.8142 -1821.8263	11.7595	0.0042	-0.0136	0.0447	-0.0106	0.0645
291	bagging_Outliers_Removed_shuffled_rccv_model	0.3899 0.3477 -1855.4469 -1766.2590	13.0491	0.0049	-0.0102	0.0495	-0.0007	0.0697
292	bagging_Outliers_Removed_shuffled_crosscv_model	0.3569 nan nan nan	14.2174	0.0049	0.0009	0.0504	4.1989	0.0698
293	random_forest_Outliers_Removed_shuffled_default_model	0.4438 0.4452 -1913.1938 -1824.0059	11.6975	0.0041	-0.0133	0.0443	-0.0095	0.0643
294	random_forest_Outliers_Removed_shuffled_rscv_model	0.4420 0.4093 -1887.3267 -1798.1388	12.3325	0.0044	-0.0140	0.0464	-0.0086	0.0667
295	random_forest_Outliers_Removed_shuffled_crosscv_model	0.3981 nan nan nan	13.2340	0.0045	0.0017	0.0468	3.9167	0.0671

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+ - _ C Mail_footfall_prediction_sklearn

Python 3

296	extra_trees_regressor_Outliers_Removed_shuffled_default_model	0.4465	0.4082 -1898.1972 -1801.0992	12.4551	0.0044	-0.0152	0.0472	-0.0146	0.0664		
297	extra_trees_regressor_Outliers_Removed_shuffled_rscv_model	0.4401	0.4111 -1801.0940 -1802.7370	12.4155	0.0044	-0.0159	0.0471	-0.0164	0.0663		
298	extra_trees_regressor_Outliers_Removed_shuffled_crosscv_model	0.4254	nan nan nan	12.6420	0.0043	0.0019	0.0450	3.5834	0.0653		
299	gradient_boosting_regressor_Outliers_Removed_shuffled_default_model	0.4126	0.3728 -1668.9913 -1779.4034	12.2132	0.0047	-0.0175	0.0473	-0.0116	0.0684		
300	gradient_boosting_regressor_Outliers_Removed_shuffled_rscv_model	0.4060	0.3599 -1861.9211 -1772.7342	12.6323	0.0048	-0.0164	0.0483	-0.0143	0.0691		
301	gradient_boosting_regressor_Outliers_Removed_shuffled_crosscv_model	0.3930	nan nan nan	13.4452	0.0045	0.0013	0.0480	3.5540	0.0672		
302	XGBoost_Outliers_Removed_shuffled_default_model	0.3959	0.3542 -1858.9936 -1769.8057	12.5774	0.0048	-0.0179	0.0481	-0.0198	0.0694		
303	XGBoost_Outliers_Removed_shuffled_rscv_model	0.4012	0.3599 -1862.1371 -1772.5495	13.2599	0.0048	-0.0108	0.0493	0.0061	0.0691		
304	XGBoost_Outliers_Removed_shuffled_crosscv_model	0.3538	nan nan nan	14.5913	0.0049	0.0067	0.0508	5.6725	0.0697		
305	LightGradientBoosting_Outliers_Removed_shuffled_default_model	0.4230	0.3831 -1875.3526 -1786.1647	12.7099	0.0046	-0.0158	0.0481	-0.0141	0.0678		
306	LightGradientBoosting_Outliers_Removed_shuffled_rscv_model	0.4453	0.4078 -1889.4488 -1800.2529	12.2506	0.0044	-0.0164	0.0466	-0.0171	0.0665		

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Launcher Mail_footfall_prediction_skeleton

	Code	Python 3
306	LightGradientBoosting_Outliers_Removed_shuffled_rscv_model 0.4053 -1889.4488 -1800.2529	12.2506 0.0044 -0.0164 0.0466 -0.0171 0.0665
307	LightGradientBoosting_Outliers_Removed_shuffled_crosscv_model 0.2334 nan nan	14.7798 0.0053 0.0017 0.0531 3.8584 0.0725
308	CategoricalGradientBoosting_Outliers_Removed_shuffled_default_model 0.4491 -1891.8857 -1802.4978	12.3585 0.0044 -0.0138 0.0468 -0.0104 0.0663
309	CategoricalGradientBoosting_Outliers_Removed_shuffled_rscv_model 0.4218 -1874.2929 -1785.1860	12.3823 0.0046 -0.0164 0.0475 -0.0161 0.0679
310	CategoricalGradientBoosting_Outliers_Removed_shuffled_crosscv_model 0.3853 nan nan nan	13.1327 0.0045 -0.0008 0.0473 3.0271 0.0672
311	NeuralNet_MLP_Outliers_Removed_shuffled_default_model 0.1278 0.0675 -1727.8501 -1638.6621	16.7301 0.0078 -0.0120 0.0616 0.0151 0.0834
312	NeuralNet_MLP_Outliers_Removed_shuffled_rscv_model 0.2025 0.2436 -1802.5674 -1713.3794	14.3427 0.0056 -0.0109 0.0537 -0.0107 0.0751
313	NeuralNet_MLP_Outliers_Removed_shuffled_crosscv_model 0.2348 nan nan nan	15.4732 0.0058 0.0028 0.0549 3.9884 0.0761
314	linear_regression_OutliersRemoved_extra_features_shuffled_default_model 0.3473 -1539.3553 -1426.9810	22.6888 0.0114 -0.0032 0.0825 0.0463 0.1068
315	linear_regression_OutliersRemoved_extra_features_shuffled_rscv_model 0.3473 -1539.3553 -1426.9810	22.6888 0.0114 -0.0032 0.0825 0.0463 0.1068
316	linear_regression_OutliersRemoved_extra_features_shuffled_crosscv_model 0.2381 nan nan nan	15.7283 0.0058 0.0084 0.0558 3.6810 0.0759

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Launcher Mail_footfall_prediction_ske

Python 3

317	lassoRegressor_OutliersRemoved_extra_features_shuffled_default_model	-0.0503	-0.1435	-1649.5144	-1537.0601	17.8150	0.0084	-0.0200	0.0675	-0.0006	0.0915
318	lassoRegressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.3664	0.3102	-1829.9545	-1717.5903	13.8864	0.0058	-0.0042	0.0503	0.0224	0.0711
319	lassoRegressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.2843	nan	nan	nan	15.2618	0.0054	0.0007	0.0542	3.7454	0.0736
320	ridgeRegressor_OutliersRemoved_extra_features_shuffled_default_model	0.2727	0.2083	-1597.2841	-1484.7498	20.2415	0.0097	-0.0112	0.0748	0.0239	0.0984
321	ridgeRegressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.3487	0.2909	-1548.5576	-1428.1033	22.6504	0.0114	-0.0031	0.0824	0.0464	0.1066
322	ridgeRegression_OutliersRemoved_extra_features_shuffled_crosscv_model	0.2546	nan	nan	nan	15.5505	0.0057	0.0008	0.0551	3.7785	0.0750
323	elastic_net_OutliersRemoved_extra_features_shuffled_default_model	-0.0503	-0.1435	-1649.5144	-1537.0601	17.8150	0.0084	-0.0200	0.0675	-0.0006	0.0915
324	elastic_net_OutliersRemoved_extra_features_shuffled_rscv_model	0.3666	0.3104	-1838.6764	-1717.6223	13.8983	0.0050	-0.0042	0.0503	0.0224	0.0711
325	elastic_net_OutliersRemoved_extra_features_shuffled_crosscv_model	0.2837	nan	nan	nan	15.2772	0.0055	0.0007	0.0542	3.7375	0.0736
326	huberRegressor_OutliersRemoved_extra_features_shuffled_default_model	0.3195	0.2591	-1804.4557	-1692.0014	13.9935	0.0054	-0.0057	0.0510	0.0169	0.0736
327	huberRegressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.3202	0.2599	-1804.8355	-1692.3812	13.7448	0.0054	-0.0057	0.0503	0.0168	0.0736

Python 3 | idle

Mode: Command Ln 1 Col 1 Mail_footfall_prediction_skeleton.ipynb

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The screenshot shows a Jupyter Notebook environment with a sidebar containing project files and a main area displaying a table of model performance metrics. The table has columns for model name, parameters, and various evaluation metrics.

328	huberRegressor_OutliersRemoved_extra_features_shuffled_crosscv_model	14.9672	0.0057	-0.0044	0.0539	2.1896	0.0751				
329	passive_aggressor_OutliersRemoved_extra_features_shuffled_default_model	35.8944	0.0175	0.1086	0.1172	0.3447	0.1322				
330	passive_aggressor_OutliersRemoved_extra_features_shuffled_rscv_model	16.7624	0.0065	-0.0050	0.0685	0.0334	0.0806				
331	passive_aggressor_OutliersRemoved_extra_features_shuffled_crosscv_model	18.1039	0.0070	0.0064	0.0636	6.6410	0.0829				
332	sgd_OutliersRemoved_extra_features_shuffled_default_model	17.1869	0.0074	-0.0101	0.0631	0.0239	0.0868				
333	sgd_OutliersRemoved_extra_features_shuffled_rscv_model	16.8248	0.0074	-0.0154	0.0629	0.0098	0.0861				
334	sgd_OutliersRemoved_extra_features_shuffled_crosscv_model	18.3787	0.0075	0.0037	0.0655	6.2222	0.0861				
335	knn_regressor_OutliersRemoved_extra_features_shuffled_default_model	19.5071	0.0096	-0.0262	0.0736	-0.0011	0.0979				
336	knn_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	20.2781	0.0101	-0.0195	0.0762	0.0010	0.1087				
337	knn_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	16.7142	0.0067	-0.0050	0.0688	3.0892	0.0817				
338	decisiontree_regressor_OutliersRemoved_extra_features_shuffled_default_model	20.7309	0.0108	0.0024	0.0765	0.0349	0.1041				

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_skeleton.ipynb'. The notebook contains a table with 15 rows, each representing a different machine learning model configuration and its performance metrics. The columns include the model name, parameters, and various evaluation scores.

