

```
In [ ]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [ ]: diabet_df = pd.read_csv('diabetes.csv')
```

```
In [ ]: diabet_df.isna().sum()
```

```
Out[ ]: Pregnancies      0
Glucose      0
BloodPressure 0
SkinThickness 0
Insulin      0
BMI          0
DiabetesPedigreeFunction 0
Age          0
Outcome      0
dtype: int64
```

```
In [ ]: diabet_df.head()
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

```
In [ ]: diabet_df.tail()
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
763	10	101	76	48	180	32.9	0.171	63	0
764	2	122	70	27	0	36.8	0.340	27	0
765	5	121	72	23	112	26.2	0.245	30	0
766	1	126	60	0	0	30.1	0.349	47	1
767	1	93	70	31	0	30.4	0.315	23	0

```
In [ ]: diabet_df.describe()
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
count	768.000000	768.000000	768.000000	768.000000	768.000000	768.000000	768.000000	768.000000	768.000000
mean	3.845052	120.894531	69.105469	20.536458	79.799479	31.992578	0.471876	33.240885	0.348958
std	3.369578	31.972618	19.355807	15.952218	115.244002	7.884160	0.331329	11.760232	0.476951
min	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.078000	21.000000	0.000000
25%	1.000000	99.000000	62.000000	0.000000	0.000000	27.300000	0.243750	24.000000	0.000000
