

Code for Airfoil Dataset

```
In [1]: pip install ucimlrepo
```

```
Requirement already satisfied: ucimlrepo in c:\anacon\lib\site-packages (0.0.7)
Requirement already satisfied: pandas>=1.0.0 in c:\anacon\lib\site-packages (from ucimlrepo) (2.1.4)
Requirement already satisfied: certifi>=2020.12.5 in c:\anacon\lib\site-packages (from ucimlrepo) (2024.2.2)
Requirement already satisfied: numpy<2,>=1.23.2 in c:\anacon\lib\site-packages (from pandas>=1.0.0->ucimlrepo) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\anacon\lib\site-packages (from pandas>=1.0.0->ucimlrepo) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in c:\anacon\lib\site-packages (from pandas>=1.0.0->ucimlrepo) (2023.3.post1)
Requirement already satisfied: tzdata>=2022.1 in c:\anacon\lib\site-packages (from pandas>=1.0.0->ucimlrepo) (2023.3)
Requirement already satisfied: six>=1.5 in c:\anacon\lib\site-packages (from python-dateutil>=2.8.2->pandas>=1.0.0->ucimlrepo) (1.16.0)
Note: you may need to restart the kernel to use updated packages.
```

```
In [1]: from ucimlrepo import fetch_ucirepo

# fetch dataset
airfoil_self_noise = fetch_ucirepo(id=291)

# data (as pandas dataframes)
X = airfoil_self_noise.data.features
y = airfoil_self_noise.data.targets

# metadata
print(airfoil_self_noise.metadata)

# variable information
print(airfoil_self_noise.variables)
```

```
{'uci_id': 291, 'name': 'Airfoil Self-Noise', 'repository_url': 'https://archive.ics.uci.edu/dataset/291/airfoil+self+noise', 'data_url': 'https://archive.ics.uci.edu/static/public/291/data.csv', 'abstract': 'NASA data set, obtained from a series of aerodynamic and acoustic tests of two and three-dimensional airfoil blade sections conducted in an anechoic wind tunnel.', 'area': 'Physics and Chemistry', 'tasks': ['Regression'], 'characteristics': ['Multivariate'], 'num_instances': 1503, 'num_features': 5, 'feature_types': ['Real'], 'demographics': [], 'target_col': ['scaled-sound-pressure'], 'index_col': None, 'has_missing_values': 'no', 'missing_values_symbol': None, 'year_of_dataset_creation': 1989, 'last_updated': 'Fri Mar 29 2024', 'dataset_doi': '10.24432/C5VW2C', 'creators': ['Thomas Brooks', 'D. Pope', 'Michael Marcolini'], 'intro_paper': None, 'additional_info': {'summary': 'The NASA data set comprises different size NACA 0012 airfoils at various wind tunnel speeds and angles of attack. The span of the airfoil and the observer position were the same in all of the experiments.'}, 'purpose': None, 'funded_by': None, 'instances_represent': None, 'recommended_data_splits': None, 'sensitive_data': None, 'preprocessing_description': None, 'variable_info': 'This problem has the following inputs:\r\n1. Frequency, in Hertz.\r\n2. Angle of attack, in degrees.\r\n3. Chord length, in meters.\r\n4. Free-stream velocity, in meters per second.\r\n5. Suction side displacement thickness, in meters.\r\n\r\nThe only output is:\r\n6. Scaled sound pressure level, in decibels.'}, 'citation': None}}
```

		name	role	type	demographic	\
0		frequency	Feature	Integer	None	
1		attack-angle	Feature	Binary	None	
2		chord-length	Feature	Continuous	None	
3		free-stream-velocity	Feature	Continuous	None	
4	suction-side-displacement-thickness		Feature	Continuous	None	
5		scaled-sound-pressure	Target	Continuous	None	

	description	units	missing_values
0	None	Hz	no
1	None	deg	no
2	None	m	no
3	None	m/s	no
4	None	m	no
5	None	dB	no

In [3]: X

Out[3]:

	frequency	attack-angle	chord-length	free-stream-velocity	suction-side-displacement-thickness
0	800	0.0	0.3048	71.3	0.002663
1	1000	0.0	0.3048	71.3	0.002663
2	1250	0.0	0.3048	71.3	0.002663
3	1600	0.0	0.3048	71.3	0.002663
4	2000	0.0	0.3048	71.3	0.002663
...
1498	2500	15.6	0.1016	39.6	0.052849
1499	3150	15.6	0.1016	39.6	0.052849
1500	4000	15.6	0.1016	39.6	0.052849
1501	5000	15.6	0.1016	39.6	0.052849
1502	6300	15.6	0.1016	39.6	0.052849

1503 rows × 5 columns

In [4]:

y

Out[4]:

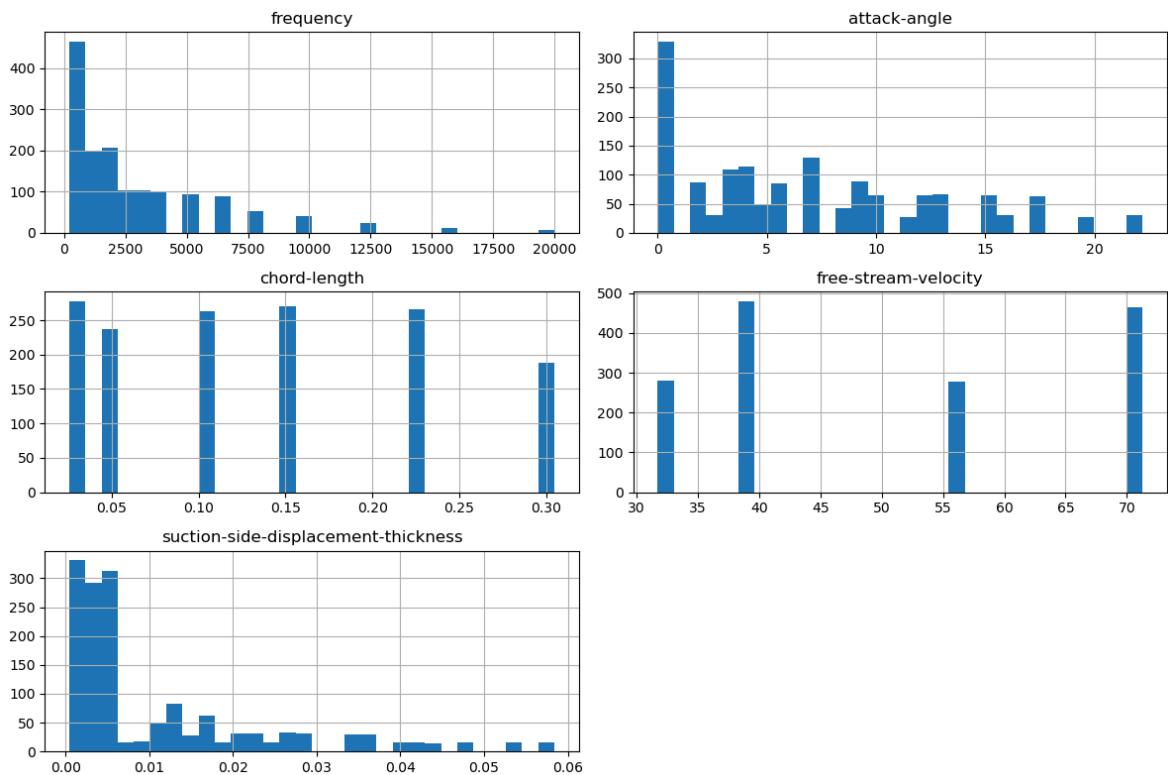
	scaled-sound-pressure
0	126.201
1	125.201
2	125.951
3	127.591
4	127.461
...	...
1498	110.264
1499	109.254
1500	106.604
1501	106.224
1502	104.204

1503 rows × 1 columns

In [11]:

```
import matplotlib.pyplot as plt

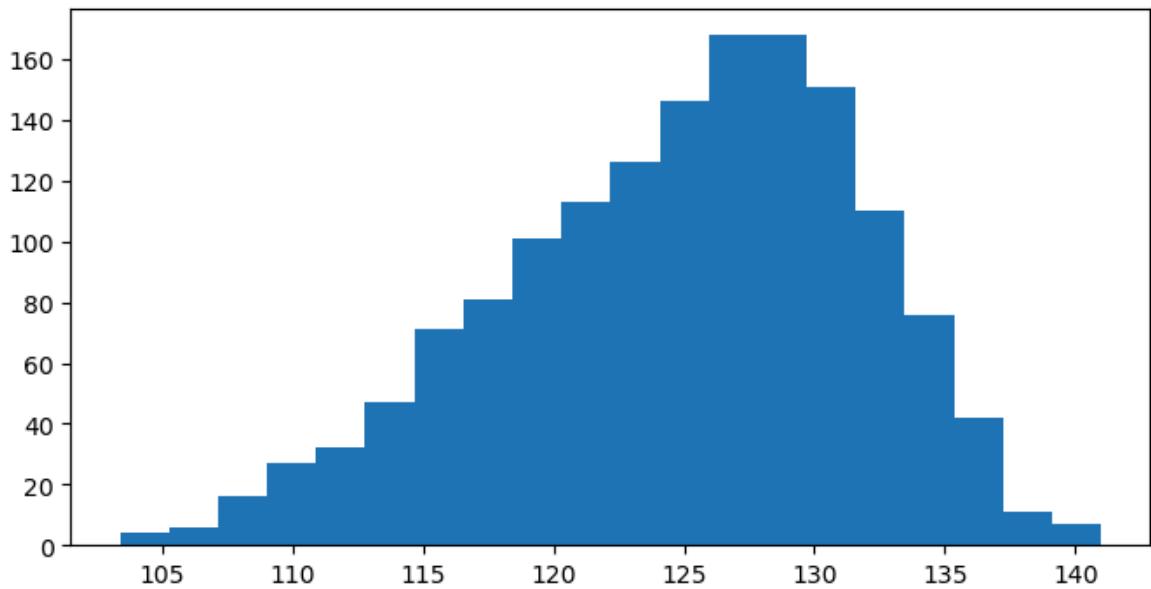
X.hist(figsize=(12, 8), bins=30)
plt.tight_layout()
plt.show()
```



```
In [19]: import matplotlib.pyplot as plt
import seaborn as sns

plt.figure(figsize=(8, 4))
plt.hist(y, bins=20)
plt.show()

print(y.describe())
```