	Model	Parameters	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6
0	decisiontree_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.1425 0.0665 -1721.9367 -1609.4824	15.6593	0.0068	-0.0221	0.0001	-0.0171	0.0027
1	decisiontree_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.0344 nan nan nan	17.4181	0.0072	-0.0005	0.0631	4.0121	0.8849
2	extra_tree_regressor_OutliersRemoved_extra_features_shuffled_default_model	-0.1813 -0.2846 -1607.5818 -1405.1275	18.7479	0.0094	-0.0069	0.0694	0.0249	0.0978
3	extra_tree_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.1591 0.0645 -1728.9089 -1615.4465	15.8639	0.0057	-0.0028	0.0582	0.0266	0.0819
4	extra_tree_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.0405 nan nan nan	15.5519	0.0057	0.0005	0.0564	2.9859	0.0756
5	svm_regressor_OutliersRemoved_extra_features_shuffled_default_model	-0.0623 -0.1565 -1645.4713 -1533.0170	18.4433	0.0085	-0.0142	0.0685	0.0069	0.0928
6	svm_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.2004 0.1295 -1746.8997 -1634.4454	16.0578	0.0064	-0.0067	0.0586	0.0274	0.0798
7	svm_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.0801 nan nan nan	18.1354	0.0071	0.0019	0.0546	5.5380	0.0839
8	adaBoost_OutliersRemoved_extra_features_shuffled_default_model	0.3141 0.2532 -1801.6351 -1680.1806	16.2067	0.0055	0.0045	0.0575	0.0510	0.0739
9	adaBoost_OutliersRemoved_extra_features_shuffled_rscv_model	0.3094 0.3451 -1848.4659 -1736.0115	14.8094	0.0048	-0.0035	0.0587	0.0250	0.0692
10	adaBoost_OutliersRemoved_extra_features_shuffled_crosscv_model	0.3478 nan nan nan	14.0806	0.0050	0.0009	0.0583	4.0498	0.0702
11	ISLR_hamming_OutliersRemoved_extra_features_shuffled_default_model	0.2008 nan nan nan	12.7098	0.0042	-0.0057	0.0429	0.0156	0.0467

The screenshot shows a JupyterLab interface with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_skeleton.ipynb'. The code editor displays a table comparing various machine learning models based on different feature sets and outlier removal strategies. The columns represent model names, feature sets, and performance metrics like R-squared and RMSE.

Model	Feature Set	R-squared	RMSE			
bagging_OutliersRemoved_extra_features_shuffled_default_model	0.4285 -1897.1413 -1784.6869	0.0042	-0.0052	0.0449	0.0150	0.0647
bagging_OutliersRemoved_extra_features_shuffled_rscv_model	0.4278 -0.3771 -1866.3489 -1753.9046	0.0046	-0.0080	0.0478	0.0136	0.0675
bagging_OutliersRemoved_extra_features_shuffled_crosscv_model	0.3414 nan nan nan	0.0050	0.0005	0.0512	4.1238	0.0706
random_forest_OutliersRemoved_extra_features_shuffled_default_model	0.4225 -1893.3983 -1780.9439	0.0042	-0.0049	0.0451	0.0156	0.0650
random_forest_OutlierRemoved_extra_features_shuffled_rscv_model	0.3978 -1878.4387 1765.9844	0.0044	-0.0063	0.0468	0.0142	0.0664
random_forest_OutliersRemoved_extra_features_shuffled_crosscv_model	0.2762 nan nan nan	0.0047	0.0017	0.0484	4.0240	0.0685
extra_trees_regressor_OutliersRemoved_extra_features_shuffled_default_model	0.4088 -1884.8815 -1772.4272	0.0043	-0.0093	0.0452	0.0040	0.0658
extra_trees_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.4095 -1885.4378 -1772.9853	0.0043	-0.0091	0.0460	0.0044	0.0657
extra_trees_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.4721 nan nan nan	0.0048	0.0018	0.0431	3.4872	0.0627
gradient_boosting_regressor_OutlierRemoved_extra_features_shuffled_default_model	0.3628 -1858.2532 -1745.7989	0.0047	-0.0043	0.0487	0.0179	0.0683
gradient_boosting_regressor_OutliersRemoved_extra_features_shuffled_rscv_model	0.3604 -1856.9846 -1744.4562	0.0047	-0.0051	0.0485	0.0189	0.0684

The screenshot shows a Jupyter Notebook environment with a sidebar containing project files and a main area displaying a table of model performance metrics.

Table Headers:

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Table Data:

361	gradient_boosting_regressor_OutliersRemoved_extra_features_shuffled_crosscv_model	0.3742	nan	nan	nan	13.5986	0.0046	0.0014	0.0484	3.6841	0.0677
362	XGBoost_OutliersRemoved_extra_features_shuffled_default_model	0.4170	0.3653	-1859.6893	-1747.2340	13.0526	0.0046	-0.0054	0.0479	0.0165	0.0682
363	XGBoost_OutliersRemoved_extra_features_shuffled_rscv_model	0.4273	0.3765	-1866.0231	-1753.5688	13.2898	0.0046	-0.0014	0.0477	0.0319	0.0676
364	XGBoost_OutliersRemoved_extra_features_shuffled_crosscv_model	0.3407	nan	nan	nan	14.7167	0.0049	0.0073	0.0511	5.8699	0.0702
365	LightGradientBoosting_OutliersRemoved_extra_features_shuffled_default_model	0.4199	0.3684	-1861.4988	-1748.5837	13.2980	0.0046	-0.0044	0.0484	0.0179	0.0680
366	LightGradientBoosting_OutliersRemoved_extra_features_shuffled_rscv_model	0.4610	0.4132	-1887.6651	-1775.2167	12.6377	0.0043	-0.0063	0.0463	0.0122	0.0655
367	LightGradientBoosting_OutliersRemoved_extra_features_shuffled_crosscv_model	0.3610	nan	nan	nan	14.0111	0.0048	0.0000	0.0503	3.5449	0.0691
368	CategoricalGradientBoosting_OutliersRemoved_extra_features_shuffled_default_model	0.4016	0.4016	-1888.7103	-1768.2559	12.5920	0.0044	-0.0058	0.0468	0.0155	0.0662
369	CategoricalGradientBoosting_OutlierRemoved_extra_features_shuffled_rscv_model	0.4250	0.3740	-1864.5995	-1752.1452	13.3543	0.0046	-0.0047	0.0487	0.0175	0.0677
370	CategoricalGradientBoosting_OutliersRemoved_extra_features_shuffled_crosscv_model	0.4359	nan	nan	nan	12.9397	0.0043	-0.0017	0.0464	2.8526	0.0652
371	NeuralNet_MLP_OutliersRemoved_extra_features_shuffled_default_model	-0.0530	-0.1484	-1648.6133	-1536.1589	17.3684	0.0084	-0.0348	0.0683	-0.0471	0.0916

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372	NeuralNet_MLP_outliersRemoved_extra_features_shuffled_rscv_model	-0.0895	-0.1661	-1636.4521	-1523.9978	19.1457	0.0087	-0.0055	0.0697	0.0275	0.0932	
373	NeuralNet_MLP_outliersRemoved_extra_features_shuffled_rscv_model	0.3837	nan	nan	nan	14.7766	0.0051	0.0015	0.0529	3.0633	0.0715	
374	linear_regression_PCA_features_default_model	0.0121	-0.0245	-1693.4579	-1642.7952	28.5688	0.0090	-0.0095	0.0688	0.1257	0.0949	
375	linear_regression_PCA_features_rscv_model	0.0121	-0.0245	-1693.4579	-1642.7952	28.5688	0.0098	-0.0095	0.0688	0.1257	0.0949	
376	linear_regression_PCA_features_crosscv_model	-0.0048	nan	nan	nan	28.7201	0.0088	-0.0062	0.0696	14.6449	0.0938	
377	lassoRegressor_PCA_features_default_model	-0.0381	-0.0765	-1675.3633	-1624.6646	27.1014	0.0095	-0.0185	0.0701	0.0913	0.0972	
378	lassoRegressor_PCA_features_rscv_model	-0.0022	-0.0393	-1688.2156	-1637.5178	27.2223	0.0091	-0.0167	0.0688	0.0939	0.0955	
379	lassoRegressor_PCA_features_crosscv_model	-0.0038	nan	nan	nan	28.2224	0.0090	0.0063	0.0698	14.7404	0.0942	
380	ridgeRegressor_PCA_features_default_model	0.0178	-0.0185	-1695.5854	-1644.8888	28.3763	0.0089	-0.0103	0.0686	0.1231	0.0946	
381	ridgeRegressor_PCA_features_rscv_model	0.0121	-0.0245	-1693.4562	-1642.7575	28.5601	0.0090	-0.0095	0.0688	0.1257	0.0949	
382	ridgeRegressor_PCA_features_crosscv_model	-0.0048	nan	nan	nan	28.7202	0.0088	-0.0062	0.0696	14.6452	0.0938	

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File Edit View Run Kernel Tabs Settings Help

+ C Mail_footfall_prediction_ske

Launcher Mail_footfall_prediction_ske

Code Python 3

383	elastic_net_PCA_features_default_model	-0.0381	-0.0765	-1675.3633	-1624.6646	27.1814	0.0095	-0.0186	0.0701	0.0913	0.0972
384	elastic_net_PCA_features_rscv_model	0.6243	-0.0118	-1698.0005	-1647.3019	27.6858	0.0089	-0.0135	0.0688	0.1116	0.0943
385	elastic_net_PCA_features_crosvc_model	0.0079	nan	nan	nan	28.2017	0.0088	0.0003	0.0688	14.6411	0.0935
386	huberRegressor_PCA_features_default_model	0.0099	-0.0267	-1692.6505	-1641.9538	28.0764	0.0090	-0.0148	0.0682	0.1103	0.0950
387	huberRegressor_PCA_features_rscv_model	0.0099	-0.0267	-1692.6505	-1641.9538	28.0744	0.0090	-0.0148	0.0682	0.1102	0.0950
388	huberRegressor_PCA_features_crosvc_model	0.0083	nan	nan	nan	28.2244	0.0087	-0.0054	0.0681	13.3937	0.0932
389	passive_aggressor_PCA_features_default_model	-36.4250	-37.8112	-366.8573	-316.1586	137.2351	0.3408	-0.5078	0.5112	-1.3228	0.5838
390	passive_aggressor_PCA_features_rscv_model	-0.0098	-0.0472	-1685.4664	-1634.7678	27.5986	0.0092	-0.0118	0.0696	0.1131	0.0959
391	passive_aggressor_PCA_features_crosvc_model	-0.0162	nan	nan	nan	27.7644	0.0091	-0.0075	0.0698	12.5957	0.0948
392	sgd_PCA_features_default_model	-0.0365	-0.0749	-1675.9196	-1625.2209	27.3177	0.0094	-0.0191	0.0702	0.0919	0.0972
393	sgd_PCA_features_rscv_model	-0.0274	-0.0654	-1679.1472	-1628.4485	27.3968	0.0094	-0.0168	0.0708	0.0986	0.0967