50%	3.000000	117.000000	72.000000	23.000000	30.500000	32.000000	0.372500	29.000000	0.000000
75%	6.000000	140.250000	80.000000	32.000000	127.250000	36.600000	0.626250	41.000000	1.000000
max	17.000000	199.000000	122.000000	99.000000	846.000000	67.100000	2.420000	81.000000	1.000000

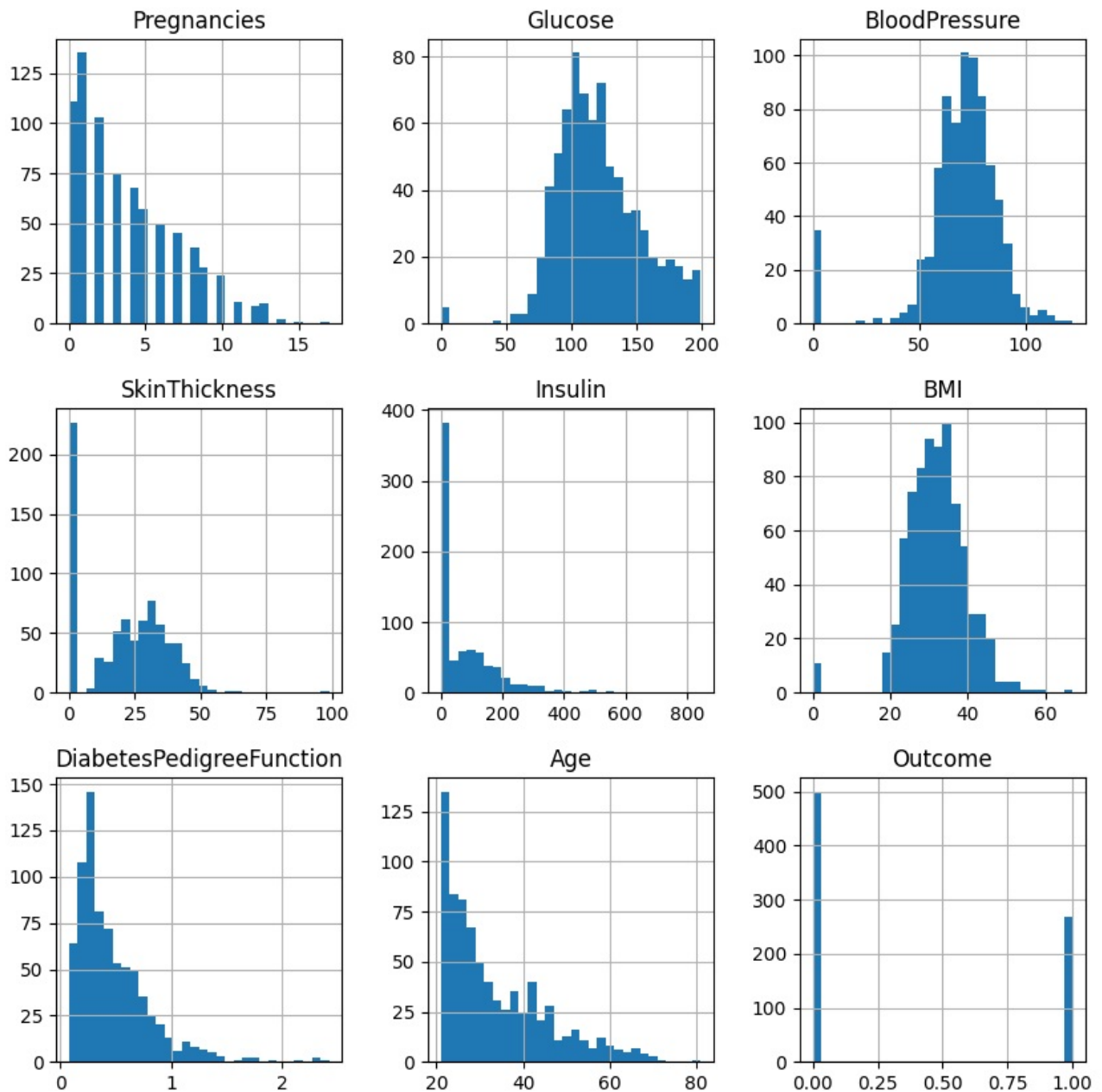
```
In [ ]: df_age = diabet_df.groupby('Age').mean()
df_age
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Outcome
Age								
21	1.079365	108.317460	65.936508	19.349206	73.634921	27.817460	0.433825	0.079365
22	1.555556	108.208333	63.722222	20.486111	74.486111	29.509722	0.430625	0.152778
23	1.578947	111.578947	64.315789	22.368421	118.026316	31.502632	0.438579	0.184211
24	1.891304	117.891304	64.956522	25.934783	88.021739	32.569565	0.393565	0.173913
25	1.770833	110.083333	59.666667	23.958333	82.895833	31.943750	0.600500	0.291667
26	1.969697	118.212121	64.181818	23.666667	90.878788	34.915152	0.413455	0.242424
27	2.562500	115.281250	73.500000	18.375000	63.125000	31.950000	0.471750	0.250000
28	3.028571	119.914286	68.314286	23.628571	94.600000	33.642857	0.459629	0.285714
29	3.210526	127.272727	68.244444	24.000000	88.702400	32.544270	0.408889	0.444444