	scaled-sound-pressure
count	1503.000000
mean	124.835943
std	6.898657
min	103.380000
25%	120.191000
50%	125.721000
75%	129.995500
max	140.987000

```
In [15]: !pip install autogluon.tabular
```

```
Collecting autogluon.tabular
  Using cached autogluon.tabular-1.3.1-py3-none-any.whl.metadata (14 kB)
Requirement already satisfied: numpy<2.3.0,>=1.25.0 in c:\anacon\lib\site-packages (from autogluon.tabular) (1.26.4)
Requirement already satisfied: scipy<1.16,>=1.5.4 in c:\anacon\lib\site-packages (from autogluon.tabular) (1.11.4)
Requirement already satisfied: pandas<2.3.0,>=2.0.0 in c:\anacon\lib\site-packages (from autogluon.tabular) (2.1.4)
Collecting scikit-learn<1.7.0,>=1.4.0 (from autogluon.tabular)
  Using cached scikit_learn-1.6.1-cp311-cp311-win_amd64.whl.metadata (15 kB)
Requirement already satisfied: networkx<4,>=3.0 in c:\anacon\lib\site-packages (from autogluon.tabular) (3.1)
Collecting autogluon.core==1.3.1 (from autogluon.tabular)
  Using cached autogluon.core-1.3.1-py3-none-any.whl.metadata (12 kB)
Collecting autogluon.features==1.3.1 (from autogluon.tabular)
  Using cached autogluon.features-1.3.1-py3-none-any.whl.metadata (11 kB)
Requirement already satisfied: tqdm<5,>=4.38 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.tabular) (4.65.0)
Requirement already satisfied: requests in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.tabular) (2.31.0)
Requirement already satisfied: matplotlib<3.11,>=3.7.0 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.tabular) (3.8.0)
Collecting boto3<2,>=1.10 (from autogluon.core==1.3.1->autogluon.tabular)
  Using cached boto3-1.38.32-py3-none-any.whl.metadata (6.6 kB)
Collecting autogluon.common==1.3.1 (from autogluon.core==1.3.1->autogluon.tabular)
  Using cached autogluon.common-1.3.1-py3-none-any.whl.metadata (11 kB)
Requirement already satisfied: psutil<7.1.0,>=5.7.3 in c:\anacon\lib\site-packages (from autogluon.common==1.3.1->autogluon.core==1.3.1->autogluon.tabular) (5.9.0)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\anacon\lib\site-packages (from pandas<2.3.0,>=2.0.0->autogluon.tabular) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in c:\anacon\lib\site-packages (from pandas<2.3.0,>=2.0.0->autogluon.tabular) (2023.3.post1)
Requirement already satisfied: tzdata>=2022.1 in c:\anacon\lib\site-packages (from pandas<2.3.0,>=2.0.0->autogluon.tabular) (2023.3)
Requirement already satisfied: joblib>=1.2.0 in c:\anacon\lib\site-packages (from scikit-learn<1.7.0,>=1.4.0->autogluon.tabular) (1.2.0)
Collecting threadpoolctl>=3.1.0 (from scikit-learn<1.7.0,>=1.4.0->autogluon.tabular)
  Using cached threadpoolctl-3.6.0-py3-none-any.whl.metadata (13 kB)
Collecting botocore<1.39.0,>=1.38.32 (from boto3<2,>=1.10->autogluon.core==1.3.1->autogluon.tabular)
  Using cached botocore-1.38.32-py3-none-any.whl.metadata (5.7 kB)
Requirement already satisfied: jmespath<2.0.0,>=0.7.1 in c:\anacon\lib\site-packages (from boto3<2,>=1.10->autogluon.core==1.3.1->autogluon.tabular) (1.0.1)
Collecting s3transfer<0.14.0,>=0.13.0 (from boto3<2,>=1.10->autogluon.core==1.3.1->autogluon.tabular)
  Using cached s3transfer-0.13.0-py3-none-any.whl.metadata (1.7 kB)
Requirement already satisfied: contourpy>=1.0.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (1.2.0)
Requirement already satisfied: cycler>=0.10 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (4.25.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (1.4.4)
Requirement already satisfied: packaging>=20.0 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (23.1)
Requirement already satisfied: pillow>=6.2.0 in c:\anacon\lib\site-packages (from
```

```
matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (10.2.0)
Requirement already satisfied: pyparsing>=2.3.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.tabular) (3.0.9)
Requirement already satisfied: six>=1.5 in c:\anacon\lib\site-packages (from python-dateutil>=2.8.2->pandas<2.3.0,>=2.0.0->autogluon.tabular) (1.16.0)
Requirement already satisfied: colorama in c:\anacon\lib\site-packages (from tqdm<5,>=4.38->autogluon.core==1.3.1->autogluon.tabular) (0.4.6)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.tabular) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.tabular) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.tabular) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.tabular) (2024.2.2)
Downloading autogluon.tabular-1.3.1-py3-none-any.whl (382 kB)
----- 0.0/382.4 kB ? eta -:-:--
----- 10.2/382.4 kB ? eta -:-:-
----- 20.5/382.4 kB 131.3 kB/s eta 0:00:03
----- 20.5/382.4 kB 131.3 kB/s eta 0:00:03
----- 41.0/382.4 kB 196.9 kB/s eta 0:00:02
----- 71.7/382.4 kB 280.5 kB/s eta 0:00:02
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----- 382.4/382.4 kB 1.3 MB/s eta 0:00:00
Downloading autogluon.core-1.3.1-py3-none-any.whl (222 kB)
----- 0.0/222.7 kB ? eta -:-:-
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Downloading autogluon.features-1.3.1-py3-none-any.whl (64 kB)
----- 0.0/64.2 kB ? eta -:-:-
----- 64.2/64.2 kB ? eta 0:00:00
Downloading autogluon.common-1.3.1-py3-none-any.whl (69 kB)
----- 0.0/69.1 kB ? eta -:-:-
----- 69.1/69.1 kB 3.9 MB/s eta 0:00:00
Downloading scikit_learn-1.6.1-cp311-cp311-win_amd64.whl (11.1 MB)
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----- 4.1/11.1 MB 20.1 MB/s eta 0:00:01
----- 4.9/11.1 MB 19.6 MB/s eta 0:00:01
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----- 8.4/11.1 MB 13.4 MB/s eta 0:00:01
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Downloading boto3-1.38.32-py3-none-any.whl (139 kB)
----- 0.0/139.9 kB ? eta -:-:-
----- 30.7/139.9 kB 660.6 kB/s eta 0:00:01
----- 133.1/139.9 kB 2.0 MB/s eta 0:00:01
----- 139.9/139.9 kB 1.7 MB/s eta 0:00:00
Downloading threadpoolctl-3.6.0-py3-none-any.whl (18 kB)
Downloading botocore-1.38.32-py3-none-any.whl (13.6 MB)
----- 0.0/13.6 MB ? eta -:-:-
----- 0.4/13.6 MB 13.2 MB/s eta 0:00:01
----- 1.4/13.6 MB 15.0 MB/s eta 0:00:01
----- 2.4/13.6 MB 19.3 MB/s eta 0:00:01
----- 2.7/13.6 MB 15.4 MB/s eta 0:00:01
----- 4.3/13.6 MB 18.2 MB/s eta 0:00:01
----- 4.5/13.6 MB 16.9 MB/s eta 0:00:01
----- 5.7/13.6 MB 18.3 MB/s eta 0:00:01
----- 6.2/13.6 MB 17.9 MB/s eta 0:00:01
----- 7.0/13.6 MB 18.0 MB/s eta 0:00:01
----- 8.2/13.6 MB 18.7 MB/s eta 0:00:01
----- 8.8/13.6 MB 18.2 MB/s eta 0:00:01
----- 10.1/13.6 MB 19.1 MB/s eta 0:00:01
----- 10.6/13.6 MB 18.7 MB/s eta 0:00:01
----- 11.4/13.6 MB 18.7 MB/s eta 0:00:01
----- 12.2/13.6 MB 18.2 MB/s eta 0:00:01
----- 13.1/13.6 MB 19.8 MB/s eta 0:00:01
----- 13.6/13.6 MB 19.3 MB/s eta 0:00:01
----- 13.6/13.6 MB 19.3 MB/s eta 0:00:01
----- 13.6/13.6 MB 16.8 MB/s eta 0:00:00
Downloading s3transfer-0.13.0-py3-none-any.whl (85 kB)
----- 0.0/85.2 kB ? eta -:-:-
----- 85.2/85.2 kB 5.0 MB/s eta 0:00:00
Installing collected packages: threadpoolctl, scikit-learn, botocore, s3transfer, boto3, autogluon.common, autogluon.features, autogluon.core, autogluon.tabular
Attempting uninstall: threadpoolctl
  Found existing installation: threadpoolctl 2.2.0
  Uninstalling threadpoolctl-2.2.0:
    Successfully uninstalled threadpoolctl-2.2.0
Attempting uninstall: scikit-learn
  Found existing installation: scikit-learn 1.2.2
  Uninstalling scikit-learn-1.2.2:
    Successfully uninstalled scikit-learn-1.2.2
Attempting uninstall: botocore
  Found existing installation: botocore 1.31.64
  Uninstalling botocore-1.31.64:
    Successfully uninstalled botocore-1.31.64
Successfully installed autogluon.common-1.3.1 autogluon.core-1.3.1 autogluon.features-1.3.1 autogluon.tabular-1.3.1 boto3-1.38.32 botocore-1.38.32 s3transfer-0.13.0 scikit-learn-1.6.1 threadpoolctl-3.6.0
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
aiobotocore 2.7.0 requires botocore<1.31.65,>=1.31.16, but you have botocore 1.38.32 which is incompatible.
```

In [17]:

```

from autogluon.tabular import TabularPredictor
from sklearn.model_selection import train_test_split
from sklearn.metrics import r2_score

```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, random_state=42)

# AutoGluon용 데이터 준비
train_data = X_train.copy()
train_data['target'] = y_train

test_data = X_test.copy()
test_data['target'] = y_test
# AutoML 모델 학습
predictor = TabularPredictor(label='target').fit(train_data)

predictions = predictor.predict(test_data.drop(columns=['target']))
print(predictor.evaluate(test_data))
```

```
No path specified. Models will be saved in: "AutogluonModels\ag-20250609_163129"
Verbosity: 2 (Standard Logging)
=====
System Info =====
AutoGluon Version: 1.3.1
Python Version: 3.11.7
Operating System: Windows
Platform Machine: AMD64
Platform Version: 10.0.26100
CPU Count: 12
Memory Avail: 6.58 GB / 15.69 GB (41.9%)
Disk Space Avail: 320.74 GB / 476.05 GB (67.4%)
=====
No presets specified! To achieve strong results with AutoGluon, it is recommended
to use the available presets. Defaulting to `medium`...
    Recommended Presets (For more details refer to https://auto.gluon.ai/stable/tutorials/tabular/tabular-essentials.html#presets):
        presets='experimental' : New in v1.2: Pre-trained foundation model + parallel fits. The absolute best accuracy without consideration for inference speed.
Does not support GPU.
        presets='best'          : Maximize accuracy. Recommended for most users. Use in competitions and benchmarks.
        presets='high'          : Strong accuracy with fast inference speed.
        presets='good'          : Good accuracy with very fast inference speed.
        presets='medium'         : Fast training time, ideal for initial prototyping.
Beginning AutoGluon training ...
AutoGluon will save models to "C:\Users\준서\Desktop\Jun\3-2\데파프\A5\AutogluonM
odels\ag-20250609_163129"
Train Data Rows: 1127
Train Data Columns: 5
Label Column: target
AutoGluon infers your prediction problem is: 'regression' (because dtype of label
-column == float and many unique label-values observed).
    Label info (max, min, mean, stddev): (140.987, 103.38, 124.91494, 6.8945
7)
    If 'regression' is not the correct problem_type, please manually specify
the problem_type parameter during Predictor init (You may specify problem_type as
one of: ['binary', 'multiclass', 'regression', 'quantile'])
Problem Type: regression
Preprocessing data ...
Using Feature Generators to preprocess the data ...
Fitting AutoMLPipelineFeatureGenerator...
    Available Memory: 6730.07 MB
    Train Data (Original) Memory Usage: 0.04 MB (0.0% of available memory)
    Inferring data type of each feature based on column values. Set feature_m
etadata_in to manually specify special dtypes of the features.
    Stage 1 Generators:
        Fitting AsTypeFeatureGenerator...
    Stage 2 Generators:
        Fitting FillNaFeatureGenerator...
    Stage 3 Generators:
        Fitting IdentityFeatureGenerator...
    Stage 4 Generators:
        Fitting DropUniqueFeatureGenerator...
    Stage 5 Generators:
        Fitting DropDuplicatesFeatureGenerator...
    Types of features in original data (raw dtype, special dtypes):
        ('float', []) : 4 | ['attack-angle', 'chord-length', 'free-stream
-velocity', 'suction-side-displacement-thickness']
        ('int', [])   : 1 | ['frequency']
```

```

Types of features in processed data (raw dtype, special dtypes):
    ('float', []) : 4 | ['attack-angle', 'chord-length', 'free-stream-
-velocity', 'suction-side-displacement-thickness']
    ('int', [])   : 1 | ['frequency']
0.1s = Fit runtime
5 features in original data used to generate 5 features in processed dat
a.