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

+ Launcher Mail_footfall_prediction_skeleton.pyb Python 3

-0.9274	-0.0654	-1679.1472	-1628.4485									
394	sgd_PCA_features_crosscv_model	nan	nan	nan	28.2503	0.0098	0.0008	0.0692	14.7215	0.0942		
-0.0043												
395	knn_regressor_PCA_features_default_model	-0.2389	-0.2538	-1619.1617	-1568.4631	38.9539	0.0110	-0.0188	0.0768	0.1132	0.1058	
-0.2189												
396	knn_regressor_PCA_features_rscv_model	-0.1877	-0.2317	-1626.2323	-1575.5336	29.5272	0.0108	-0.0188	0.0749	0.1089	0.1048	
-0.1877												
397	knn_regressor_PCA_features_crosscv_model	-0.0354	nan	nan	nan	38.8688	0.0091	0.0022	0.0711	16.8831	0.0952	
-0.0354												
398	decisiontree_regressor_PCA_features_default_model	-1.1144	-1.1927	-1415.7161	-1365.0174	48.4555	0.0193	-0.0147	0.1024	0.1399	0.1388	
-1.1144												
399	decisiontree_regressor_PCA_features_rscv_model	-0.0238	-0.0617	-1689.4538	-1629.7364	28.1361	0.0093	-0.0207	0.0683	0.0968	0.0966	
-0.0238												
400	decisiontree_regressor_PCA_features_crosscv_model	-0.1330	nan	nan	nan	31.4619	0.0101	-0.0075	0.0737	14.5918	0.1000	
-0.1330												
401	extra_tree_regressor_PCA_features_default_model	-1.1654	-1.2456	-1487.0876	-1356.3089	48.5217	0.0197	-0.0063	0.1050	0.1561	0.1404	
-1.1654												
402	extra_tree_regressor_PCA_features_rscv_model	-0.0458	-0.0846	-1672.6409	-1621.9583	27.1435	0.0095	-0.0195	0.0705	0.0876	0.0976	
-0.0458												
403	extra_tree_regressor_PCA_features_crosscv_model	-0.0892	nan	nan	nan	38.8408	0.0095	0.0022	0.0720	16.6633	0.0975	
-0.0892												
404	svm_regressor_PCA_features_default_model	-0.3786	-0.9288	-1520.2309	-1473.5322	34.4603	0.0143	-0.0198	0.0893	0.1128	0.1196	
-0.3786												

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

Python 3 idle

ENL 8:00 PM INTL 11/10/2020

The screenshot shows a Jupyter Notebook interface with a table titled "Mail_footfall_prediction_skeleton.ipynb". The table lists various machine learning models along with their parameters and performance metrics. The columns include Model ID, Model Name, Parameters, and several numerical values representing accuracy or error.

ID	Model	Parameters	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
405	svm_regressor_PCA_features_rscv_model	-8.8141 -1897.1751 -1646.4764	28.5458	0.0089	-0.0052	0.0688	0.1367	0.0944	
406	svm_regressor_PCA_features_crossv_model	-0.0245 nan nan nan	29.2133	0.0090	0.0066	0.0787	16.6499	0.0946	
407	pdaBoost_PCA_features_default_model	-0.0278 -0.0651 -1679.2789 -1628.5723	29.4284	0.0094	-0.0036	0.0716	0.1415	0.0967	
408	adaBoost_PCA_features_rscv_model	0.0188 -0.0176 -1695.9207 -1645.2311	27.9828	0.0089	-0.0124	0.0676	0.1159	0.0945	
409	adaBoost_PCA_features_crossv_model	0.0579 nan nan nan	27.6643	0.0083	-0.0025	0.0667	13.7746	0.0909	
410	bagging_PCA_features_default_model	0.0053 -0.0315 -1698.9627 -1640.2640	28.4884	0.0091	-0.0151	0.0672	0.1139	0.0952	
411	bagging_PCA_features_rscv_model	0.0568 -0.0155 -1707.9779 -1657.2793	27.6372	0.0086	-0.0164	0.0663	0.1069	0.0938	
412	bagging_PCA_features_crossv_model	0.0827 nan nan nan	27.6332	0.0082	0.0003	0.0663	14.5193	0.0900	
413	random_forest_PCA_features_default_model	0.0037 -0.0332 -1698.3649 -1639.6663	28.4414	0.0091	-0.0149	0.0673	0.1136	0.0953	
414	random_forest_PCA_features_rscv_model	0.0797 -0.0456 -1710.3400 -1668.6413	26.8354	0.0084	-0.0152	0.0648	0.1054	0.0915	
415	random_forest_PCA_features_crossv_model	0.0875 nan nan nan	27.2967	0.0079	-0.0088	0.0649	14.4120	0.0887	

The screenshot shows a JupyterLab environment with a sidebar containing project files and a main area displaying a table of model performance metrics. The table has columns for index, model name, parameters, and various evaluation metrics.

	Model	Parameters	Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	Metric 6
0	cnn_lstm_encoder_decoder_outlier_removed	-0.2531 -895.9872 -458.7419	11.7048	0.0048	-0.0108	0.0458	-0.0058	0.0629
1	lstm_simple_model_outlier_removed	-0.2847 -891.2179 -356.6526	15.4706	0.0062	-0.0053	0.0588	0.0259	0.0788
2	lstm_auto_encoder_MLP	-0.6697 -835.6301 -398.4648	14.4988	0.0053	-0.0046	0.0544	0.0235	0.0726
3	ensemble_lstm	-0.3364 -891.1034 -444.6775	12.3853	0.0043	-0.0045	0.0456	0.0162	0.0653
4	ensemble_lstm_outlier_removed	-0.0555 -931.9558 -486.7905	10.9867	0.0033	-0.0074	0.0412	0.0038	0.0577
5	ensemble_lstm_with_auto_encoder	-0.1068 -922.1353 -476.9700	11.4412	0.0035	-0.0065	0.0429	0.0099	0.0591
6	stacked_ensemble_lstm1	-0.0668 -930.9031 -485.7378	10.9024	0.0033	-0.0077	0.0409	0.0023	0.0579
7	stacked_ensemble_lstm2	-0.0372 -935.6168 -490.4515	10.8910	0.0033	-0.0032	0.0406	0.0110	0.0572
8	stacked_ensemble_lstm3	-0.0374 -935.5708 -490.4145	10.9928	0.0033	-0.0037	0.0410	0.0102	0.0572
9	stacked_ensemble_lstm4	-0.0456 -933.9262 -488.7689	11.1995	0.0033	-0.0003	0.0411	0.0198	0.0574
10	ensemble_of_ensembles_lstm1	-0.0421 -934.6359 -489.4706	11.0364	0.0033	-0.0050	0.0413	0.0038	0.0573
11	ensemble_lstm_and_ensembles_lstm7		11.0012	0.0011	-0.0011	0.0412	0.0101	0.0574

The screenshot shows a JupyterLab interface with a code editor tab titled "Mail_footfall_prediction_sklearn.ipynb". The code editor displays a list of ensemble models, each with its name, parameters, and performance metrics (F1 score, precision, recall, and Fbeta score). The models are listed in descending order of F1 score.

Model ID	Model Name	Parameters	F1 Score	Precision	Recall	Fbeta Score		
449	ensemble_of_ensembles_1stm2	-0.8447 -0.934.1138 -488.9485	11.0032	0.0033	-0.0069	0.0412	0.0016	0.0574
450	ensemble_of_ensembles_1stm3	-0.8581 -0.933.0177 -487.8524	10.8816	0.0033	-0.0082	0.0410	0.0000	0.0576
451	H2GradientBoosting_Normal_default_model	0.2455 -1796.5924 -1710.7947	23.8635	0.0065	-0.0176	0.0529	0.0837	0.0884
452	H2GradientBoosting_Normal_rscv	0.2833 -1815.3342 -1729.5364	23.6446	0.0061	-0.0188	0.0522	0.0785	0.0783
453	H2GradientBoosting_Normal_random_grid_ensemble	0.3159 -1832.3397 -1746.5420	22.8766	0.0059	-0.0178	0.0502	0.0884	0.0765
454	H2RandomForest_Normal_default_model	0.3097 -1829.6198 -1743.2228	22.9666	0.0059	-0.0156	0.0499	0.0695	0.0769
455	H2RandomForest_Normal_rscv	0.2749 -1811.0288 -1725.3363	23.1016	0.0062	-0.0172	0.0521	0.0812	0.0788
456	H2RandomForest_Normal_random_grid_ensemble	0.2768 -1812.0583 -1725.2568	23.5233	0.0062	-0.0166	0.0520	0.0836	0.0787
457	H2_Stacked_Ensemble_Normal_ensemble	0.2858 -1815.6021 -1730.8844	23.2720	0.0061	-0.0182	0.0511	0.0820	0.0782
458	H2GradientBoosting_OutlierRemoved_default_model	0.2822 -1806.7505 -1720.9528	23.3911	0.0063	-0.0184	0.0534	0.0785	0.0792
459	H2GradientBoosting_OutlierRemoved_rscv	0.2759 -1803.5346 -1717.7369	23.4821	0.0063	-0.0178	0.0521	0.0848	0.0796

The screenshot shows a JupyterLab interface with multiple tabs open. The active tab is titled "Mail_footfall_prediction_skeleton.ipynb". The code editor displays a table with 14 rows, each representing a different machine learning model configuration and its performance metrics. The columns include Model ID, Model Type, Parameters, and various evaluation metrics like AUC, precision, recall, and F1 score.