29	3.310345	127.379310	68.241379	21.000000	88.793103	33.541379	0.408897	0.448270
30	3.619048	122.285714	64.857143	18.904762	82.666667	30.033333	0.367238	0.285714
31	3.875000	126.958333	64.375000	20.000000	111.166667	34.016667	0.589583	0.541667
32	4.437500	116.312500	70.062500	18.187500	35.812500	32.318750	0.613250	0.562500
33	4.058824	122.882353	65.647059	21.705882	85.588235	32.335294	0.734176	0.588235
34	5.857143	131.857143	74.000000	18.714286	148.071429	31.164286	0.649857	0.285714
35	5.000000	121.400000	75.600000	22.600000	75.000000	33.780000	0.454000	0.500000
36	5.187500	132.437500	69.125000	19.187500	65.812500	31.718750	0.472875	0.625000
37	5.263158	130.157895	75.947368	18.315789	59.263158	32.078947	0.414632	0.315789
38	6.875000	121.125000	71.125000	19.625000	33.500000	35.568750	0.413938	0.625000
39	7.416667	126.750000	72.666667	26.083333	72.416667	31.983333	0.605917	0.250000
40	6.230769	130.923077	69.230769	24.230769	72.307692	33.538462	0.376077	0.461538
41	6.500000	129.090909	67.590909	17.409091	38.818182	35.259091	0.396273	0.590909
42	6.888889	109.555556	73.388889	19.222222	61.277778	34.983333	0.388000	0.388889
43	7.769231	133.000000	78.461538	27.846154	125.153846	36.892308	0.450846	0.846154
44	7.250000	124.375000	61.750000	4.625000	32.250000	34.162500	0.668375	0.625000
45	7.333333	131.200000	83.066667	20.600000	31.133333	34.960000	0.496467	0.533333
46	6.384615	105.923077	76.000000	24.153846	112.307692	34.523077	0.426846	0.538462
47	8.333333	137.000000	78.333333	14.500000	49.166667	34.566667	0.355333	0.666667
48	8.800000	107.600000	78.400000	23.400000	52.000000	29.980000	0.456800	0.200000
49	7.600000	153.000000	81.400000	21.600000	55.200000	32.020000	0.612000	0.600000
50	6.750000	138.250000	78.250000	16.000000	26.375000	31.225000	0.470125	0.625000
51	8.625000	147.625000	84.500000	21.875000	129.375000	33.975000	0.615250	0.625000
52	4.625000	133.000000	81.500000	13.375000	94.500000	33.475000	0.505375	0.875000
53	5.400000	158.000000	79.000000	21.200000	183.000000	30.500000	0.550600	0.800000
54	7.000000	140.333333	89.333333	8.833333	61.000000	30.800000	0.465500	0.666667
55	5.500000	140.750000	70.250000	16.250000	83.750000	27.025000	0.226500	0.250000
56	8.000000	98.333333	76.333333	32.333333	69.000000	31.700000	0.936667	0.666667
57	8.800000	137.800000	76.800000	9.600000	78.000000	29.700000	0.704000	0.200000
58	7.142857	135.142857	78.285714	19.285714	167.857143	32.428571	0.554714	0.428571
59	2.333333	173.333333	74.000000	16.666667	282.000000	26.966667	0.252667	0.666667
60	6.000000	146.400000	80.000000	20.000000	164.200000	28.740000	0.436800	0.400000
61	5.500000	144.000000	76.000000	16.500000	95.000000	30.000000	0.613000	0.500000
62	3.750000	139.500000	71.500000	29.000000	0.000000	28.950000	0.565500	0.500000
63	5.500000	133.250000	78.000000	23.500000	45.000000	30.775000	0.249250	0.000000
64	8.000000	120.000000	78.000000	0.000000	0.000000	25.000000	0.409000	0.000000
65	3.333333	137.000000	78.666667	12.333333	0.000000	31.600000	0.259000	0.000000
66	5.000000	157.000000	86.000000	0.000000	0.000000	30.375000	0.408500	0.500000
67	4.000000	132.333333	72.666667	0.000000	0.000000	28.766667	0.602000	0.333333
68	8.000000	91.000000	82.000000	0.000000	0.000000	35.600000	0.587000	0.000000
69	5.000000	134.000000	81.000000	0.000000	0.000000	13.400000	0.413000	0.000000
70	4.000000	145.000000	82.000000	18.000000	0.000000	32.500000	0.235000	1.000000
72	2.000000	119.000000	0.000000	0.000000	0.000000	19.600000	0.832000	0.000000
81	9.000000	134.000000	74.000000	33.000000	60.000000	25.900000	0.460000	0.000000

```
In [ ]: diabet_df.hist(figsize=(10,10), bins = 30)
```

```
Out[ ]: array([[<Axes: title={'center': 'Pregnancies'}>,
      <Axes: title={'center': 'Glucose'}>,
      <Axes: title={'center': 'BloodPressure'}>],
      [<Axes: title={'center': 'SkinThickness'}>,
      <Axes: title={'center': 'Insulin'}>,
      <Axes: title={'center': 'BMI'}>],
      [<Axes: title={'center': 'DiabetesPedigreeFunction'}>,
      <Axes: title={'center': 'Age'}>,
      <Axes: title={'center': 'Outcome'}>]], dtype=object)
```