Train Data (Processed) Memory Usage: 0.04 MB (0.0% of available memory)
Data preprocessing and feature engineering runtime = 0.12s ...
AutoGluon will gauge predictive performance using evaluation metric: 'root_mean_s
quared_error'
    This metric's sign has been flipped to adhere to being higher_is_better.
The metric score can be multiplied by -1 to get the metric value.
    To change this, specify the eval_metric parameter of Predictor()
Automatically generating train/validation split with holdout_frac=0.2, Train Row
s: 901, Val Rows: 226
User-specified model hyperparameters to be fit:
{
    'NN_TORCH': [{}],
    'GBM': [{['extra_trees']: True, 'ag_args': {'name_suffix': 'XT'}}, {}, {'le
arning_rate': 0.03, 'num_leaves': 128, 'feature_fraction': 0.9, 'min_data_in_lea
f': 3, 'ag_args': {'name_suffix': 'Large', 'priority': 0, 'hyperparameter_tune_kw
args': None}}],
    'CAT': [{}],
    'XGB': [{}],
    'FASTAI': [{}],
    'RF': [{['criterion': 'gini', 'ag_args': {'name_suffix': 'Gini', 'problem_
types': ['binary', 'multiclass']}}, {'criterion': 'entropy', 'ag_args': {'name_su
ffix': 'Entr', 'problem_types': ['binary', 'multiclass']}}, {'criterion': 'square
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tile']}}],
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    'KNN': [{['weights': 'uniform', 'ag_args': {'name_suffix': 'Unif'}}, {'wei
ghts': 'distance', 'ag_args': {'name_suffix': 'Dist'}}],
}
Fitting 11 L1 models, fit_strategy="sequential" ...
Fitting model: KNeighborsUnif ...
    -5.8642 = Validation score (-root_mean_squared_error)
    0.02s   = Training runtime
    0.05s   = Validation runtime
Fitting model: KNeighborsDist ...
    -6.3493 = Validation score (-root_mean_squared_error)
    0.01s   = Training runtime
    0.03s   = Validation runtime
Fitting model: LightGBMXT ...
[1000] valid_set's rmse: 2.00326
[2000] valid_set's rmse: 1.86357
[3000] valid_set's rmse: 1.78471
[4000] valid_set's rmse: 1.74176
[5000] valid_set's rmse: 1.70833
[6000] valid_set's rmse: 1.6827
[7000] valid_set's rmse: 1.66524
[8000] valid_set's rmse: 1.64576
[9000] valid_set's rmse: 1.63127
[10000] valid_set's rmse: 1.61927

```

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-1.6193 = Validation score (-root_mean_squared_error)
62.88s  = Training runtime
0.2s    = Validation runtime
Fitting model: LightGBM ...
[1000] valid_set's rmse: 1.65768
[2000] valid_set's rmse: 1.60659
[3000] valid_set's rmse: 1.61047
-1.6029 = Validation score (-root_mean_squared_error)
29.44s  = Training runtime
0.09s   = Validation runtime
Fitting model: RandomForestMSE ...
-2.0073 = Validation score (-root_mean_squared_error)
2.61s   = Training runtime
0.16s   = Validation runtime
Fitting model: CatBoost ...
```

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Collecting autogluon
  Downloading autogluon-1.3.1-py3-none-any.whl.metadata (11 kB)
Collecting autogluon.core==1.3.1 (from autogluon.core[all]==1.3.1->autogluon)
  Downloading autogluon.core-1.3.1-py3-none-any.whl.metadata (12 kB)
Collecting autogluon.features==1.3.1 (from autogluon)
  Downloading autogluon.features-1.3.1-py3-none-any.whl.metadata (11 kB)
Collecting autogluon.tabular==1.3.1 (from autogluon.tabular[all]==1.3.1->autogluon)
  Downloading autogluon.tabular-1.3.1-py3-none-any.whl.metadata (14 kB)
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  Downloading autogluon.multimodal-1.3.1-py3-none-any.whl.metadata (13 kB)
Collecting autogluon.timeseries==1.3.1 (from autogluon.timeseries[all]==1.3.1->autogluon)
  Downloading autogluon.timeseries-1.3.1-py3-none-any.whl.metadata (12 kB)
Requirement already satisfied: numpy<2.3.0,>=1.25.0 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (1.26.4)
Requirement already satisfied: scipy<1.16,>=1.5.4 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (1.11.4)
Collecting scikit-learn<1.7.0,>=1.4.0 (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
  Downloading scikit_learn-1.6.1-cp311-cp311-win_amd64.whl.metadata (15 kB)
Requirement already satisfied: networkx<4,>=3.0 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (3.1)
Requirement already satisfied: pandas<2.3.0,>=2.0.0 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2.1.4)
Requirement already satisfied: tqdm<5,>=4.38 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (4.65.0)
Requirement already satisfied: requests in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2.31.0)
Requirement already satisfied: matplotlib<3.11,>=3.7.0 in c:\anacon\lib\site-packages (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (3.8.0)
Collecting boto3<2,>=1.10 (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
  Downloading boto3-1.38.32-py3-none-any.whl.metadata (6.6 kB)
Collecting autogluon.common==1.3.1 (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
  Downloading autogluon.common-1.3.1-py3-none-any.whl.metadata (11 kB)
Collecting ray<2.45,>=2.10.0 (from ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
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Collecting pyarrow>=15.0.0 (from autogluon.core[all]==1.3.1->autogluon)
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Requirement already satisfied: Pillow<12,>=10.0.1 in c:\anacon\lib\site-packages (from autogluon.multimodal==1.3.1->autogluon) (10.2.0)
Collecting torch<2.7,>=2.2 (from autogluon.multimodal==1.3.1->autogluon)
  Downloading torch-2.6.0-cp311-cp311-win_amd64.whl.metadata (28 kB)
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Collecting transformers<4.50,>=4.38.0 (from transformers[sentencepiece]<4.50,>=4.38.0->autogluon.multimodal==1.3.1->autogluon)
  Downloading transformers-4.49.0-py3-none-any.whl.metadata (44 kB)
  -----
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  -----
  44.0/44.0 kB 2.3 MB/s eta 0:00:00
Collecting accelerate<2.0,>=0.34.0 (from autogluon.multimodal==1.3.1->autogluon)
  Downloading accelerate-1.7.0-py3-none-any.whl.metadata (19 kB)
Requirement already satisfied: jsonschema<4.24,>=4.18 in c:\anacon\lib\site-packages (from autogluon.multimodal==1.3.1->autogluon) (4.19.2)
Collecting seqeval<1.3.0,>=1.2.2 (from autogluon.multimodal==1.3.1->autogluon)