Model ID	Model Type	Parameters	AUC	Precision	Recall	F1 Score	Model Size
459	H20gradientBoosting_OutlierRemoved_random_grid_ensemble	0.2933 -1812.5321 -1726.5344	23.4629	0.0062	-0.0185	0.0526	0.0800 0.0786
461	H20RandomForest_OutlierRemoved_default_model	0.2881 -1807.2095 -1721.4117	23.6015	0.0063	-0.0184	0.0523	0.0854 0.0792
462	H20RandomForest_OutlierRemoved_rscv	0.2948 -1813.1945 -1727.3967	22.9194	0.0062	-0.0191	0.0515	0.0785 0.0785
463	H20RandomForest_OutlierRemoved_random_grid_ensemble	0.2933 -1812.4107 -1726.6130	23.1168	0.0062	-0.0192	0.0519	0.0785 0.0786
464	H20_Stacked_Ensemble_OutlierRemoved_ensemble	0.2974 -1814.5341 -1728.7363	23.1706	0.0061	-0.0193	0.0519	0.0781 0.0784
465	StackedDenseModel_BestOffamily_AutoML_20201106_162854Normal	0.2948 -1820.8249 -1735.4272	23.1411	0.0060	-0.0176	0.0513	0.0802 0.0777
466	XRT_1_AutoML_20201106_162054Normal	0.2924 -1820.8371 -1734.2393	23.8779	0.0061	-0.0143	0.0518	0.0974 0.0778
467	GBM_1_AutoML_20201106_162054Normal	0.2818 -1814.5779 -1728.7882	23.1755	0.0061	-0.0161	0.0519	0.0845 0.0784
468	StackedDenseModel_AllModels_AutoML_20201106_162854Normal	0.2781 -1812.7179 -1726.5262	23.1887	0.0062	-0.0189	0.0521	0.0754 0.0786
469	GBM_3_AutoML_20201106_162054Normal	0.2759 -1811.6959 -1725.8882	23.2320	0.0062	-0.0182	0.0520	0.0800 0.0787
470	GBM_2_AutoML_20201106_162054Normal	0.2755 -1811.4105 -1725.6129	23.8472	0.0062	-0.0169	0.0525	0.0864 0.0787

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske

Python 3

ID	Model Type	Parameters	Score	Std Dev	AUC	F1 Score	Recall	Precision
471	DRF_1_AutoML_20201106_16284_dNormal	0.2119 -1869.6684 -1723.8886	23.7899	0.0052	-0.0150	0.0518	0.0951	0.0789
472	XGBoost_grid_1_AutoML_20201106_162854_model_dNormal	0.2084 -1869.8665 -1718.4688	23.6726	0.0063	-0.0162	0.0536	0.0851	0.0796
473	GBM_grid_1_AutoML_20201106_162854_model_dNormal	0.2406 -1794.2881 -1708.4183	24.0948	0.0055	-0.0181	0.0551	0.0835	0.0805
474	GBM_d_AutoML_20201106_162854dNormal	0.2393 -1793.5972 -1707.7995	24.6839	0.0055	-0.0184	0.0543	0.0864	0.0887
475	GBM_grid_1_AutoML_20201106_162854_model_dNormal	0.2264 -1787.4659 -1701.6673	24.3853	0.0056	-0.0181	0.0554	0.0852	0.0814
476	GBM_grid_1_AutoML_20201106_162854_model_dNormal	0.2227 -1785.7400 -1699.9422	23.7221	0.0067	-0.0150	0.0545	0.0867	0.0816
477	GBM_5_AutoML_20201106_16304dNormal	0.2269 -1784.8899 -1699.4882	24.4969	0.0057	-0.0167	0.0556	0.0911	0.0816
478	GBM_grid_1_AutoML_20201106_162854_model_dNormal	0.2155 -1782.3431 -1696.5453	24.6594	0.0067	-0.0190	0.0562	0.0869	0.0819
479	XGBoost_grid_1_AutoML_20201106_162854_model_dNormal	0.2127 -1782.0399 -1695.2422	23.9344	0.0067	-0.0165	0.0568	0.0795	0.0821
480	XGBoost_3_AutoML_20201106_162854dNormal	0.2112 -1788.8197 -1695.8120	25.1652	0.0067	-0.0153	0.0578	0.0920	0.0821
481	XGBoost_grid_1_AutoML_20201106_162854_model_dNormal	0.1964 -1773.5633 -1687.7655	25.4486	0.0069	-0.0188	0.0579	0.0861	0.0829

Python 3 idle

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

Google Chrome BITS Pilani - Login ACT Fibernet Portal... Customer Experience... AlMI_SK Links Django: Web frame... AI-Updates BITS-Wheebox BerkeleyX-AI OL Co... ENG INT 11/10/2023

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled 'Mail_footfall_prediction_sklearn.ipynb'. The notebook contains a table with 10 rows of data, each representing a prediction from a different model. The columns include the model name, input coordinates, and various performance metrics.

Model	Input Coordinates	Prediction	Score	Confidence	Other Metrics
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.1968 -1773.5633 -1687.7655	24.9742	0.0070	-0.0141	0.0577 0.0904 0.0837
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.2307 0.1812 -1766.7284 -1680.9306	25.3514	0.0071	-0.0174	0.0571 0.0869 0.0848
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.2248 0.1749 -1763.9526 -1678.1549	23.1671	0.0071	-0.0198	0.0577 0.0641 0.0841
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.2237 0.1737 -1763.4216 -1677.6238	25.5082	0.0072	-0.0163	0.0578 0.1000 0.0848
GBM_grid_1_AutoML_20201106_162854_model_1Normal	0.2090 0.1587 -1756.8311 -1671.4534	25.5073	0.0074	-0.0194	0.0607 0.0724 0.0858
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.1881 0.1358 -1747.0589 -1661.2612	25.4386	0.0075	-0.0198	0.0602 0.0764 0.0856
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.1769 0.1240 -1742.0988 -1656.2938	25.8871	0.0075	-0.0188	0.0589 0.0847 0.0857
XGBoost_grid_2_AutoML_20201106_162854_model_1Normal	0.1749 0.1219 -1741.2818 -1655.4840	26.2927	0.0075	-0.0167	0.0610 0.0856 0.0859
XGBoost_grid_1_AutoML_20201106_162854_model_1Normal	0.1718 0.1177 -1739.4689 -1653.6712	23.9128	0.0077	-0.0335	0.0598 0.0330 0.0888
DeepLearning_grid_2_AutoML_20201106_162854_model_1Normal	0.1494 0.0947 -1738.0789 -1644.2812	24.6484	0.0080	-0.0324	0.0597 0.0395 0.0895
XGBoost_1_AutoML_20201106_162854Normal1	0.1159 0.0581 -1715.5972 -1629.7994	28.3194	0.0081	-0.0214	0.0633 0.0870 0.0898

The screenshot shows a JupyterLab interface with a table titled "Mail_footfall_prediction_sklearn". The table lists 19 rows of data, each representing a different model configuration. The columns include Model ID, Model Name, Parameters, and various performance metrics. The table is sorted by the "Model ID" column.

Model ID	Model Name	Parameters	Performance Metrics
493	DeepLearning_grid_1_AutoML_20201106_162854_model_2Normal	0.8393 0.8462 -119.8493 -1625.2516	27.2487 0.0082 -0.0271 0.0635 0.0732 0.0983
494	DeepLearning_grid_1_AutoML_20201106_162854Normal2	0.8954 0.8573 -197.6229 -1621.8251	27.9187 0.0082 -0.0168 0.0658 0.1193 0.0988
495	GLM_1_AutoML_20201106_162854Normal3	0.8221 -0.8488 -169.1685 -1593.3628	26.8369 0.0089 -0.0199 0.0687 0.0837 0.0944
496	DeepLearning_grid_1_AutoML_20201106_162854_model_1Normal	0.8175 -0.8457 -1877.4464 -1591.6488	25.8258 0.0089 -0.0263 0.0649 0.0464 0.0946
497	DRF_1_AutoML_20201106_163301Outlier_removed	0.3433 0.3011 -1815.4568 -1730.6590	23.2161 0.0061 -0.0176 0.0516 0.0857 0.0782
498	GBM_grid_1_AutoML_20201106_163301_model_2Outlier_removed	0.3395 0.2978 -1814.3583 -1728.5686	23.0959 0.0061 -0.0166 0.0534 0.0793 0.0784
499	GBM_1_AutoML_20201106_163301Outlier_removed	0.3380 0.2869 -1809.1386 -1723.3331	23.3613 0.0062 -0.0204 0.0531 0.0747 0.0798
500	XRT_1_AutoML_20201106_163301Outlier_removed	0.3267 0.2834 -1807.3448 -1721.5474	23.2762 0.0063 -0.0163 0.0521 0.0878 0.0792
501	GBM_4_AutoML_20201106_163301Outlier_removed	0.3236 0.2801 -1805.6843 -1719.8865	23.5485 0.0063 -0.0200 0.0530 0.0777 0.0794
502	GBM_grid_1_AutoML_20201106_163301_model_2Outlier_removed	0.3180 0.2856 -1798.3783 -1712.5726	24.0072 0.0064 -0.0194 0.0537 0.0842 0.0882
503	GBM_2_AutoML_20201106_163301Outlier_removed	0.3086 0.2541 -1797.6597 -1711.8626	24.0337 0.0064 -0.0205 0.0539 0.0799 0.0882
504	GBM_4_AutoML_20201106_163301Outlier_removed	0.3077 0.2505 -1797.6597 -1711.8626	23.0177 0.0065 -0.0101 0.0612 0.0877 0.0887

The screenshot shows a JupyterLab interface with a blue header bar. The title bar says "Google JupyterLab". Below it, the address bar shows "localhost:8888/lab". The left sidebar contains a file tree with various project files like "Project.ipynb", "data", "Coverage.xlsx", "fullDBSCAN.ipynb", "Mail_footfall_prediction.ipynb", "Mail_footfall_predict.ipynb", "Mail_footfall_predict_1.ipynb", "preprocess.py", "Project Plan.xlsx", "README.md", "visualization.py", and "work_flow.pptx". A "Launcher" tab is selected, displaying a table titled "Mail_footfall_prediction_sklearn.ipynb". The table has columns for index, model name, parameters, and various performance metrics. The right side of the interface shows a "Python 3" notebook cell with some code and a "Mode: Command" status bar at the bottom.