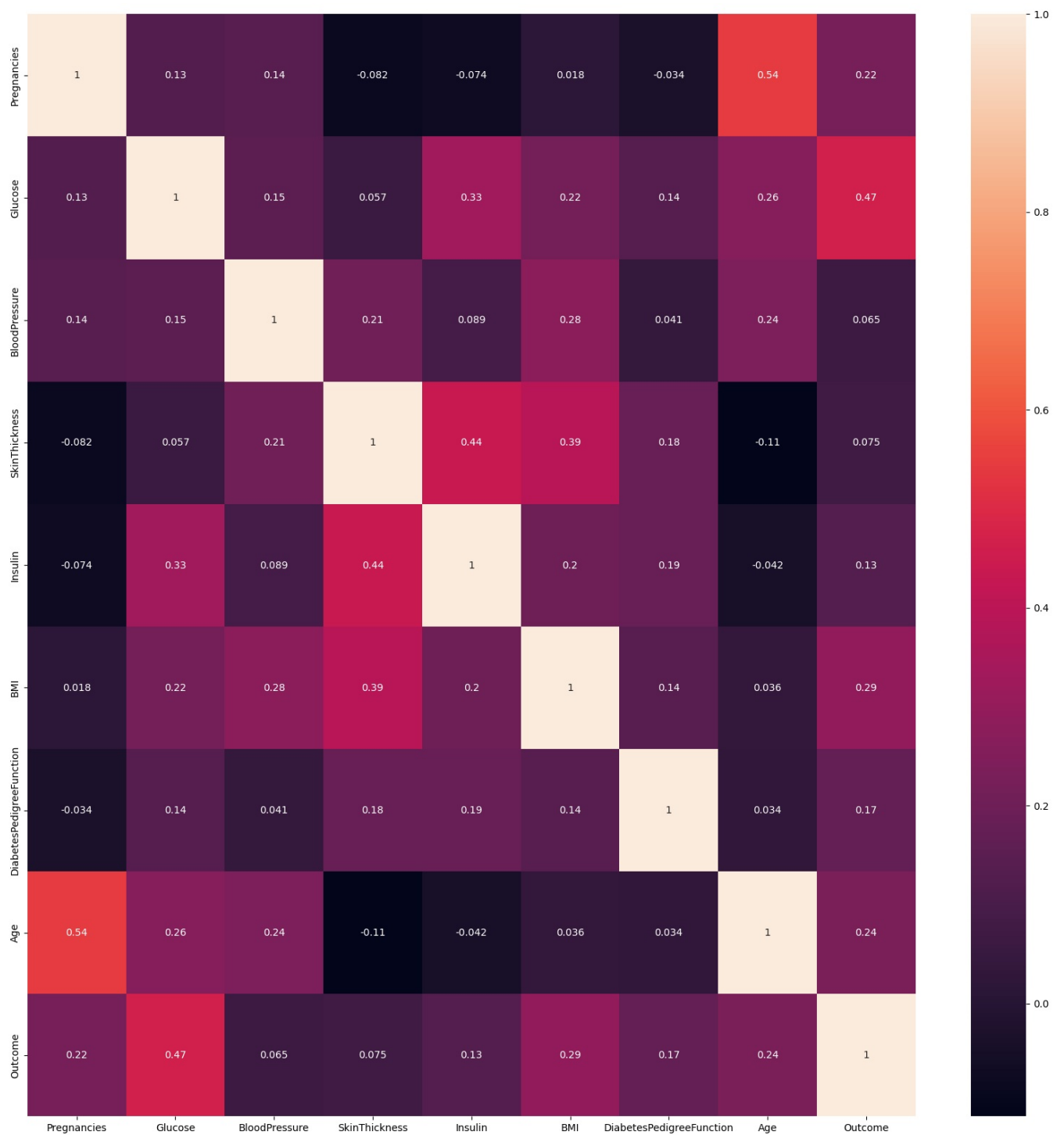
```
In [ ]: diabet_df.corr()
```

```
Out[ ]:
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
Pregnancies	1.000000	0.129459	0.141282	-0.081672	-0.073535	0.017683	-0.033523	0.544341	0.
Glucose	0.129459	1.000000	0.152590	0.057328	0.331357	0.221071	0.137337	0.263514	0.
BloodPressure	0.141282	0.152590	1.000000	0.207371	0.088933	0.281805	0.041265	0.239528	0.
SkinThickness	-0.081672	0.057328	0.207371	1.000000	0.436783	0.392573	0.183928	-0.113970	0.