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Downloading seqeval-1.2.2.tar.gz (43 kB)
----- 0.0/43.6 kB ? eta -:-:--
----- 43.6/43.6 kB 2.2 MB/s eta 0:00:00
Preparing metadata (setup.py): started
Preparing metadata (setup.py): finished with status 'done'
Collecting evaluate<0.5.0,>=0.4.0 (from autogluon.multimodal==1.3.1->autogluon)
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Collecting timm<1.0.7,>=0.9.5 (from autogluon.multimodal==1.3.1->autogluon)
    Downloading timm-1.0.3-py3-none-any.whl.metadata (43 kB)
----- 0.0/43.6 kB ? eta -:-:--
----- 43.6/43.6 kB 1.1 MB/s eta 0:00:00
Collecting torchvision<0.22.0,>=0.16.0 (from autogluon.multimodal==1.3.1->autogluon)
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Requirement already satisfied: scikit-image<0.26.0,>=0.19.1 in c:\anacon\lib\site-packages (from autogluon.multimodal==1.3.1->autogluon) (0.22.0)
Requirement already satisfied: text-unidecode<1.4,>=1.3 in c:\anacon\lib\site-packages (from autogluon.multimodal==1.3.1->autogluon) (1.3)
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Requirement already satisfied: jinja2<3.2,>=3.0.3 in c:\anacon\lib\site-packages (from autogluon.multimodal==1.3.1->autogluon) (3.1.3)
Collecting tensorboard<3,>=2.9 (from autogluon.multimodal==1.3.1->autogluon)
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Collecting nvidia-ml-py3<8.0,>=7.352.0 (from autogluon.multimodal==1.3.1->autogluon)
    Downloading nvidia-ml-py3-7.352.0.tar.gz (19 kB)
Preparing metadata (setup.py): started
Preparing metadata (setup.py): finished with status 'done'
Collecting pdf2image<1.19,>=1.17.0 (from autogluon.multimodal==1.3.1->autogluon)
    Downloading pdf2image-1.17.0-py3-none-any.whl.metadata (6.2 kB)
Requirement already satisfied: catboost<1.3,>=1.2 in c:\anacon\lib\site-packages (from autogluon.tabular[all]==1.3.1->autogluon) (1.2.8)
Collecting einops<0.9,>=0.7 (from autogluon.tabular[all]==1.3.1->autogluon)
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Requirement already satisfied: xgboost<3.1,>=2.0 in c:\anacon\lib\site-packages (from autogluon.tabular[all]==1.3.1->autogluon) (3.0.0)
Collecting fastai<2.9,>=2.3.1 (from autogluon.tabular[all]==1.3.1->autogluon)
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Collecting huggingface-hub[torch] (from autogluon.tabular[all]==1.3.1->autogluon)
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Collecting pytorch-lightning (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading pytorch_lightning-2.5.1.post0-py3-none-any.whl.metadata (20 kB)
Collecting gluonts<0.17,>=0.15.0 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
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Collecting statsforecast<2.0.2,>=1.7.0 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
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Collecting mlforecast<0.14,>0.13 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading mlforecast-0.13.6-py3-none-any.whl.metadata (12 kB)
Collecting utilsforecast<0.2.11,>=0.2.3 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading utilsforecast-0.2.10-py3-none-any.whl.metadata (7.4 kB)
Collecting coreforecast<0.0.16,>=0.0.12 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading coreforecast-0.0.15-cp311-cp311-win_amd64.whl.metadata (3.8 kB)
Collecting fugue>=0.9.0 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading fugue-0.9.1-py3-none-any.whl.metadata (18 kB)
Collecting orjson~=3.9 (from autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
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----- 0.0/43.0 kB ? eta :---:-
----- 43.0/43.0 kB 1.1 MB/s eta 0:00:00
Requirement already satisfied: psutil<7.1.0,>=5.7.3 in c:\anacon\lib\site-packages (from autogluon.common==1.3.1->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (5.9.0)
Requirement already satisfied: packaging>=20.0 in c:\anacon\lib\site-packages (from accelerate<2.0,>=0.34.0->autogluon.multimodal==1.3.1->autogluon) (23.1)
Requirement already satisfied: pyyaml in c:\anacon\lib\site-packages (from accelerate<2.0,>=0.34.0->autogluon.multimodal==1.3.1->autogluon) (6.0.1)
Collecting safetensors>=0.4.3 (from accelerate<2.0,>=0.34.0->autogluon.multimodal==1.3.1->autogluon)
    Downloading safetensors-0.5.3-cp38-abi3-win_amd64.whl.metadata (3.9 kB)
Collecting botocore<1.39.0,>=1.38.32 (from boto3<2,>=1.10->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
    Downloading botocore-1.38.32-py3-none-any.whl.metadata (5.7 kB)
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Collecting s3transfer<0.14.0,>=0.13.0 (from boto3<2,>=1.10->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
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Requirement already satisfied: graphviz in c:\anacon\lib\site-packages (from catboost<1.3,>=1.2->autogluon.tabular[all]==1.3.1->autogluon) (0.20.3)
Requirement already satisfied: plotly in c:\anacon\lib\site-packages (from catboost<1.3,>=1.2->autogluon.tabular[all]==1.3.1->autogluon) (5.9.0)
Requirement already satisfied: six in c:\anacon\lib\site-packages (from catboost<1.3,>=1.2->autogluon.tabular[all]==1.3.1->autogluon) (1.16.0)
Collecting datasets>=2.0.0 (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1->autogluon)
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Requirement already satisfied: dill in c:\anacon\lib\site-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1->autogluon) (0.3.7)
Collecting xxhash (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1->auto
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gluon)
    Downloading xxhash-3.5.0-cp311-cp311-win_amd64.whl.metadata (13 kB)
Collecting multiprocessing (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1
->autogluon)
    Downloading multiprocessing-0.70.18-py311-none-any.whl.metadata (7.5 kB)
Requirement already satisfied: fsspec>=2021.05.0 in c:\anacon\lib\site-packages
(from fsspec[http]>=2021.05.0->evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.
1->autogluon) (2023.10.0)
Requirement already satisfied: pip in c:\anacon\lib\site-packages (from fastai<2.
9,>=2.3.1->autogluon.tabular[all]==1.3.1->autogluon) (23.3.1)
Collecting fastdownload<2,>=0.0.5 (from fastai<2.9,>=2.3.1->autogluon.tabular[al
l]==1.3.1->autogluon)
    Downloading fastdownload-0.0.7-py3-none-any.whl.metadata (5.5 kB)
Collecting fastcore<1.9,>=1.8.0 (from fastai<2.9,>=2.3.1->autogluon.tabular[all]=
=1.3.1->autogluon)
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Collecting fasttransform>=0.0.2 (from fastai<2.9,>=2.3.1->autogluon.tabular[all]==
1.3.1->autogluon)
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1.3.1->autogluon)
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Collecting plum-dispatch (from fastai<2.9,>=2.3.1->autogluon.tabular[all]==1.3.1-
>autogluon)
    Downloading plum_dispatch-2.5.7-py3-none-any.whl.metadata (7.5 kB)
Requirement already satisfied: cloudpickle in c:\anacon\lib\site-packages (from fastai<2.9,>=2.3.1->autogluon.tabular[all]==1.3.1->autogluon) (2.2.1)
Collecting triad>=0.9.7 (from fugue>=0.9.0->autogluon.timeseries==1.3.1->autogluo
n.timeseries[all]==1.3.1->autogluon)
    Downloading triad-0.9.8-py3-none-any.whl.metadata (6.3 kB)
Collecting adagio>=0.2.4 (from fugue>=0.9.0->autogluon.timeseries==1.3.1->autoglu
on.timeseries[all]==1.3.1->autogluon)
    Downloading adagio-0.2.6-py3-none-any.whl.metadata (1.8 kB)
Requirement already satisfied: pydantic<3,>=1.7 in c:\anacon\lib\site-packages (f
rom gluonts<0.17,>=0.15.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]
==1.3.1->autogluon) (1.10.12)
Requirement already satisfied: toolz~>0.10 in c:\anacon\lib\site-packages (from gluonts<0.17,>=0.15.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.
3.1->autogluon) (0.12.0)
Requirement already satisfied: typing-extensions~>4.0 in c:\anacon\lib\site-packa
ges (from gluonts<0.17,>=0.15.0->autogluon.timeseries==1.3.1->autogluon.timeserie
s[all]==1.3.1->autogluon) (4.9.0)
Requirement already satisfied: future in c:\anacon\lib\site-packages (from hyperopt<0.2.8,>=0.2.7->autogluon.core[all]==1.3.1->autogluon) (0.18.3)
Collecting py4j (from hyperopt<0.2.8,>=0.2.7->autogluon.core[all]==1.3.1->autoglu
on)
    Downloading py4j-0.10.9.9-py2.py3-none-any.whl.metadata (1.3 kB)
Requirement already satisfied: MarkupSafe>=2.0 in c:\anacon\lib\site-packages (fr
om jinja2<3.2,>=3.0.3->autogluon.multimodal==1.3.1->autogluon) (2.1.3)
Requirement already satisfied: attrs>=22.2.0 in c:\anacon\lib\site-packages (from jsonschema<4.24,>=4.18->autogluon.multimodal==1.3.1->autogluon) (23.1.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in c:\anacon
\lib\site-packages (from jsonschema<4.24,>=4.18->autogluon.multimodal==1.3.1->aut
ogluon) (2023.7.1)
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(from jsonschema<4.24,>=4.18->autogluon.multimodal==1.3.1->autogluon) (0.30.2)
Requirement already satisfied: rpds-py>=0.7.1 in c:\anacon\lib\site-packages (fro
m jsonschema<4.24,>=4.18->autogluon.multimodal==1.3.1->autogluon) (0.10.6)
Collecting lightning-utilities<2.0,>=0.10.0 (from lightning<2.7,>=2.2->autogluon.
multimodal==1.3.1->autogluon)

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  Downloading lightning_utilities-0.14.3-py3-none-any.whl.metadata (5.6 kB)
Requirement already satisfied: contourpy>=1.0.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (1.2.0)
Requirement already satisfied: cycler>=0.10 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (4.25.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (1.4.4)
Requirement already satisfied: pyparsing>=2.3.1 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (3.0.9)
Requirement already satisfied: python-dateutil>=2.7 in c:\anacon\lib\site-packages (from matplotlib<3.11,>=3.7.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2.8.2)
Requirement already satisfied: numba in c:\anacon\lib\site-packages (from mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon) (0.59.0)
Collecting optuna (from mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
  Downloading optuna-4.3.0-py3-none-any.whl.metadata (17 kB)
Collecting window-ops (from mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
  Downloading window_ops-0.0.15-py3-none-any.whl.metadata (6.8 kB)
Collecting gdown>=4.0.0 (from nlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.3.1->autogluon)
  Downloading gdown-5.2.0-py3-none-any.whl.metadata (5.8 kB)
Requirement already satisfied: click in c:\anacon\lib\site-packages (from nltk<3.9,>=3.4.5->autogluon.multimodal==1.3.1->autogluon) (8.1.7)
Requirement already satisfied: regex>=2021.8.3 in c:\anacon\lib\site-packages (from nltk<3.9,>=3.4.5->autogluon.multimodal==1.3.1->autogluon) (2023.10.3)
Collecting antlr4-python3-runtime==4.9.* (from omegaconf<2.4.0,>=2.1.1->autogluon.multimodal==1.3.1->autogluon)
  Downloading antlr4-python3-runtime-4.9.3.tar.gz (117 kB)
----- 0.0/117.0 kB ? eta ------
----- 117.0/117.0 kB ? eta 0:00:00
Preparing metadata (setup.py): started
Preparing metadata (setup.py): finished with status 'done'
Requirement already satisfied: colorama in c:\anacon\lib\site-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon) (0.4.6)
Collecting model-index (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon)
  Downloading model_index-0.1.11-py3-none-any.whl.metadata (3.9 kB)
Collecting opendatalab (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon)
  Downloading opendatalab-0.0.10-py3-none-any.whl.metadata (6.4 kB)
Requirement already satisfied: rich in c:\anacon\lib\site-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon) (13.3.5)
Requirement already satisfied: tabulate in c:\anacon\lib\site-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon) (0.9.0)
Requirement already satisfied: pytz>=2020.1 in c:\anacon\lib\site-packages (from pandas<2.3.0,>=2.0.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2023.3.post1)
Requirement already satisfied: tzdata>=2022.1 in c:\anacon\lib\site-packages (from pandas<2.3.0,>=2.0.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2023.3)