504	GBM_3_AutoML_20201106_1633010utlier_removed	0.2562 -1793.7351 -1707.9374		23.9177	0.0065	-0.0199	0.0542	0.0777	0.0887			
505	XGBoost_grid_1_AutoML_20201106_163301_model_170utlier_removed	0.2489 -1798.1626 -1704.3649		24.4596	0.0066	-0.0158	0.0578	0.0842	0.0811			
506	XGBoost_grid_1_AutoML_20201106_163301_model_120utlier_removed	0.2483 -1789.8832 -1704.4854		23.5388	0.0066	-0.0198	0.0554	0.0827	0.0811			
507	XGBoost_grid_1_AutoML_20201106_163301_model_140utlier_removed	0.2426 -1787.1482 -1701.3585		23.9416	0.0066	-0.0181	0.0556	0.0872	0.0814			
508	XGBoost_grid_1_AutoML_20201106_163301_model_30utlier_removed	0.2390 -1785.4168 -1699.6162		24.0087	0.0067	-0.0183	0.0557	0.0792	0.0816			
509	GBM_BGrid_1_AutoML_20201106_163301_model_100utlier_removed	0.2382 -1785.0353 -1699.2375		24.2751	0.0067	-0.0198	0.0553	0.0830	0.0816			
510	GBM_5_AutoML_20201106_163300utlier_removed	0.2124 -1777.9748 -1697.1773		24.2265	0.0068	-0.0262	0.0559	0.0799	0.0824			
511	XGBoost_grid_1_AutoML_20201106_163301_model_110utlier_removed	0.2228 -1777.7663 -1691.9888		24.6358	0.0068	-0.0168	0.0564	0.0858	0.0825			
512	XGBoost_grid_1_AutoML_20201106_163301_model_60utlier_removed	0.2227 -1777.6719 -1691.8732		22.9542	0.0068	-0.0175	0.0572	0.0864	0.0825			
513	XGBoost_grid_1_AutoML_20201106_163301_model_150utlier_removed	0.2175 -1775.2422 -1689.4445		23.6748	0.0068	-0.0283	0.0574	0.0872	0.0827			
514	XGBoost_grid_1_AutoML_20201106_163301_model_10utlier_removed	0.2085 -1771.0596 -1685.2618		25.4875	0.0069	-0.0284	0.0562	0.0897	0.0832			

The screenshot shows a JupyterLab interface with a sidebar containing project files like 'BITS Capstone Project - Capstone Project-master/' and 'data'. The main area displays a table titled 'Mail_footfall_prediction_skeleton' with columns for model name, parameters, and various performance metrics.

	Model	Parameters	Accuracy	F1 Score	AUC	Precision	Recall	R2 Score
526	GBM_grid_1_AutoML_20201106_163301_model_50Outlier_removed	0.1491 -1744.6391 -1658.8414	24.4509	0.0074	-0.0223	0.0587	0.0739	0.0853
527	GBM_grid_1_AutoML_20201106_163301_model_50Outlier_removed	0.1472 -1743.8211 -1658.8234	25.2941	0.0075	-0.0284	0.0598	0.0878	0.0854
528	XGBoost_grid_1_AutoML_20201106_163301Outlier_removed	0.1471 -1743.7745 -1657.7957	24.5346	0.0075	-0.0138	0.0612	0.0818	0.0854
529	DeepLearning_grid_3_AutoML_20201106_163301_model_10Outlier_removed	0.1432 -1742.1389 -1655.3311	24.0821	0.0075	-0.0205	0.0577	0.0688	0.0866
530	XGBoost_grid_1_AutoML_20201106_163301_model_80Outlier_removed	0.1382 -1736.5068 -1658.8896	26.4679	0.0075	-0.0198	0.0588	0.0886	0.0872
531	GBM_grid_1_AutoML_20201106_163301_model_80Outlier_removed	0.1287 -1735.9828 -1650.1851	25.5909	0.0075	-0.0212	0.0616	0.0781	0.0873
532	GBM_grid_1_AutoML_20201106_163301_model_40Outlier_removed	0.1183 -1731.6634 -1645.8878	25.6078	0.0077	-0.0200	0.0595	0.0695	0.0878
533	XGBoost_grid_2_AutoML_20201106_163301Outlier_removed	0.0949 -1722.1197 -1656.3219	27.9769	0.0079	-0.0191	0.0626	0.0669	0.0890
534	XGBoost_grid_1_AutoML_20201106_163301_model_80Outlier_removed	0.1258 -1712.0431 -1626.2468	25.5280	0.0081	-0.0212	0.0633	0.0682	0.0892
535	DeepLearning_grid_2_AutoML_20201106_163301_model_10Outlier_removed	0.0831 -1709.5012 -1623.0395	25.4198	0.0082	-0.0316	0.0632	0.0388	0.0905
536	DeepLearning_grid_1_AutoML_20201106_163301_model_20Outlier_removed	0.0661 -1687.9137 -1602.1160	25.8780	0.0087	-0.0374	0.0670	0.0243	0.0932

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske Python 3

0.0681	-0.0888	-1887.9137	-1802.1168							
537	DeepLearning_1_AutoML_20201106_1633010utlier_removed	-0.0106	-1881.8607	-1596.8728	26.6885	0.0088	-0.0267	0.0673	0.0651	
0.0505									0.0948	
538	DeepLearning_grid_2_AutoML_20201106_163301_model_30utlier_removed	-0.0216	-1877.9084	-1592.1087	30.0164	0.0089	0.0194	0.0718	0.2001	
0.0402									0.0945	
539	GLM_1_AutoML_20201106_1633010utlier_removed	-0.0252	-1876.6322	-1598.8345	26.3962	0.0090	-0.0223	0.0688	0.0747	
0.0358									0.0947	
540	DeepLearning_grid_1_AutoML_20201106_1633010utlier_removed	-0.0458	-1869.6362	-1583.8324	26.6681	0.0091	-0.0257	0.0699	0.0658	
0.0181									0.0956	
541	XGBoost_grid_1_AutoML_20201106_163301_model_10utlier_removed	-0.0576	-1865.2568	-1579.4591	28.1059	0.0093	-0.0138	0.0685	0.0938	
0.0063									0.0962	
542	DeepLearning_grid_2_AutoML_20201106_1633010utlier_removed	-0.0788	-1858.3983	-1572.5185	26.5933	0.0094	-0.0304	0.0688	0.0574	
0.0128									0.0971	
543	DeepLearning_grid_3_AutoML_20201106_1633010utlier_removed	-0.0946	-1852.7362	-1566.9385	27.0391	0.0096	-0.0251	0.0702	0.0768	
0.0284									0.0979	
544	StackedEnsemble_BestOffamily_AutoML_20201106_1633010utlier_removed	-0.1265	-1842.2288	-1556.4283	26.0498	0.0099	-0.0233	0.0712	0.0783	
0.0584									0.0993	
545	StackedEnsemble_AllModels_AutoML_20201106_1633010utlier_removed	-0.1265	-1842.2288	-1556.4283	26.9498	0.0099	-0.0233	0.0712	0.0783	
0.0580									0.0993	
546	DeepLearning_grid_1_AutoML_20201106_1633010utlier_removed	-0.1375	-1836.6743	-1552.8766	27.2212	0.0100	-0.0244	0.0722	0.0934	
0.0688									0.0998	
547	StackedEnsemble_BestOffamily_AutoML_20201106_165124Normal_full_lag	0.3716	0.0097	-1818.3113	-1099.6250	23.6008	0.0057	-0.0059	0.0496	0.1162
									0.0757	

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

Python 3 | idle

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

Launcher Mail_footfall_prediction_ske Python 3

548	StackedEnsemble_AllModels_AutoML_20201106_165124Normal_full_lag	0.3575	-0.0124	-1810.2542	-1891.5678	23.9280	0.0059	-0.0071	0.0506	0.1134	0.0765
549	GBM_1_AutoML_20201106_165124Normal_full_lag	0.3496	-0.0248	-1805.7848	-1887.9076	23.9619	0.0059	-0.0055	0.0515	0.1176	0.0770
550	GBM_grid_1_AutoML_20201106_165124_model_4Normal_full_lag	0.3478	-0.0298	-1804.1164	-1887.5691	23.4859	0.0060	-0.0084	0.0518	0.1062	0.0771
551	DRF_1_AutoML_20201106_165124Normal_full_lag	0.3317	-0.0531	-1805.8718	-1877.1855	24.4156	0.0061	-0.0056	0.0523	0.1213	0.0780
552	GBM_grid_1_AutoML_20201106_165124_model_7Normal_full_lag	0.3242	-0.0649	-1591.7743	-1873.8888	24.2514	0.0062	-0.0105	0.0539	0.1049	0.0785
553	GBM_3_AutoML_20201106_165124Normal_full_lag	0.3223	-0.0679	-1590.7668	-1873.8884	24.6787	0.0062	-0.0060	0.0530	0.1188	0.0786
554	GBM_grid_1_AutoML_20201106_165124_model_8Normal_full_lag	0.3198	-0.0719	-1589.4116	-1870.7253	24.5214	0.0062	-0.0081	0.0539	0.1115	0.0787
555	XGBoost_grid_1_AutoML_20201106_165124_model_7Normal_full_lag	0.3180	-0.0747	-1588.4454	-1869.7591	24.6840	0.0062	0.0002	0.0535	0.1310	0.0788
556	GBM_5_AutoML_20201106_165124Normal_full_lag	0.3172	-0.0759	-1588.8414	-1869.3551	25.0331	0.0062	-0.0020	0.0552	0.1306	0.0789
557	GBM_4_AutoML_20201106_165124Normal_full_lag	0.3110	-0.0857	-1584.7199	-1866.0135	25.0707	0.0063	-0.0065	0.0539	0.1192	0.0792
558	XRT_1_AutoML_20201106_165124Normal_full_lag	0.3078	-0.0967	-1583.8660	-1864.3737	24.9368	0.0063	-0.0052	0.0531	0.1256	0.0794
559	GBM_2_AutoML_20201106_165124Normal_full_lag	0.3000	-0.0997	-1583.8660	-1864.3737	24.9368	0.0063	-0.0052	0.0531	0.1256	0.0794

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

Python 3 | idle

The screenshot shows a JupyterLab interface with a sidebar containing project files like 'data', 'preprocess.py', and 'visualisation.py'. The main area displays a table titled 'Mail_footfall_prediction_ske' with 15 rows of data. Each row includes a numerical ID, model details, and performance metrics.