Insulin	-0.073535	0.331357	0.088933	0.436783	1.000000	0.197859	0.185071	-0.042163	0.
BMI	0.017683	0.221071	0.281805	0.392573	0.197859	1.000000	0.140647	0.036242	0.
DiabetesPedigreeFunction	-0.033523	0.137337	0.041265	0.183928	0.185071	0.140647	1.000000	0.033561	0.
Age	0.544341	0.263514	0.239528	-0.113970	-0.042163	0.036242	0.033561	1.000000	0.
Outcome	0.221898	0.466581	0.065068	0.074752	0.130548	0.292695	0.173844	0.238356	1.

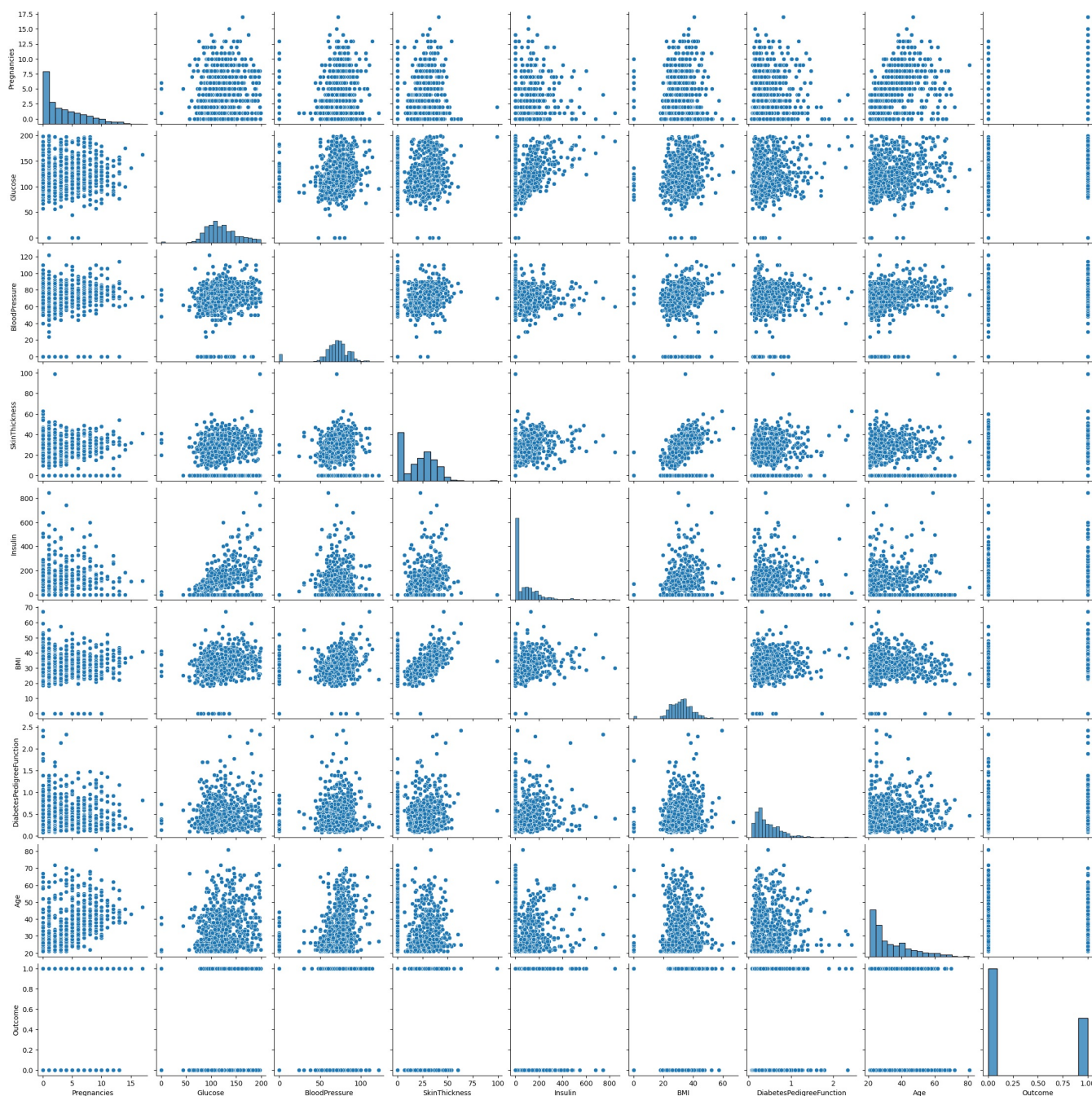
```
In [ ]: plt.figure(figsize=(20,20))
sns.heatmap(diabet_df.corr(), annot = True)
```