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Requirement already satisfied: filelock in c:\anacon\lib\site-packages (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (3.13.1)
Requirement already satisfied: msgpack<2.0.0,>=1.0.0 in c:\anacon\lib\site-packages (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (1.0.3)
Requirement already satisfied: protobuf!=3.19.5,>=3.15.3 in c:\anacon\lib\site-packages (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (3.20.3)
Requirement already satisfied: aiosignal in c:\anacon\lib\site-packages (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (1.2.0)
Requirement already satisfied: frozenlist in c:\anacon\lib\site-packages (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (1.4.0)
Requirement already satisfied: aiohttp>=3.7 in c:\anacon\lib\site-packages (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (3.9.3)
Collecting aiohttp_cors (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading aiohttp_cors-0.8.1-py3-none-any.whl.metadata (20 kB)
Collecting colorful (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading colorful-0.5.6-py2.py3-none-any.whl.metadata (16 kB)
Collecting py-spy>=0.2.0 (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading py_spy-0.4.0-py2.py3-none-win_amd64.whl.metadata (16 kB)
Collecting grpcio>=1.42.0 (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading grpcio-1.73.0-cp311-cp311-win_amd64.whl.metadata (4.0 kB)
Collecting opencensus (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading opencensus-0.11.4-py2.py3-none-any.whl.metadata (12 kB)
Requirement already satisfied: prometheus_client>=0.7.1 in c:\anacon\lib\site-packages (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (0.14.1)
Requirement already satisfied: smart_open in c:\anacon\lib\site-packages (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (5.2.1)
Collecting virtualenv!=20.21.1,>=20.0.24 (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading virtualenv-20.31.2-py3-none-any.whl.metadata (4.5 kB)
Collecting tensorboardX>=1.9 (from ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading tensorboardX-2.6.2.2-py2.py3-none-any.whl.metadata (5.8 kB)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\anacon\lib\site-packages (from requests->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon) (2024.2.2)
Requirement already satisfied: imageio>=2.27 in c:\anacon\lib\site-packages (from scikit-image<0.26.0,>=0.19.1->autogluon.multimodal==1.3.1->autogluon) (2.33.1)
Requirement already satisfied: tifffile>=2022.8.12 in c:\anacon\lib\site-packages (from scikit-image<0.26.0,>=0.19.1->autogluon.multimodal==1.3.1->autogluon) (202
```

3.4.12)

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Requirement already satisfied: lazy_loader>=0.3 in c:\anacon\lib\site-packages (from scikit-image<0.26.0,>=0.19.1->autogluon.multimodal==1.3.1->autogluon) (0.3)
Collecting threadpoolctl>=3.1.0 (from scikit-learn<1.7.0,>=1.4.0->autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
    Downloading threadpoolctl-3.6.0-py3-none-any.whl.metadata (13 kB)
Collecting spacy-legacy<3.1.0,>=3.0.11 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading spacy_legacy-3.0.12-py2.py3-none-any.whl.metadata (2.8 kB)
Collecting spacy-loggers<2.0.0,>=1.0.0 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading spacy_loggers-1.0.5-py3-none-any.whl.metadata (23 kB)
Collecting murmurhash<1.1.0,>=0.28.0 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading murmurhash-1.0.13-cp311-cp311-win_amd64.whl.metadata (2.2 kB)
Collecting cymem<2.1.0,>=2.0.2 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading cymem-2.0.11-cp311-cp311-win_amd64.whl.metadata (8.8 kB)
Collecting preshed<3.1.0,>=3.0.2 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading preshed-3.0.10-cp311-cp311-win_amd64.whl.metadata (2.5 kB)
Collecting thinc<8.4.0,>=8.3.4 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading thinc-8.3.6-cp311-cp311-win_amd64.whl.metadata (15 kB)
Collecting wasabi<1.2.0,>=0.9.1 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading wasabi-1.1.3-py3-none-any.whl.metadata (28 kB)
Collecting srsly<3.0.0,>=2.4.3 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading srsly-2.5.1-cp311-cp311-win_amd64.whl.metadata (20 kB)
Collecting catalogue<2.1.0,>=2.0.6 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading catalogue-2.0.10-py3-none-any.whl.metadata (14 kB)
Collecting weasel<0.5.0,>=0.1.0 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading weasel-0.4.1-py3-none-any.whl.metadata (4.6 kB)
Collecting typer<1.0.0,>=0.3.0 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading typer-0.16.0-py3-none-any.whl.metadata (15 kB)
Requirement already satisfied: setuptools in c:\anacon\lib\site-packages (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon) (68.2.2)
Collecting langcodes<4.0.0,>=3.2.0 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading langcodes-3.5.0-py3-none-any.whl.metadata (29 kB)
Requirement already satisfied: statsmodels>=0.13.2 in c:\anacon\lib\site-packages (from statsforecast<2.0.2,>=1.7.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon) (0.14.0)
Collecting absl-py>=0.4 (from tensorboard<3,>=2.9->autogluon.multimodal==1.3.1->autogluon)
    Downloading absl_py-2.3.0-py3-none-any.whl.metadata (2.4 kB)
Requirement already satisfied: markdown>=2.6.8 in c:\anacon\lib\site-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.3.1->autogluon) (3.4.1)
Collecting tensorboard-data-server<0.8.0,>=0.7.0 (from tensorboard<3,>=2.9->autogluon.multimodal==1.3.1->autogluon)
    Downloading tensorboard_data_server-0.7.2-py3-none-any.whl.metadata (1.1 kB)
Requirement already satisfied: werkzeug>=1.0.1 in c:\anacon\lib\site-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.3.1->autogluon) (2.2.3)
Collecting typing-extensions~4.0 (from gluonts<0.17,>=0.15.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading typing_extensions-4.14.0-py3-none-any.whl.metadata (3.0 kB)

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Collecting sympy==1.13.1 (from torch<2.7,>=2.2->autogluon.multimodal==1.3.1->autogluon)
    Downloading sympy-1.13.1-py3-none-any.whl.metadata (12 kB)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in c:\anacon\lib\site-packages (from sympy==1.13.1->torch<2.7,>=2.2->autogluon.multimodal==1.3.1->autogluon) (1.3.0)
Collecting tokenizers<0.22,>=0.21 (from transformers<4.50,>=4.38.0->transformers[sentencepiece]<4.50,>=4.38.0->autogluon.multimodal==1.3.1->autogluon)
    Downloading tokenizers-0.21.1-cp39-abi3-win_amd64.whl.metadata (6.9 kB)
Collecting sentencepiece!=0.1.92,>=0.1.91 (from transformers[sentencepiece]<4.50,>=4.38.0->autogluon.multimodal==1.3.1->autogluon)
    Downloading sentencepiece-0.2.0-cp311-cp311-win_amd64.whl.metadata (8.3 kB)
Requirement already satisfied: multidict<7.0,>=4.5 in c:\anacon\lib\site-packages (from aiohttp>=3.7->ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (6.0.4)
Requirement already satisfied: yarl<2.0,>=1.0 in c:\anacon\lib\site-packages (from aiohttp>=3.7->ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (1.9.3)
Collecting requests (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
    Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
Collecting tqdm<5,>=4.38 (from autogluon.core==1.3.1->autogluon.core[all]==1.3.1->autogluon)
    Downloading tqdm-4.67.1-py3-none-any.whl.metadata (57 kB)
        -----
        ----- 0.0/57.7 kB ? eta -:-:-
        ----- 57.7/57.7 kB 3.0 MB/s eta 0:00:00
Collecting multiprocess (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1->autogluon)
    Downloading multiprocess-0.70.16-py311-none-any.whl.metadata (7.2 kB)
Requirement already satisfied: beautifulsoup4 in c:\anacon\lib\site-packages (from gdown>=4.0.0->nlpauge<1.2.0,>=1.1.10->autogluon.multimodal==1.3.1->autogluon) (4.12.2)
Collecting language-data>=1.2 (from langcodes<4.0.0,>=3.2.0->spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading language_data-1.3.0-py3-none-any.whl.metadata (4.3 kB)
Collecting dill (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.3.1->autogluon)
    Downloading dill-0.3.8-py3-none-any.whl.metadata (10 kB)
Requirement already satisfied: llvmlite<0.43,>=0.42.0dev0 in c:\anacon\lib\site-packages (from numba->mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon) (0.42.0)
Requirement already satisfied: patsy>=0.5.2 in c:\anacon\lib\site-packages (from statsmodels>=0.13.2->statsforecast<2.0.2,>=1.7.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon) (0.5.3)
Collecting blis<1.4.0,>=1.3.0 (from thinc<8.4.0,>=8.3.4->spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading blis-1.3.0-cp311-cp311-win_amd64.whl.metadata (7.6 kB)
Collecting confection<1.0.0,>=0.0.1 (from thinc<8.4.0,>=8.3.4->spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading confection-0.1.5-py3-none-any.whl.metadata (19 kB)
INFO: pip is looking at multiple versions of thinc to determine which version is compatible with other requirements. This could take a while.
Collecting thinc<8.4.0,>=8.3.4 (from spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading thinc-8.3.4-cp311-cp311-win_amd64.whl.metadata (15 kB)
Collecting blis<1.3.0,>=1.2.0 (from thinc<8.4.0,>=8.3.4->spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading blis-1.2.1-cp311-cp311-win_amd64.whl.metadata (7.6 kB)
Collecting fs (from triad>=0.9.7->fugue>=0.9.0->autogluon.timeseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)

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  Downloading fs-2.4.16-py2.py3-none-any.whl.metadata (6.3 kB)
Collecting shellingham>=1.3.0 (from typer<1.0.0,>=0.3.0->spacy<3.9->autogluon.tab
ular[all]==1.3.1->autogluon)
    Downloading shellingham-1.5.4-py2.py3-none-any.whl.metadata (3.5 kB)
Requirement already satisfied: markdown-it-py<3.0.0,>=2.2.0 in c:\anacon\lib\site
-packages (from rich->openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autoglu
on) (2.2.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\anacon\lib\site-pack
ages (from rich->openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon)
(2.15.1)
Collecting distlib<1,>=0.3.7 (from virtualenv!=20.21.1,>=20.0.24->ray[default,tun
e]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading distlib-0.3.9-py2.py3-none-any.whl.metadata (5.2 kB)
Requirement already satisfied: platformdirs<5,>=3.9.1 in c:\anacon\lib\site-packa
ges (from virtualenv!=20.21.1,>=20.0.24->ray[default,tune]<2.45,>=2.10.0; extra =
= "all"->autogluon.core[all]==1.3.1->autogluon) (3.10.0)
Collecting cloudpathlib<1.0.0,>=0.7.0 (from weasel<0.5.0,>=0.1.0->spacy<3.9->auto
gluon.tabular[all]==1.3.1->autogluon)
    Downloading cloudpathlib-0.21.1-py3-none-any.whl.metadata (14 kB)
Collecting ordered-set (from model-index->openmim<0.4.0,>=0.3.7->autogluon.multim
odal==1.3.1->autogluon)
    Downloading ordered_set-4.1.0-py3-none-any.whl.metadata (5.3 kB)
Collecting opencensus-context>=0.1.3 (from opencensus->ray[default,tune]<2.45,>=
2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading opencensus_context-0.1.3-py2.py3-none-any.whl.metadata (3.3 kB)
Collecting google-api-core<3.0.0,>=1.0.0 (from opencensus->ray[default,tune]<2.4
5,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading google_api_core-2.25.0-py3-none-any.whl.metadata (3.0 kB)
Collecting pycryptodome (from opendatalab->openmim<0.4.0,>=0.3.7->autogluon.multi
modal==1.3.1->autogluon)
    Downloading pycryptodome-3.23.0-cp37-abi3-win_amd64.whl.metadata (3.5 kB)
Collecting openxlab (from opendatalab->openmim<0.4.0,>=0.3.7->autogluon.multimoda
l==1.3.1->autogluon)
    Downloading openxlab-0.1.2-py3-none-any.whl.metadata (3.8 kB)
Requirement already satisfied: pywin32 in c:\anacon\lib\site-packages (from opend
atalab->openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.3.1->autogluon) (305.1)
Collecting alembic>=1.5.0 (from optuna->mlforecast<0.14,>0.13->autogluon.timeseri
es==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading alembic-1.16.1-py3-none-any.whl.metadata (7.3 kB)
Collecting colorlog (from optuna->mlforecast<0.14,>0.13->autogluon.timeseries==1.
3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading colorlog-6.9.0-py3-none-any.whl.metadata (10 kB)
Requirement already satisfied: sqlalchemy>=1.4.2 in c:\anacon\lib\site-packages
(from optuna->mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1->autogluon.times
eries[all]==1.3.1->autogluon) (2.0.25)
Requirement already satisfied: tenacity>=6.2.0 in c:\anacon\lib\site-packages (fr
om plotly->catboost<1.3,>=1.2->autogluon.tabular[all]==1.3.1->autogluon) (8.2.2)
Collecting beartype>=0.16.2 (from plum-dispatch->fastai<2.9,>=2.3.1->autogluon.ta
bular[all]==1.3.1->autogluon)
    Downloading beartype-0.21.0-py3-none-any.whl.metadata (33 kB)
Collecting Mako (from alembic>=1.5.0->optuna->mlforecast<0.14,>0.13->autogluon.ti
meseries==1.3.1->autogluon.timeseries[all]==1.3.1->autogluon)
    Downloading mako-1.3.10-py3-none-any.whl.metadata (2.9 kB)
Collecting googleapis-common-protos<2.0.0,>=1.56.2 (from google-api-core<3.0.0,>=
1.0.0->opencensus->ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.cor
e[all]==1.3.1->autogluon)
    Downloading googleapis_common_protos-1.70.0-py3-none-any.whl.metadata (9.3 kB)
Collecting proto-plus<2.0.0,>=1.22.3 (from google-api-core<3.0.0,>=1.0.0->opencen
sus->ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1-
>autogluon)

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    Downloading proto_plus-1.26.1-py3-none-any.whl.metadata (2.2 kB)
Collecting google-auth<3.0.0,>=2.14.1 (from google-api-core<3.0.0,>=1.0.0->openc
nsus->ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1
->autogluon)
    Downloading google_auth-2.40.3-py2.py3-none-any.whl.metadata (6.2 kB)
Collecting marisa-trie>=1.1.0 (from language-data>=1.2->langcodes<4.0.0,>=3.2.0->
spacy<3.9->autogluon.tabular[all]==1.3.1->autogluon)
    Downloading marisa_trie-1.2.1-cp311-cp311-win_amd64.whl.metadata (9.3 kB)
Requirement already satisfied: mdurl~0.1 in c:\anacon\lib\site-packages (from ma
rtdown-it-py<3.0.0,>=2.2.0->rich->openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.
3.1->autogluon) (0.1.0)
Requirement already satisfied: greenlet!=0.4.17 in c:\anacon\lib\site-packages (f
rom sqlalchemy>=1.4.2->optuna->mlforecast<0.14,>0.13->autogluon.timeseries==1.3.1
->autogluon.timeseries[all]==1.3.1->autogluon) (3.0.1)
Requirement already satisfied: soupsieve>1.2 in c:\anacon\lib\site-packages (from
beautifulsoup4->gdown>=4.0.0->nlpauge<1.2.0,>=1.1.10->autogluon.multimodal==1.3.1-
->autogluon) (2.5)
Requirement already satisfied: appdirs~1.4.3 in c:\anacon\lib\site-packages (fro
m fs->triad>=0.9.7->fugue>=0.9.0->autogluon.timeseries==1.3.1->autogluon.timeseri
es[all]==1.3.1->autogluon) (1.4.4)
Collecting filelock (from ray<2.45,>=2.10.0->ray[default]<2.45,>=2.10.0; extra ==
"all"->autogluon.core[all]==1.3.1->autogluon)
    Downloading filelock-3.14.0-py3-none-any.whl.metadata (2.8 kB)
Collecting oss2~=2.17.0 (from openxlab->opendatalab->openmim<0.4.0,>=0.3.7->autog
luon.multimodal==1.3.1->autogluon)
    Downloading oss2-2.17.0.tar.gz (259 kB)
    ----- 0.0/259.5 kB ? eta -:-:--
    ----- 112.6/259.5 kB 6.8 MB/s eta 0:00:01
    ----- 259.5/259.5 kB 4.0 MB/s eta 0:00:00

Preparing metadata (setup.py): started
Preparing metadata (setup.py): finished with status 'done'
Collecting packaging>=20.0 (from accelerate<2.0,>=0.34.0->autogluon.multimodal==
1.3.1->autogluon)
    Downloading packaging-24.2-py3-none-any.whl.metadata (3.2 kB)
INFO: pip is looking at multiple versions of openxlab to determine which version
is compatible with other requirements. This could take a while.
Collecting openxlab (from opendatalab->openmim<0.4.0,>=0.3.7->autogluon.multimoda
l==1.3.1->autogluon)
    Downloading openxlab-0.1.1-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.1.0-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.38-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.37-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.36-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.35-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.34-py3-none-any.whl.metadata (3.8 kB)
INFO: pip is still looking at multiple versions of openxlab to determine which ve
rsion is compatible with other requirements. This could take a while.
    Downloading openxlab-0.0.33-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.32-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.31-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.30-py3-none-any.whl.metadata (3.8 kB)
    Downloading openxlab-0.0.29-py3-none-any.whl.metadata (3.8 kB)
INFO: This is taking longer than usual. You might need to provide the dependency
resolver with stricter constraints to reduce runtime. See https://pip.pypa.io/war
nings/backtracking for guidance. If you want to abort this run, press Ctrl + C.
    Downloading openxlab-0.0.28-py3-none-any.whl.metadata (3.7 kB)
    Downloading openxlab-0.0.27-py3-none-any.whl.metadata (3.7 kB)
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    Downloading openxlab-0.0.25-py3-none-any.whl.metadata (3.7 kB)
    Downloading openxlab-0.0.24-py3-none-any.whl.metadata (3.7 kB)

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Downloading openxlab-0.0.20-py3-none-any.whl.metadata (3.7 kB)
Downloading openxlab-0.0.19-py3-none-any.whl.metadata (3.7 kB)
Downloading openxlab-0.0.18-py3-none-any.whl.metadata (3.7 kB)
Downloading openxlab-0.0.17-py3-none-any.whl.metadata (3.7 kB)
Downloading openxlab-0.0.16-py3-none-any.whl.metadata (3.8 kB)
Downloading openxlab-0.0.15-py3-none-any.whl.metadata (3.8 kB)
Downloading openxlab-0.0.14-py3-none-any.whl.metadata (3.8 kB)
Downloading openxlab-0.0.13-py3-none-any.whl.metadata (4.5 kB)
Downloading openxlab-0.0.12-py3-none-any.whl.metadata (4.5 kB)
Downloading openxlab-0.0.11-py3-none-any.whl.metadata (4.3 kB)
Requirement already satisfied: PySocks!=1.5.7,>=1.5.6 in c:\anacon\lib\site-packages (from requests[socks]->gdown>=4.0.0->nlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.3.1->autogluon) (1.7.1)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in c:\anacon\lib\site-packages (from google-auth<3.0.0,>=2.14.1->google-api-core<3.0.0,>=1.0.0->opencensus-ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (4.2.2)
Requirement already satisfied: pyasn1-modules>=0.2.1 in c:\anacon\lib\site-packages (from google-auth<3.0.0,>=2.14.1->google-api-core<3.0.0,>=1.0.0->opencensus-ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (0.2.8)
Collecting rsa<5,>=3.1.4 (from google-auth<3.0.0,>=2.14.1->google-api-core<3.0.0,>=1.0.0->opencensus-ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon)
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Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in c:\anacon\lib\site-packages (from pyasn1-modules>=0.2.1->google-auth<3.0.0,>=2.14.1->google-api-core<3.0.0,>=1.0.0->opencensus-ray[default,tune]<2.45,>=2.10.0; extra == "all"->autogluon.core[all]==1.3.1->autogluon) (0.4.8)
    Downloading autogluon-1.3.1-py3-none-any.whl (9.8 kB)
    Using cached autogluon.core-1.3.1-py3-none-any.whl (222 kB)
    Using cached autogluon.features-1.3.1-py3-none-any.whl (64 kB)
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Downloading pdf2image-1.17.0-py3-none-any.whl (11 kB)
Downloading pyarrow-20.0.0-cp311-cp311-win_amd64.whl (25.8 MB)
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Downloading spacy_legacy-3.0.12-py2.py3-none-any.whl (29 kB)
Downloading spacy_loggers-1.0.5-py3-none-any.whl (22 kB)
Downloading srslly-2.5.1-cp311-cp311-win_amd64.whl (632 kB)
----- 0.0/632.6 kB ? eta -:-:-
----- 632.6/632.6 kB 38.9 MB/s eta 0:00:00
Downloading tensorboard_data_server-0.7.2-py3-none-any.whl (2.4 kB)
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----- 0.0/101.7 kB ? eta -:-:-
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Downloading thinc-8.3.4-cp311-cp311-win_amd64.whl (1.5 MB)
----- 0.0/1.5 MB ? eta -:-:-
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```