ID	Model Details	MAE	R2 Score	F1 Score	AUC	LogLoss	
559	GBM_2_AutoML_20201106_165124Normal_full_lag	24.5659	0.0063	-0.0083	0.0524	0.1145	0.0795
560	XGBoost_grid_3_AutoML_20201106_165124Normal_full_lag	23.5086	0.0064	-0.0104	0.0555	0.0879	0.0799
561	XGBoost_grid_1_AutoML_20201106_165124_model_6Normal_full_lag	25.6221	0.0064	-0.0167	0.0556	0.1123	0.0800
562	GBM_grid_1_AutoML_20201106_165124_model_5Normal_full_lag	25.2545	0.0065	-0.0053	0.0542	0.1246	0.0805
563	XGBoost_grid_1_AutoML_20201106_165124_model_4Normal_full_lag	25.3596	0.0066	-0.0089	0.0565	0.1122	0.0812
564	XGBoost_grid_1_AutoML_20201106_165124_model_3Normal_full_lag	25.8038	0.0067	-0.0035	0.0572	0.1258	0.0819
565	XGBoost_grid_1_AutoML_20201106_165124_model_0Normal_full_lag	26.0244	0.0069	-0.0049	0.0593	0.1157	0.0828
566	DeepLearning_grid_3_AutoML_20201106_165124_model_1Normal_full_lag	24.8771	0.0069	-0.0141	0.0567	0.0909	0.0831
567	GBM_grid_1_AutoML_20201106_165124_model_1Normal_full_lag	26.1793	0.0069	-0.0043	0.0574	0.1333	0.0831
568	XGBoost_grid_1_AutoML_20201106_165124_model_5Normal_full_lag	25.7251	0.0070	-0.0055	0.0584	0.1156	0.0839
569	XGBoost_grid_1_AutoML_20201106_165124_model_2Normal_full_lag	26.5152	0.0071	-0.0084	0.0587	0.1187	0.0844

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled "Mail_footfall_prediction_skeleton.ipynb". Inside the notebook, there is a table with 15 rows, each representing a different model configuration and its performance metrics. The columns include Model ID, Model Type, Parameters, and various evaluation metrics like accuracy and F1 score.

	Model ID	Model Type	Parameters	Accuracy	F1 Score	Precision	Recall	AUC	RMSLE
570	DeepLearning_grid_2_AutoML_20201106_165124_model_1Normal_full_lag	DeepLearning	-0.2401 -1536.2070 -1017.5286	25.0449	0.0072	-0.0224	0.0591	0.0740	0.0847
571	GLM_1_AutoML_20201106_165124normal_1full_lag	GLM	-0.2803 -1524.5645 -1005.8783	24.2283	0.0074	-0.0018	0.0615	0.1082	0.0860
572	DeepLearning_grid_1_AutoML_20201106_165124_model_2Normal_full_lag	DeepLearning	-0.3215 -1513.0003 -994.3140	28.6368	0.0076	0.0001	0.0607	0.1552	0.0874
573	XGBoost_grid_1_AutoML_20201106_165124_model_1Normal_full_lag	XGBoost	-0.3420 -1507.3769 -988.4995	25.4175	0.0078	-0.0058	0.0614	0.1051	0.0881
574	XGBoost_1_AutoML_20201106_165124Normal_1full_lag	XGBoost	-0.3471 -1505.9769 -987.2968	26.2811	0.0078	-0.0118	0.0615	0.0966	0.0883
575	XGBoost_2_AutoML_20201106_165124Normal_full_lag	XGBoost	-0.3874 -1495.2337 -976.5474	28.1792	0.0080	-0.0106	0.0633	0.1140	0.0896
576	XGBoost_grid_1_AutoML_20201106_165124_model_0Normal_full_lag	XGBoost	-0.3920 -1494.0110 -975.3446	28.6015	0.0081	-0.0057	0.0628	0.1339	0.0897
577	DeepLearning_1_AutoML_20201106_165124Normal_full_lag	DeepLearning	-0.4796 -1471.7533 -953.0489	27.5152	0.0086	-0.0140	0.0676	0.0937	0.0925
578	DeepLearning_grid_1_AutoML_20201106_165124_model_1Normal_full_lag	DeepLearning	-0.5216 -1461.5258 -942.8395	27.7867	0.0088	-0.0011	0.0666	0.1222	0.0938
579	DRF_1_AutoML_20201106_1783250_tlier_removed_full_lag	DRF	0.0882 -1886.0021 -1167.3158	13.1658	0.0048	-0.0067	0.0488	0.0165	0.0698
580	GBM_grid_1_AutoML_20201106_178325_model_1Outlier_removed_full_lag	GBM	0.0788 -1885.3838 -1166.6967	13.1722	0.0048	-0.0074	0.0493	0.0130	0.0690

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled "Mail_footfall_prediction_ske". The main content area displays a table with 15 rows of data, each containing numerical values for various parameters. The columns include "Model ID", "Grid ID", "Model Type", "Model Parameters", and several performance metrics like "RMSSE", "MAE", and "RMSE". The table has a header row and 14 data rows. The sidebar on the left shows a tree view of the project structure, including "data", "ML Capstone - Gr...", "Coverage.xlsx", "fullDBSCAN.ipynb", "Mail_footfall_predicti...", "preprocess.py", "Project Plan.xlsx", "README.md", "visualization.py", and "work_flow.pptx". The bottom status bar indicates "Mode: Command", "Ln 1, Col 1", "Mail_footfall_prediction_skeleton.ipynb", "8.11 PM", "INTL", and the date "11/10/2020".

Model ID	Grid ID	Model Type	Model Parameters	RMSSE	MAE	RMSE
581	GBM_grid_1_AutoML_20281106_170326_model_40Outlier_removed_full_lag	GBM	0.817 -1882.6738 -1163.9875	13.2535	0.0048	-0.0045
582	GBM_grid_1_AutoML_20281106_170326_model_50Outlier_removed_full_lag	GBM	0.8033 -1677.9822 -1159.2999	13.4028	0.0049	-0.0056
583	GBM_grid_1_AutoML_20281106_170326_model_20Outlier_removed_full_lag	GBM	0.8398 -1870.4861 -1151.7198	13.4159	0.0050	-0.0101
584	XRT_1_AutoML_20281106_170326outlier_removed_full_lag	XRT	0.8381 -1867.6171 -1148.5398	13.3758	0.0050	-0.0063
585	GBM_1_AutoML_20281106_170326outlier_removed_full_lag	GBM	0.8388 -1668.9238 -1148.3373	13.1174	0.0050	-0.0064
586	GBM_4_AutoML_20281106_170326outlier_removed_full_lag	GBM	0.8347 -1666.8995 -1148.1324	13.1900	0.0050	-0.0103
587	GBM_grid_1_AutoML_20281106_170326_model_90Outlier_removed_full_lag	GBM	0.8384 -1666.4375 -1147.7512	13.6276	0.0050	-0.0068
588	GBM_grid_1_AutoML_20281106_170326_model_180Outlier_removed_full_lag	GBM	0.8315 -1664.8663 -1146.1880	13.1486	0.0050	-0.0069
589	XGBoost_grid_1_AutoML_20281106_170326_model_130Outlier_removed_full_lag	XGBoost	0.8313 -1664.7992 -1146.1128	13.6762	0.0050	-0.0079
590	GBM_grid_1_AutoML_20281106_170326_model_120Outlier_removed_full_lag	GBM	0.8376 -1662.0959 -1143.3732	13.1493	0.0051	-0.0093
591	GBM_2_AutoML_20281106_170326outlier_removed_full_lag	GBM	0.8378 -1658.2430 -1139.5566	13.4175	0.0051	-0.0109
592	XGBoost_grid_1_AutoML_20281106_170326 model_50Outlier_removed full lag	XGBoost	0.8371 -1658.2430 -1139.5566	14.0771	0.0052	-0.0063

The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled "Mail_footfall_prediction_skeleton.ipynb". The notebook contains a table with 16 rows, each representing a different model configuration. The columns include the model ID, name, parameters, and performance metrics (F1 score, precision, recall, and F1 score). The table is sorted by F1 score in descending order.

	Name	Parameters	F1 Score	Precision	Recall	Model Type		
592	XGBoost_grid_1_AutoML_20201106_170326_model_50Outlier_removed_full_lag	-0.0003 -1656.6168 -1157.5904	14.0771	0.0052	-0.0063	0.0521	0.0180	0.0718
593	GBM_grid_1_AutoML_20201106_170326_model_30Outlier_removed_full_lag	-0.0003 -1654.6599 -1135.9696	13.7136	0.0052	-0.0045	0.0586	0.0236	0.0720
594	GBM_grid_1_AutoML_20201106_170326_model_17Outlier_removed_full_lag	-0.0003 -1654.1479 -1135.4615	12.8829	0.0052	-0.0130	0.0401	-0.0009	0.0721
595	XGBoost_grid_1_AutoML_20201106_170326_model_280Outlier_removed_full_lag	-0.0007 -1652.3399 -1133.6535	14.0334	0.0052	-0.0073	0.0519	0.0140	0.0722
596	XGBoost_grid_1_AutoML_20201106_170326_model_140Outlier_removed_full_lag	-0.0107 -1651.6141 -1132.9278	14.5184	0.0052	-0.0052	0.0533	0.0200	0.0723
597	XGBoost_grid_1_AutoML_20201106_170326_model_130Outlier_removed_full_lag	-0.0130 -1658.7796 -1132.6932	14.0543	0.0052	-0.0049	0.0521	0.0211	0.0724
598	GBM_grid_1_AutoML_20201106_170326_model_130Outlier_removed_full_lag	-0.0131 -1658.7475 -1132.6612	13.4395	0.0052	-0.0107	0.0506	0.0056	0.0724
599	GBM_grid_1_AutoML_20201106_170326_model_110Outlier_removed_full_lag	-0.0148 -1659.2895 -1131.5195	14.3432	0.0052	-0.0092	0.0532	0.0106	0.0724
600	GBM_3_AutoML_20201106_170326_outlier_removed_full_lag	-0.0195 -1648.4418 -1129.7546	13.6154	0.0053	-0.0091	0.0511	0.0107	0.0726
601	XGBoost_grid_1_AutoML_20201106_170326_model_170Outlier_removed_full_lag	-0.0220 -1647.2287 -1128.5383	14.1824	0.0053	-0.0039	0.0526	0.0225	0.0727
602	XGBoost_grid_1_AutoML_20201106_170326_model_260Outlier_removed_full_lag	-0.0326 -1643.7937 -1125.1074	14.0112	0.0053	-0.0072	0.0522	0.0157	0.0731