```
----- 1.5/1.5 MB 18.7 MB/s eta 0:00:00
Using cached threadpoolctl-3.6.0-py3-none-any.whl (18 kB)
Downloading tokenizers-0.21.1-cp39-abi3-win_amd64.whl (2.4 MB)
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----- 0.6/2.4 MB 13.1 MB/s eta 0:00:01
----- 1.8/2.4 MB 22.8 MB/s eta 0:00:01
----- 2.4/2.4 MB 19.3 MB/s eta 0:00:01
----- 2.4/2.4 MB 15.5 MB/s eta 0:00:00
Downloading triad-0.9.8-py3-none-any.whl (62 kB)
----- 0.0/62.3 kB ? eta -:-:-
----- 62.3/62.3 kB 3.5 MB/s eta 0:00:00
Downloading typer-0.16.0-py3-none-any.whl (46 kB)
----- 0.0/46.3 kB ? eta -:-:-
----- 46.3/46.3 kB 2.4 MB/s eta 0:00:00
Downloading typing_extensions-4.14.0-py3-none-any.whl (43 kB)
----- 0.0/43.8 kB ? eta -:-:-
----- 43.8/43.8 kB ? eta 0:00:00
Downloading virtualenv-20.31.2-py3-none-any.whl (6.1 MB)
----- 0.0/6.1 MB ? eta -:-:-
----- 1.0/6.1 MB 20.7 MB/s eta 0:00:01
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----- 6.1/6.1 MB 22.7 MB/s eta 0:00:01
----- 6.1/6.1 MB 20.4 MB/s eta 0:00:00
Downloading wasabi-1.1.3-py3-none-any.whl (27 kB)
Downloading weasel-0.4.1-py3-none-any.whl (50 kB)
----- 0.0/50.3 kB ? eta -:-:-
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Downloading aiohttp_cors-0.8.1-py3-none-any.whl (25 kB)
Downloading colorful-0.5.6-py2.py3-none-any.whl (201 kB)
----- 0.0/201.4 kB ? eta -:-:-
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Downloading model_index-0.1.11-py3-none-any.whl (34 kB)
Downloading opencensus-0.11.4-py2.py3-none-any.whl (128 kB)
----- 0.0/128.2 kB ? eta -:-:-
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Downloading opendatalab-0.0.10-py3-none-any.whl (29 kB)
Downloading optuna-4.3.0-py3-none-any.whl (386 kB)
----- 0.0/386.6 kB ? eta -:-:-
----- 386.6/386.6 kB 23.5 MB/s eta 0:00:00
Downloading plum_dispatch-2.5.7-py3-none-any.whl (42 kB)
----- 0.0/42.6 kB ? eta -:-:-
----- 42.6/42.6 kB 2.0 MB/s eta 0:00:00
Downloading py4j-0.10.9.9-py2.py3-none-any.whl (203 kB)
----- 0.0/203.0 kB ? eta -:-:-
----- 203.0/203.0 kB 12.0 MB/s eta 0:00:00
Downloading window_ops-0.0.15-py3-none-any.whl (15 kB)
Downloading xxhash-3.5.0-cp311-cp311-win_amd64.whl (30 kB)
Downloading alembic-1.16.1-py3-none-any.whl (242 kB)
----- 0.0/242.5 kB ? eta -:-:-
----- 242.5/242.5 kB 15.5 MB/s eta 0:00:00
Downloading beartype-0.21.0-py3-none-any.whl (1.2 MB)
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----- 0.9/1.2 MB 58.2 MB/s eta 0:00:01
----- 1.2/1.2 MB 18.7 MB/s eta 0:00:00
Downloading blis-1.2.1-cp311-cp311-win_amd64.whl (6.2 MB)
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----- 0.7/6.2 MB 20.8 MB/s eta 0:00:01
```