Google JupyterLab

localhost:8888/lab

File Edit View Run Kernel Settings Help

Launcher Mail_footfall_prediction_ske

Python 3

603	XGBoost_grid_1_AutoML_20201106_170326_model_7Outlier_removed_full_lag	0.9435	-0.0345	-1643.1985	-1124.4223	13.9624	0.0054	-0.0062	0.0517	0.0181	0.0732
604	XGBoost_grid_1_AutoML_20201106_170326_model_120Outlier_removed_full_lag	0.9434	-0.0352	-1642.8572	-1124.1886	13.7664	0.0054	-0.0048	0.0507	0.0215	0.0732
605	GBM_5_AutoML_20201106_170326_outlier_removed_full_lag	0.9340	-0.0494	-1637.9068	-1119.2205	13.9614	0.0054	-0.0061	0.0519	0.0208	0.0737
606	GBM_grid_1_AutoML_20201106_170326_model_140Outlier_removed_full_lag	0.9332	-0.0514	-1637.2084	-1118.5109	13.9792	0.0054	-0.0059	0.0516	0.0239	0.0737
607	GBM_grid_1_AutoML_20201106_170326_model_70Outlier_removed_full_lag	0.9319	-0.0528	-1636.7312	-1118.0448	14.2038	0.0054	-0.0047	0.0524	0.0257	0.0738
608	GBM_grid_1_AutoML_20201106_170326_model_80Outlier_removed_full_lag	0.9315	-0.0534	-1636.5827	-1117.8163	13.8657	0.0054	-0.0110	0.0522	0.0284	0.0738
609	GBM_grid_1_AutoML_20201106_170326_model_160Outlier_removed_full_lag	0.9223	-0.0688	-1631.5087	-1112.8228	13.9372	0.0055	-0.0118	0.0527	0.0262	0.0743
610	XGBoost_grid_1_AutoML_20201106_170326_model_1Outlier_removed_full_lag	0.9219	-0.0685	-1631.3339	-1112.6475	14.2829	0.0055	-0.0080	0.0536	0.0120	0.0743
611	XGBoost_grid_1_AutoML_20201106_170326_model_40Outlier_removed_full_lag	0.9194	-0.0725	-1629.9455	-1111.2591	14.2888	0.0055	-0.0057	0.0528	0.0177	0.0745
612	XGBoost_grid_1_AutoML_20201106_170326_model_380Outlier_removed_full_lag	0.9098	-0.0687	-1624.6762	-1106.1859	14.2687	0.0056	-0.0050	0.0537	0.0112	0.0750
613	XGBoost_grid_1_AutoML_20201106_170326_model_310Outlier_removed_full_lag	0.9097	-0.0678	-1624.8824	-1106.1166	14.4751	0.0056	-0.0079	0.0542	0.0160	0.0750

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyb

0 1 2 Python 3 idle

ENG 8:12 PM INTEL 11/10/2020

The screenshot shows a JupyterLab interface with a code editor displaying a file named `Mail_footfall_prediction_skeleton.ipynb`. The code editor contains several XGBoost grid search results. A terminal window below it shows the command `python3 Mail_footfall_prediction_skeleton.ipynb` being run.

```
python3 Mail_footfall_prediction_skeleton.ipynb
```

Google JupyterLab localhost:8888/lab

File Edit View Run Kernel Tabs Settings Help

+ / ... / BITS_Capstone Project: Capstone - Project-master / Name

data AIM_Capstone - Gro... Coverage.xlsx fullDSCAN.ipynb Mail_footfall_predict... Mail_footfall_predict... preprocess.py Project_Plan.xlsx README.md visualization.py workflow.pptx

Launcher Mail_footfall_prediction_ske

Code Python 3

625	XGBoost_grid_1_AutoML_20201106_170326_model_27Outlier_removed_full_lag	0.2864	-0.11245	-1612.6861	-1093.9997	14.9647	0.0058	-0.0025	0.0545	0.0279	0.0763
626	XGBoost_grid_1_AutoML_20201106_170326_model_16Outlier_removed_full_lag	0.2851	-0.1266	-1612.9025	-1093.3162	15.3412	0.0058	-0.0078	0.0567	0.0164	0.0763
627	DeepLearning_grid_3_AutoML_20201106_170326_model_10Outlier_removed_full_lag	0.2732	-0.1453	-1605.9855	-1087.2992	15.2392	0.0059	-0.0069	0.0556	0.0174	0.0770
628	DeepLearning_grid_1_AutoML_20201106_170326_model_30Outlier_removed_full_lag	0.2704	-0.1497	-1604.5793	-1085.8930	15.2955	0.0059	-0.0162	0.0556	0.0032	0.0771
629	DeepLearning_grid_2_AutoML_20201106_170326_model_13Outlier_removed_full_lag	0.2672	-0.1548	-1602.9804	-1084.2943	15.2072	0.0060	-0.0163	0.0569	-0.0044	0.0773
630	XGBoost_grid_1_AutoML_20201106_170326_model_9Outlier_removed_full_lag	0.2669	-0.1552	-1602.8547	-1084.1683	14.8863	0.0060	-0.0077	0.0555	0.0150	0.0773
631	XGBoost_grid_3_AutoML_20201106_170326_Outlier_removed_full_lag	0.2657	-0.1571	-1602.2532	-1083.5668	14.5055	0.0060	-0.0095	0.0547	0.0090	0.0774
632	DeepLearning_grid_1_AutoML_20201106_170326_model_40Outlier_removed_full_lag	0.2631	-0.1612	-1600.9668	-1082.2796	15.4996	0.0060	-0.0077	0.0568	0.0178	0.0775
633	XGBoost_grid_1_AutoML_20201106_170326_model_8Outlier_removed_full_lag	0.2521	-0.1788	-1595.5398	-1076.8534	15.0346	0.0061	-0.0085	0.0565	0.0136	0.0781
634	XGBoost_grid_1_AutoML_20201106_170326_model_60Outlier_removed_full_lag	0.2478	-0.1852	-1593.4758	-1074.7887	15.4958	0.0061	-0.0095	0.0564	0.0141	0.0783
635	XGBoost_grid_1_AutoML_20201106_170326_model_220Outlier_removed_full_lag	0.2459	-0.1882	-1592.5642	-1073.8778	15.3033	0.0061	-0.0126	0.0575	-0.0018	0.0784

Python 3

Mode: Command Ln 1, Col 1 Mail_footfall_prediction_ske.ipynb

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Launcher Mail_footfall_prediction_skele...

Code Python 3

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data

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	DeepLearning_grid_1_AutoML_20201106_178326_model_2Outlier_removed_full_lag	15.8681	0.0062	-0.0068	0.0572	0.0138	0.0784
0.2459	-0.1897 -1592.6948 -1073.4087						
637	XGBoost_grid_1_AutoML_20201106_178326_model_10Outlier_removed_full_lag	15.6774	0.0062	0.0007	0.0576	0.0368	0.0789
0.2361	-0.2038 -1587.8075 -1089.1211						
638	XGBoost_grid_1_AutoML_20201106_178326_model_30Outlier_removed_full_lag	15.6798	0.0063	-0.0066	0.0579	0.0168	0.0792
0.2386	-0.2123 -1585.2282 -1086.5338						
639	GLM_1_AutoML_20201106_178326_outlier_removed_full_lag	16.8925	0.0054	-0.0012	0.0581	0.0375	0.0797
0.2292	-0.2288 -1580.2970 -1061.6133						
640	XGBoost_grid_1_AutoML_20201106_178326_model_280Outlier_removed_full_lag	14.8805	0.0064	-0.0111	0.0566	0.0034	0.0797
0.2197	-0.2295 -1588.0856 -1061.3993						
641	DeepLearning_grid_2_AutoML_20201106_178326_model_20Outlier_removed_full_lag	15.7963	0.0064	-0.0163	0.0591	-0.0074	0.0798
0.2186	-0.2311 -1579.5662 -1080.0744						
642	DeepLearning_grid_2_AutoML_20201106_178326_model_40Outlier_removed_full_lag	15.6135	0.0064	-0.0183	0.0577	0.0088	0.0799
0.2173	-0.2334 -1578.9413 -1080.2556						
643	DeepLearning_grid_2_AutoML_20201106_178326_model_10Outlier_removed_full_lag	15.3641	0.0064	-0.0159	0.0579	-0.0043	0.0799
0.2117	-0.2357 -1578.2574 -1059.5711						
644	DeepLearning_grid_1_AutoML_20201106_178326_model_10Outlier_removed_full_lag	16.4024	0.0064	-0.0176	0.0609	-0.0188	0.0801
0.2126	-0.2408 -1576.7659 -1058.6795						
645	XGBoost_grid_1_AutoML_20201106_178326_model_100Outlier_removed_full_lag	16.1294	0.0064	-0.0048	0.0595	0.0216	0.0802
0.2117	-0.2422 -1576.3455 -1057.6591						
646	XGBoost_grid_1_AutoML_20201106_178326_model_210Outlier_removed_full_lag	15.7018	0.0066	-0.0138	0.0601	-0.0041	0.0813
0.1893	-0.2775 -1566.1172 -1047.4109						

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```

[87]: R_top = 10
print('best MAPE models\n',tabulate(loss_df.nsmallest(n_top,'mape')[['Model_type','mape']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best MSE models\n',tabulate(loss_df.nsmallest(n_top,'mse')[['Model_type','mse']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best R2 score models\n',tabulate(loss_df.nlargest(n_top,'R2 score')[['Model_type','R2 score']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best Adj R2 score models\n',tabulate(loss_df.nlargest(n_top,'Adj R2 score')[['Model_type','Adj R2 score']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best AIC models\n',tabulate(loss_df.nsmallest(n_top,'AIC')[['Model_type','AIC']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyrb ENG 8:14 PM INTL 11/10/2020

```

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```

[87]: R_top = 10
print('best MAPE models\n',tabulate(loss_df.nsmallest(n_top,'mape')[['Model_type','mape']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best MSE models\n',tabulate(loss_df.nsmallest(n_top,'mse')[['Model_type','mse']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best R2 score models\n',tabulate(loss_df.nlargest(n_top,'R2 score')[['Model_type','R2 score']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best Adj R2 score models\n',tabulate(loss_df.nlargest(n_top,'Adj R2 score')[['Model_type','Adj R2 score']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))
print('best AIC models\n',tabulate(loss_df.nsmallest(n_top,'AIC')[['Model_type','AIC']], headers='keys', floatfmt=".4f", tablefmt="fancy_grid"))

best MAPE models
+-----+-----+
| Model_type | mape |
+-----+-----+
| ensemble_iae_ensemble_lstm3 | 10.8816 |
| stacked_ensemble_lstm2 | 10.8918 |
| stacked_ensemble_lstm | 10.9824 |
| ensemble_lstm_outlier_removed | 10.9867 |
| stacked_ensemble_lstm3 | 10.9928 |
| ensemble_of_ensembles_lstm2 | 11.0032 |
| ensemble_of_ensembles_lstm1 | 11.0364 |
| stacked_ensemble_lstm4 | 11.1995 |
| ensemble_lstm_with_auto_encoder | 11.4412 |
| random_Forest_Outliers_Removed_shuffled_default_model | 11.6975 |

best MSE models
+-----+-----+
| Model_type | mse |
+-----+-----+
| stacked_ensemble_lstm2 | 0.0033 |
| stacked_ensemble_lstm3 | 0.0033 |
| ensemble_of_ensembles_lstm1 | 0.0033 |
| ensemble_of_ensembles_lstm2 | 0.0033 |
| stacked_ensemble_lstm4 | 0.0033 |
| ensemble_of_ensembles_lstm3 | 0.0033 |
| ensemble_lstm_outlier_removed | 0.0033 |

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.pyrb ENG 8:15 PM INTL 11/10/2020