```
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----- 2.7/6.2 MB 14.4 MB/s eta 0:00:01
----- 3.2/6.2 MB 13.6 MB/s eta 0:00:01
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----- 4.8/6.2 MB 14.6 MB/s eta 0:00:01
----- 5.6/6.2 MB 14.2 MB/s eta 0:00:01
----- 6.2/6.2 MB 14.2 MB/s eta 0:00:01
----- 6.2/6.2 MB 13.3 MB/s eta 0:00:00
Downloading cloudpathlib-0.21.1-py3-none-any.whl (52 kB)
----- 0.0/52.8 kB ? eta -:-:-
----- 52.8/52.8 kB 2.7 MB/s eta 0:00:00
Downloading confection-0.1.5-py3-none-any.whl (35 kB)
Downloading distlib-0.3.9-py2.py3-none-any.whl (468 kB)
----- 0.0/469.0 kB ? eta -:-:-
----- 469.0/469.0 kB 14.3 MB/s eta 0:00:00
Downloading google_api_core-2.25.0-py3-none-any.whl (160 kB)
----- 0.0/160.7 kB ? eta -:-:-
----- 160.7/160.7 kB ? eta 0:00:00
Downloading language_data-1.3.0-py3-none-any.whl (5.4 MB)
----- 0.0/5.4 MB ? eta -:-:-
----- 1.1/5.4 MB 35.3 MB/s eta 0:00:01
----- 2.1/5.4 MB 32.8 MB/s eta 0:00:01
----- 2.9/5.4 MB 20.3 MB/s eta 0:00:01
----- 4.3/5.4 MB 23.0 MB/s eta 0:00:01
----- 4.6/5.4 MB 20.9 MB/s eta 0:00:01
----- 5.2/5.4 MB 19.6 MB/s eta 0:00:01
----- 5.4/5.4 MB 18.1 MB/s eta 0:00:01
----- 5.4/5.4 MB 16.4 MB/s eta 0:00:00
Downloading opencensus_context-0.1.3-py2.py3-none-any.whl (5.1 kB)
Downloading shellingham-1.5.4-py2.py3-none-any.whl (9.8 kB)
Downloading colorlog-6.9.0-py3-none-any.whl (11 kB)
Downloading fs-2.4.16-py2.py3-none-any.whl (135 kB)
----- 0.0/135.3 kB ? eta -:-:-
----- 135.3/135.3 kB ? eta 0:00:00
Downloading openxlab-0.0.11-py3-none-any.whl (55 kB)
----- 0.0/55.3 kB ? eta -:-:-
----- 55.3/55.3 kB ? eta 0:00:00
Downloading ordered_set-4.1.0-py3-none-any.whl (7.6 kB)
Downloading pycryptodome-3.23.0-cp37-abi3-win_amd64.whl (1.8 MB)
----- 0.0/1.8 MB ? eta -:-:-
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----- 1.8/1.8 MB 37.9 MB/s eta 0:00:01
----- 1.8/1.8 MB 19.2 MB/s eta 0:00:00
Downloading google_auth-2.40.3-py2.py3-none-any.whl (216 kB)
----- 0.0/216.1 kB ? eta -:-:-
----- 216.1/216.1 kB 13.7 MB/s eta 0:00:00
Downloading googleapis_common_protos-1.70.0-py3-none-any.whl (294 kB)
----- 0.0/294.5 kB ? eta -:-:-
----- 294.5/294.5 kB ? eta 0:00:00
Downloading marisa_trie-1.2.1-cp311-cp311-win_amd64.whl (152 kB)
----- 0.0/152.0 kB ? eta -:-:-
----- 152.0/152.0 kB 9.5 MB/s eta 0:00:00
Downloading proto_plus-1.26.1-py3-none-any.whl (50 kB)
----- 0.0/50.2 kB ? eta -:-:-
----- 50.2/50.2 kB 2.5 MB/s eta 0:00:00
Downloading mako-1.3.10-py3-none-any.whl (78 kB)
----- 0.0/78.5 kB ? eta -:-:-
----- 78.5/78.5 kB 4.3 MB/s eta 0:00:00
Downloading rsa-4.9.1-py3-none-any.whl (34 kB)
```

```
Building wheels for collected packages: nvidia-ml-py3, antlr4-python3-runtime, seqeval
  Building wheel for nvidia-ml-py3 (setup.py): started
  Building wheel for nvidia-ml-py3 (setup.py): finished with status 'done'
  Created wheel for nvidia-ml-py3: filename=nvidia_ml_py3-7.352.0-py3-none-any.whl size=19181 sha256=1e802ef5aab13f96b8265969a2a24d5a9ea08ccfb1eabfe08fca447191b99d4e
  Stored in directory: c:\users\준서\appdata\local\pip\cache\wheels\47\50\9e\29dc79037d74c3c1bb4a8661fb608e8674b7e4260d6a3f8f51
  Building wheel for antlr4-python3-runtime (setup.py): started
  Building wheel for antlr4-python3-runtime (setup.py): finished with status 'done'
  Created wheel for antlr4-python3-runtime: filename=antlr4_python3_runtime-4.9.3-py3-none-any.whl size=144578 sha256=7d273a35a579bd95cd8af991ac7d841f808fe7cdcaaf e008bd0a25c5c391453a
  Stored in directory: c:\users\준서\appdata\local\pip\cache\wheels\1a\97\32\461f837398029ad76911109f07047fde1d7b661a147c7c56d1
  Building wheel for seqeval (setup.py): started
  Building wheel for seqeval (setup.py): finished with status 'done'
  Created wheel for seqeval: filename=seqeval-1.2.2-py3-none-any.whl size=16185 sha256=067532ba36e09f892cf5fdca165a332e841e444a55212bb29418c6f9f64a8df8
  Stored in directory: c:\users\준서\appdata\local\pip\cache\wheels\bc\92\f0\243288f899c2eacd8a8c5f9aede4c71a9bad0ee26a01dc5ead
Successfully built nvidia-ml-py3 antlr4-python3-runtime seqeval
Installing collected packages: sentencepiece, py4j, py-spy, opencensus-context, nvidia-ml-py3, distlib, cymem, antlr4-python3-runtime, xxhash, wasabi, virtualenv, typing-extensions, tqdm, threadpoolctl, tensorboardX, tensorboard-data-server, sympy, spacy-loggers, spacy-legacy, shellingham, safetensors, rsa, requests, pytessearact, pycryptodome, pyarrow, proto-plus, pdf2image, orjson, ordered-set, openxla, omegaconf, murmurhash, marisa-trie, Mako, grpcio, googleapis-common-protos, fs, fastprogress, fastcore, einops, dill, coreforecast, colorlog, colorful, cloudpathlib, catalogue, bliss, beartype, absl-py, window-ops, torch, tensorboard, srsl, scikit-learn, preshed, multiprocess, model-index, lightning-utilities, language-data, hyperopt, huggingface-hub, google-auth, fastdownload, botocore, utilsforecast, typer, triad, torchvision, torchmetrics, tokenizers, seqeval, s3transfer, pytorch-metric-learning, plum-dispatch, opendatalab, langcodes, google-api-core, gluonts, gdown, confection, alembic, aiohttp_cors, accelerate, weasel, transformers, timm, thinc, ray, pytorch-lightning, optuna, openmim, opencensus, nlpaug, fasttransform, datasets, boto3, adagio, spacy, mlforecast, lightning, fugue, evaluate, autogluon.common, statsforecast, fastai, autogluon.features, autogluon.core, autogluon.tabular, autogluon.multimodal, autogluon.timeseries, autogluon

Attempting uninstall: typing-extensions
  Found existing installation: typing_extensions 4.9.0
  Uninstalling typing_extensions-4.9.0:
    Successfully uninstalled typing_extensions-4.9.0
Attempting uninstall: tqdm
  Found existing installation: tqdm 4.65.0
  Uninstalling tqdm-4.65.0:
    Successfully uninstalled tqdm-4.65.0
Attempting uninstall: threadpoolctl
  Found existing installation: threadpoolctl 3.6.0
  Uninstalling threadpoolctl-3.6.0:
    Successfully uninstalled threadpoolctl-3.6.0
Attempting uninstall: sympy
  Found existing installation: sympy 1.12
  Uninstalling sympy-1.12:
    Successfully uninstalled sympy-1.12
Attempting uninstall: requests
  Found existing installation: requests 2.31.0
  Uninstalling requests-2.31.0:
```

```
Successfully uninstalled requests-2.31.0
Attempting uninstall: pyarrow
  Found existing installation: pyarrow 14.0.2
Uninstalling pyarrow-14.0.2:
  Successfully uninstalled pyarrow-14.0.2
Attempting uninstall: dill
  Found existing installation: dill 0.3.7
Uninstalling dill-0.3.7:
  Successfully uninstalled dill-0.3.7
Attempting uninstall: scikit-learn
  Found existing installation: scikit-learn 1.6.1
Uninstalling scikit-learn-1.6.1:
  Successfully uninstalled scikit-learn-1.6.1
Attempting uninstall: botocore
  Found existing installation: botocore 1.38.32
Uninstalling botocore-1.38.32:
  Successfully uninstalled botocore-1.38.32
Successfully installed Mako-1.3.10 absl-py-2.3.0 accelerate-1.7.0 adagio-0.2.6 ai
ohttp_cors-0.8.1 alembic-1.16.1 antlr4-python3-runtime-4.9.3 autogluon-1.3.1 auto
gluon.common-1.3.1 autogluon.core-1.3.1 autogluon.features-1.3.1 autogluon.multim
odal-1.3.1 autogluon.tabular-1.3.1 autogluon.timeseries-1.3.1 beartype-0.21.0 bli
s-1.2.1 boto3-1.38.32 botocore-1.38.32 catalogue-2.0.10 cloudpathlib-0.21.1 color
ful-0.5.6 colorlog-6.9.0 confection-0.1.5 coreforecast-0.0.15 cymem-2.0.11 datase
ts-3.6.0 dill-0.3.8 distlib-0.3.9 einops-0.8.1 evaluate-0.4.3 fastai-2.8.2 fastco
re-1.8.2 fastdownload-0.0.7 fastprogress-1.0.3 fasttransform-0.0.2 fs-2.4.16 fugu
e-0.9.1 gdown-5.2.0 gluonts-0.16.1 google-api-core-2.25.0 google-auth-2.40.3 goog
leapis-common-protos-1.70.0 grpcio-1.73.0 huggingface-hub-0.32.4 hyperopt-0.2.7 1
angcodes-3.5.0 language-data-1.3.0 lightning-2.5.1.post0 lightning-utilities-0.1
4.3 marisa-trie-1.2.1 mlforecast-0.13.6 model-index-0.1.11 multiprocess-0.70.16 m
urmurhash-1.0.13 nlpaug-1.1.11 nvidia-ml-py3-7.352.0 omegaconf-2.3.0 opencensus-
0.11.4 opencensus-context-0.1.3 opendatalab-0.0.10 openmim-0.3.9 openxlab-0.0.11
optuna-4.3.0 ordered-set-4.1.0 orjson-3.10.18 pdf2image-1.17.0 plum-dispatch-2.5.
7 preshed-3.0.10 proto-plus-1.26.1 py-spy-0.4.0 py4j-0.10.9.9 pyarrow-20.0.0 pycr
yptodome-3.23.0 pytesseract-0.3.13 pytorch-lightning-2.5.1.post0 pytorch-metric-l
earning-2.8.1 ray-2.44.1 requests-2.32.3 rsa-4.9.1 s3transfer-0.13.0 safetensors-
0.5.3 scikit-learn-1.6.1 sentencepiece-0.2.0 seqeval-1.2.2 shellingham-1.5.4 spac
y-3.8.7 spacy-legacy-3.0.12 spacy-loggers-1.0.5 srsly-2.5.1 statsforecast-2.0.1 s
ympy-1.13.1 tensorboard-2.19.0 tensorboard-data-server-0.7.2 tensorboardX-2.6.2.2
thinc-8.3.4 threadpoolctl-3.6.0 timm-1.0.3 tokenizers-0.21.1 torch-2.6.0 torchmet
rics-1.7.2 torchvision-0.21.0 tqdm-4.67.1 transformers-4.49.0 triad-0.9.8 typer-
0.16.0 typing-extensions-4.14.0 utilsforecast-0.2.10 virtualenv-20.31.2 wasabi-1.
1.3 weasel-0.4.1 window-ops-0.0.15 xxhash-3.5.0
```