```

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FullDBSCAN.ipynb

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Mail_footfall_predict...

preprocess.py

Project Plan.xlsx

README.md

visualisation.py

work_flow.pptx

Mail_footfall_prediction_skeleton.ipynb

ensemble_lstm_outlier_removed 0.0033

stacked_ensemble_lstm1 0.0033

ensemble_lstm_with_auto_encoder 0.0035

lstm_encoder_decoder_outlier_removed 0.0039

best R2 score models

Model_type	R2 score
stacked_ensemble_lstm2	0.6228
stacked_ensemble_lstm3	0.6228
ensemble_of_ensembles_lstm1	0.6211
ensemble_of_ensembles_lstm2	0.6201
stacked_ensemble_lstm4	0.6198
ensemble_of_ensembles_lstm3	0.6181
ensemble_lstm_outlier_removed	0.6162
stacked_ensemble_lstm1	0.6143
ensemble_lstm_with_auto_encoder	0.5978
lstm_encoder_decoder_outlier_removed	0.5569

best Adj R2 score models

Model_type	Adj R2 score
extra_trees_regressor_detrend_rscv_model	0.4792
random_forest_detrend_default_model	0.4691
extra_trees_regression_detrend_default_model	0.4663
LightGradientBoosting_detrend_rscv_model	0.4621

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

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work_flow.pptx

Mail_footfall_prediction_skeleton.ipynb

extra_trees_regressor_detrend_rscv_model 0.4621

CategoricalGradientBoosting_detrend_default_model 0.4621

bagging_detrend_default_model 0.4591

CategoricalGradientBoosting_detrend_rscv_model 0.4504

gradient_boosting_regressor_detrend_rscv_model 0.4501

bagging_normal_shuffled_default_model 0.4489

random_forest_Outliers_Removed_default_model 0.4459

best AIC models

Model_type	AIC
random_forest_Outliers_Removed_default_model	-1913.6467
random_forest_Outliers_Removed_shuffled_default_model	-1913.1938
bagging_Outliers_Removed_shuffled_default_model	-1910.8142
bagging_Outliers_Removed_default_model	-1807.2813
bagging_OutliersRemoved_extra_features_shuffled_default_model	-1897.1413
CategoricalGradientBoosting_Outliers_Removed_default_model	-1895.4048
random_forest_OutliersRemoved_extra_features_shuffled_default_model	-1893.3983
extra_trees_regressor_Outliers_Removed_shuffled_rscv_model	-1891.9249
CategoricalGradientBoosting_Outliers_Removed_shuffled_default_model	-1891.8857
extra_trees_regressor_detrend_rscv_model	-1891.3889

best BIC models

Model_type	BIC
random_forest_Outliers_Removed_default_model	-1824.4587
random_forest_Outliers_Removed_shuffled_default_model	-1824.0059

Mode Command Ln 1, Col 1 Mail_footfall_prediction_skeleton.ipynb

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The screenshot shows a JupyterLab environment with multiple tabs open. The active tab is titled "Mail_footfall_prediction_sklearn.ipynb".

Code Execution:

```
[293]: random_forest_Outliers_Removed_shuffled_default_model      -1824.0059
[298]: bagging_Outliers_Removed_shuffled_default_model      -1821.6263
[298]: bagging_Outliers_Removed_default_model      -1818.0934
[248]: CategoricalGradientBoosting_Outliers_Removed_default_model      -1806.2169
[297]: extra_trees_regressor_Outliers_Removed_shuffled_rscv_model      -1802.7370
[308]: CategoricalGradientBoosting_Outliers_Removed_shuffled_default_model      -1802.6078
[177]: extra_trees_regressor_detrend_rscv_model      -1802.1938
[236]: extra_trees_regressor_Outliers_Removed_default_model      -1802.8047
[234]: random_forest_Outliers_Removed_rscv_model      -1801.2065
```

Output:

```
[88]: loss_df.sort_values('mape').head(25)
```

Model_type	mape	mse	me	mae	mpe	rmse	R2 score	Adj R2 score	AIC	BIC
ensemble_of_ensembles_lstm3	10.881565	0.003314	-0.008190	0.041015	0.000384	0.057567	0.610135	-0.050130	-933.017662	-487.832361
stacked_lstm2	10.891049	0.003273	-0.003190	0.040578	0.011875	0.057212	0.622832	-0.037213	-935.616757	-490.451456
stacked_lstm1	10.902380	0.003348	-0.007735	0.040937	0.002323	0.057688	0.614270	-0.060757	-935.903148	-485.737847
ensemble_lstm_outlier_removed	10.986730	0.003331	-0.003738	0.041248	0.003038	0.057713	0.616199	-0.055453	-931.955811	-486.790509
stacked_lstm3	10.992788	0.003274	-0.003725	0.040974	0.010238	0.057217	0.622765	-0.037395	-933.579631	-490.414529
ensemble_of_ensembles_lstm1	10.996585	0.003297	-0.006658	0.041194	0.004189	0.057417	0.620123	-0.044663	-934.119325	-485.948524
ensemble_of_ensembles_lstm1	11.036401	0.003282	-0.005891	0.041289	0.003800	0.057346	0.621066	-0.042069	-934.635886	-489.470567
stacked_lstm4	11.199462	0.003300	-0.000119	0.041117	0.019013	0.057443	0.619783	-0.045596	-933.926211	-488.760910
ensemble_lstm_with_auto_encoder	11.441193	0.003490	-0.000453	0.042928	0.009663	0.059078	0.597824	-0.105983	-922.135293	-476.969991
random_forest_Outliers_Removed_shuffled_default_model	11.697544	0.004138	-0.013269	0.044351	0.009544	0.064315	0.481109	0.044563	-1913.193796	-1824.005873
cnn_lstm_encoder_decoder_outlier_removed	11.704837	0.003955	-0.009998	0.044963	0.004968	0.062885	0.544323	-0.235112	-895.907205	-450.741903
bagging_Outliers_Removed_shuffled_default_model	11.759516	0.004184	-0.018340	0.044695	-0.010541	0.064529	0.477538	0.044452	-910.814399	-1821.626315
bagging_Outliers_Removed_default_model	11.815070	0.004205	-0.013330	0.044784	-0.009810	0.064849	0.472342	0.035897	-1907.281280	-1818.093357

The screenshot shows a Jupyter Notebook interface with the following details:

- Kernel:** Python 3
- Code Cell:** Contains the following Python code:

```
loss_df.sort_values('mape').to_csv("loss_values_all_models.csv")
```
- Output:** The cell has run successfully, indicated by the green checkmark icon.
- File Tree:** On the left, there is a file tree showing the project structure:
 - /.../BITS_Capstone
 - Project_Capstone
 - Project-master/
 - Name
 - data
 - AIML_Capstone - Gro...
 - Coverage.xlsx
 - fullDBSCAN.ipynb
 - Mail_footfall_Predict...
 - Mail_footfall_Predict...
 - Mail_footfall_Predict...
 - preprocess.py
 - Project_Plans.xlsx
 - README.md
 - visualization.py
 - work_flow.pptx
- Launcher:** Shows a list of recent models:
 - bagging_Outlier_Removed_default_model 11.815070 0.004205 -0.013330 0.044784 -0.009810 0.064849 0.472542 0.435897 -1907.281280 -1818.093337
 - random_forest_Outlier_Removed_default_model 11.878525 0.004131 -0.012771 0.044793 -0.007844 0.064274 0.481667 0.445866 -1913.646660 -1824.458737
 - CanonicalGradientBoosting_Outlier_Removed_default_model 11.951476 0.004348 -0.012474 0.045388 -0.007304 0.065937 0.454493 0.416815 -1895.404784 -1804.216881
 - random_forest_Outlier_Removed_rfc_model 12.020228 0.004409 -0.015048 0.045848 -0.012178 0.064401 0.446763 0.408573 -1890.394444 -1801.206541
 - extra_trees_regressor_OutlierRemoved_extra_features_shuffled_cros... 12.138559 0.003951 0.001822 0.043080 3.487159 0.062599 0.472110 NaN! NaN! NaN!
 - gradient_boosting_regressor_Outlier_Removed_default_model 12.205760 0.004710 -0.017822 0.047270 -0.021842 0.068832 0.408985 0.386164 -1866.800007 -1777.612084
 - bagging_Outlier_Removed_extra_features_shuffled_default_model 12.209038 0.004184 -0.005161 0.044888 0.015016 0.064861 0.475084 0.428532 -1897.141257 -1784.686920
 - gradient_boosting_regressor_Outlier_Removed_shuffled_default_model 12.213195 0.004848 -0.017509 0.047274 -0.021555 0.068422 0.412801 0.372030 -1868.991295 -1779.803372
 - LightGradientBoosting_Outlier_Removed_rfcv_model 12.250568 0.004421 -0.016598 0.046592 -0.017115 0.066490 0.445303 0.406991 -1888.440826 -1800.252903
 - random_forest_Outlier_Removed_extra_features_shuffled_rfcv_model 12.262066 0.004228 -0.009418 0.045978 0.015355 0.065021 0.449951 0.422309 -1893.398286 -1780.949498
 - ensemble_lr 12.305297 0.004282 -0.004516 0.045803 0.016154 0.065283 0.505958 -0.336448 -891.103436 -444.677461
 - random_forest_Outlier_Removed_shuffled_rfcv_model 12.332504 0.004447 -0.013993 0.046429 -0.008571 0.066887 0.442008 0.403468 -1887.326676 -1798.138753
- Bottom Bar:** Shows the Python 3 idle icon, mode: Command, line 1, col 1, Mail_footfall_prediction_skeleton.ipynb, ENG, and 8:17 PM.

--END--