```

WARNING: Skipping C:\anacon\Lib\site-packages\~cikit_learn-1.2.2.dist-info due to
invalid metadata entry 'name'
ERROR: pip's dependency resolver does not currently take into account all the pac
kages that are installed. This behaviour is the source of the following dependenc
y conflicts.
    conda-repo-cli 1.0.75 requires requests_mock, which is not installed.
    aiobotocore 2.7.0 requires botocore<1.31.65,>=1.31.16, but you have botocore 1.3
    8.32 which is incompatible.
    conda-repo-cli 1.0.75 requires clyent==1.2.1, but you have clyent 1.2.2 which is
    incompatible.
    conda-repo-cli 1.0.75 requires requests==2.31.0, but you have requests 2.32.3 whi
    ch is incompatible.
        -1.2857 = Validation score (-root_mean_squared_error)
        289.06s = Training runtime
        0.01s = Validation runtime
Fitting model: ExtraTreesMSE ...
    -1.9188 = Validation score (-root_mean_squared_error)
    2.99s = Training runtime
    0.27s = Validation runtime
Fitting model: NeuralNetFastAI ...
    Warning: Exception caused NeuralNetFastAI to fail during training (Import
Error)... Skipping this model.
        cannot import name 'TypeIs' from 'typing_extensions' (C:\anacon\L
ib\site-packages\typing_extensions.py)
Fitting model: XGBoost ...
    -1.6097 = Validation score (-root_mean_squared_error)
    4.85s = Training runtime
    0.01s = Validation runtime
Fitting model: NeuralNetTorch ...
    Warning: Exception caused NeuralNetTorch to fail during training (ImportE
rror)... Skipping this model.
        Unable to import dependency torch
A quick tip is to install via `pip install torch`.
The minimum torch version is currently 2.2.
Fitting model: LightGBMLarge ...
[1000] valid_set's rmse: 1.81557
[2000] valid_set's rmse: 1.81246
        -1.8124 = Validation score (-root_mean_squared_error)
        45.06s = Training runtime
        0.05s = Validation runtime
Fitting model: WeightedEnsemble_L2 ...
    Ensemble Weights: {'CatBoost': 1.0}
    -1.2857 = Validation score (-root_mean_squared_error)
    0.07s = Training runtime
    0.0s = Validation runtime
AutoGluon training complete, total runtime = 445.9s ... Best model: WeightedEnsem
ble_L2 | Estimated inference throughput: 19767.5 rows/s (226 batch size)
TabularPredictor saved. To load, use: predictor = TabularPredictor.load("C:\Users
\준서\Desktop\Jun\3-2\데파프\A5\AutogluonModels\ag-20250609_163129")
{'root_mean_squared_error': -1.383786388410564, 'mean_squared_error': -1.91486476
87503517, 'mean_absolute_error': -0.9338936006261946, 'r2': 0.9598437399593697,
'pearsonr': 0.9798736877423885, 'median_absolute_error': -0.6110858764648412}

```

In [18]: `predictor.leaderboard(test_data, silent=True)`

Out[18]:

	model	score_test	score_val	eval_metric	pred_time_test
0	CatBoost	-1.383786	-1.285719	root_mean_squared_error	0.100339
1	WeightedEnsemble_L2	-1.383786	-1.285719	root_mean_squared_error	0.117714
2	LightGBM	-1.681652	-1.602918	root_mean_squared_error	0.460787
3	XGBoost	-1.770830	-1.609658	root_mean_squared_error	0.291502
4	LightGBMLarge	-1.826052	-1.812415	root_mean_squared_error	0.567327
5	LightGBMXT	-1.831408	-1.619263	root_mean_squared_error	1.184950
6	ExtraTreesMSE	-1.896022	-1.918812	root_mean_squared_error	0.268137
7	RandomForestMSE	-1.996238	-2.007346	root_mean_squared_error	0.304966
8	KNeighborsUnif	-6.151130	-5.864178	root_mean_squared_error	0.047666
9	KNeighborsDist	-6.511095	-6.349304	root_mean_squared_error	0.033918



In [4]:

```
from autogluon.tabular import TabularPredictor

# 예: predictor가 저장된 경로가 "AutogluonModels/ag-20240613_123456"
predictor = TabularPredictor.load("AutogluonModels/ag-20250609_163129")
```

In [6]:

```
predictor.leaderboard(silent=True)
```

Out[6]:

	model	score_val	eval_metric	pred_time_val	fit_time
0	WeightedEnsemble_L2	-1.285719	root_mean_squared_error	0.011433	289.125550
1	CatBoost	-1.285719	root_mean_squared_error	0.011433	289.056157
2	LightGBM	-1.602918	root_mean_squared_error	0.091124	29.437424
3	XGBoost	-1.609658	root_mean_squared_error	0.011881	4.850249
4	LightGBMXT	-1.619263	root_mean_squared_error	0.195550	62.883052
5	LightGBMLarge	-1.812415	root_mean_squared_error	0.047870	45.063404
6	ExtraTreesMSE	-1.918812	root_mean_squared_error	0.273062	2.991720
7	RandomForestMSE	-2.007346	root_mean_squared_error	0.158216	2.611996
8	KNeighborsUnif	-5.864178	root_mean_squared_error	0.045999	0.019792
9	KNeighborsDist	-6.349304	root_mean_squared_error	0.034532	0.007371



In [32]:

```
model_names = ['KNeighborsUnif', 'RandomForestMSE']

for model_name in model_names:
    model_obj = predictor._trainer.load_model(model_name)

    print(f"Model: {model_name}")
    print(model_obj.model.get_params())
```

```
Model: KNeighborsUnif
{'algorithm': 'auto', 'leaf_size': 30, 'metric': 'minkowski', 'metric_params': None, 'n_jobs': 12, 'n_neighbors': 5, 'p': 2, 'weights': 'uniform'}
Model: RandomForestMSE
{'bootstrap': True, 'ccp_alpha': 0.0, 'criterion': 'squared_error', 'max_depth': None, 'max_features': 1.0, 'max_leaf_nodes': 15000, 'max_samples': None, 'min_impurity_decrease': 0.0, 'min_samples_leaf': 1, 'min_samples_split': 2, 'min_weight_fraction_leaf': 0.0, 'monotonic_cst': None, 'n_estimators': 300, 'n_jobs': -1, 'oob_score': False, 'random_state': 0, 'verbose': 0, 'warm_start': False}
```

In [3]:

```
from ucimlrepo import fetch_ucirepo
import pandas as pd

# fetch dataset
airfoil_self_noise = fetch_ucirepo(id=291)

# data (as pandas dataframes)
X = airfoil_self_noise.data.features
y = airfoil_self_noise.data.targets

airfoil = pd.concat([X,y], axis=1)

airfoil
```

Out[3]:

	frequency	attack-angle	chord-length	free-stream-velocity	suction-side-displacement-thickness	scaled-sound-pressure
0	800	0.0	0.3048	71.3	0.002663	126.201
1	1000	0.0	0.3048	71.3	0.002663	125.201
2	1250	0.0	0.3048	71.3	0.002663	125.951
3	1600	0.0	0.3048	71.3	0.002663	127.591
4	2000	0.0	0.3048	71.3	0.002663	127.461
...
1498	2500	15.6	0.1016	39.6	0.052849	110.264
1499	3150	15.6	0.1016	39.6	0.052849	109.254
1500	4000	15.6	0.1016	39.6	0.052849	106.604
1501	5000	15.6	0.1016	39.6	0.052849	106.224
1502	6300	15.6	0.1016	39.6	0.052849	104.204

1503 rows × 6 columns

In [13]:

```
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler, MinMaxScaler
from sklearn.pipeline import Pipeline
from sklearn.model_selection import KFold, GridSearchCV
from sklearn.metrics import mean_squared_error, make_scorer
from sklearn.neural_network import MLPRegressor
from sklearn.ensemble import RandomForestRegressor
from sklearn.neighbors import KNeighborsRegressor
```

```
X_train_val, X_test, y_train_val, y_test = train_test_split(X, y, random_state=4)

In [15]: pipe = Pipeline([('preprocessing', None), ('regressor', RandomForestRegressor())])

# 하이퍼파라미터 그리드 정의
hyperparam_grid = [
    # MLPRegressor
    {
        'regressor': [MLPRegressor()],
        'preprocessing': [StandardScaler(), MinMaxScaler()],
        'regressor__hidden_layer_sizes': [(50,), (100,), (100, 50)],
        'regressor__learning_rate_init': [0.001, 0.01, 0.1]
    },
    # RandomForestRegressor
    {
        'regressor': [RandomForestRegressor()],
        'preprocessing': [None], # 트리 기반이므로 스케일링 불필요
        'regressor__n_estimators': [100, 300, 500],
        'regressor__max_depth': [None, 10, 30]
    },
    # KNeighborsRegressor
    {
        'regressor': [KNeighborsRegressor()],
        'preprocessing': [StandardScaler(), MinMaxScaler()],
        'regressor__n_neighbors': [3, 5, 7],
        'regressor__metric': ['minkowski'],
        'regressor__p': [1, 2]
    },
]
```

```
#Grid Search
kfold = KFold(n_splits=5, shuffle = True, random_state=42)
grid = GridSearchCV(pipe, hyperparam_grid, scoring = 'neg_root_mean_squared_error')

grid.fit(X_train_val,y_train_val)
best_model = grid.best_estimator_
best_params = grid.best_params_

#최적 모델 정보 출력
print("Best Model:", grid.best_estimator_)
print("Best param:", grid.best_params_)
print("Best performance:", grid.best_score_)

#테스트셋 예측 및 RMSE 계산
y_test_pred = grid.predict(X_test)
test_rmse = np.sqrt(mean_squared_error(y_test, y_test_pred))

print(f"\n Test Set RMSE: {test_rmse:.4f}")
```

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Best Model: Pipeline(steps=[('preprocessing', None),
                            ('regressor',
                             RandomForestRegressor(max_depth=30, n_estimators=500))])
Best param: {'preprocessing': None, 'regressor': RandomForestRegressor(), 'regressor__max_depth': 30, 'regressor__n_estimators': 500}
Best performance: -1.9659778137035793
```

```
Test Set RMSE: 1.8115
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In [ ]:
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