```
Out[ ]: <Axes: >
```



```
In [ ]: sns.pairplot(diabet_df)
```

```
Out[ ]: <seaborn.axisgrid.PairGrid at 0x784982124e50>
```



```
In [ ]: diabet_df.info()
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 9 columns):
#   Column                Non-Null Count  Dtype
---  -
0   Pregnancies            768 non-null   int64
1   Glucose                768 non-null   int64
2   BloodPressure          768 non-null   int64
3   SkinThickness          768 non-null   int64
4   Insulin                768 non-null   int64
5   BMI                   768 non-null   float64
6   DiabetesPedigreeFunction 768 non-null   float64
7   Age                   768 non-null   int64
8   Outcome                768 non-null   int64
dtypes: float64(2), int64(7)
memory usage: 54.1 KB

```

```

In [ ]: from sklearn.model_selection import train_test_split

train_df, test_df = train_test_split(diabet_df, random_state = 0, test_size = 0.2)

```

```

In [ ]: train_df

```

```

Out[ ]:
   Pregnancies  Glucose  BloodPressure  SkinThickness  Insulin   BMI  DiabetesPedigreeFunction  Age  Outcome
603           7      150             78             29     126   35.2                      0.692   54         1
118           4       97             60             23        0   28.2                      0.443   22         0
247           0      165             90             33     680   52.3                      0.427   23         0
157           1      109             56             21     135   25.2                      0.833   23         0
468           8      120              0              0        0   30.0                      0.183   38         1
...          ...      ...             ...             ...     ...    ...                      ...    ...         ...
763          10      101             76             48     180   32.9                      0.171   63         0
192           7      159             66              0        0   30.4                      0.383   36         1
629           4       94             65             22        0   24.7                      0.148   21         0
559          11       85             74              0        0   30.1                      0.300   35         0
684           5      136             82              0        0    0.0                      0.640   69         0

```

614 rows × 9 columns

```

In [ ]: test_df

```

```

Out[ ]:
   Pregnancies  Glucose  BloodPressure  SkinThickness  Insulin   BMI  DiabetesPedigreeFunction  Age  Outcome
661           1      199             76             43        0   42.9                      1.394   22         1
122           2      107             74             30     100   33.6                      0.404   23         0
113           4       76             62              0        0   34.0                      0.391   25         0
14            5      166             72             19     175   25.8                      0.587   51         1
529           0      111             65              0        0   24.6                      0.660   31         0
...          ...      ...             ...             ...     ...    ...                      ...    ...         ...
476           2      105             80             45     191   33.7                      0.711   29         1
482           4       85             58             22        49   27.8                      0.306   28         0
230           4      142             86              0        0   44.0                      0.645   22         1
527           3      116             74             15     105   26.3                      0.107   24         0
380           1      107             72             30        82   30.8                      0.821   24         0

```

154 rows × 9 columns

```

In [ ]: !pip install -U ipykernel

```


Requirement already satisfied: ipykernel in /usr/local/lib/python3.10/dist-packages (6.29.4)
 Requirement already satisfied: comm>=0.1.1 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (0.2.2)
 Requirement already satisfied: debugpy>=1.6.5 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (1.6.6)
 Requirement already satisfied: ipython>=7.23.1 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (7.34.0)
 Requirement already satisfied: jupyter-client>=6.1.12 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (6.1.12)
 Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (5.7.2)
 Requirement already satisfied: matplotlib-inline>=0.1 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (0.1.7)
 Requirement already satisfied: nest-asyncio in /usr/local/lib/python3.10/dist-packages (from ipykernel) (1.6.0)
 Requirement already satisfied: packaging in /usr/local/lib/python3.10/dist-packages (from ipykernel) (24.0)
 Requirement already satisfied: psutil in /usr/local/lib/python3.10/dist-packages (from ipykernel) (5.9.5)
 Requirement already satisfied: pyzmq>=24 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (24.0.1)
 Requirement already satisfied: tornado>=6.1 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (6.3.3)
 Requirement already satisfied: traitlets>=5.4.0 in /usr/local/lib/python3.10/dist-packages (from ipykernel) (5.7.1)
 Requirement already satisfied: setuptools>=18.5 in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (60.2.0)
 Requirement already satisfied: jedi>=0.16 in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (0.19.1)
 Requirement already satisfied: decorator in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (4.4.2)
 Requirement already satisfied: pickleshare in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (0.7.5)
 Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (3.0.43)
 Requirement already satisfied: pygments in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (2.16.1)
 Requirement already satisfied: backcall in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (0.2.0)
 Requirement already satisfied: pexpect>4.3 in /usr/local/lib/python3.10/dist-packages (from ipython>=7.23.1->ipykernel) (4.9.0)
 Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.10/dist-packages (from jupyter-client>=6.1.12->ipykernel) (2.8.2)
 Requirement already satisfied: platformdirs>=2.5 in /usr/local/lib/python3.10/dist-packages (from jupyter-core!=5.0.*,>=4.12->ipykernel) (4.2.1)
 Requirement already satisfied: parso<0.9.0,>=0.8.3 in /usr/local/lib/python3.10/dist-packages (from jedi>=0.16->ipython>=7.23.1->ipykernel) (0.8.4)
 Requirement already satisfied: ptyprocess>=0.5 in /usr/local/lib/python3.10/dist-packages (from pexpect>4.3->ipython>=7.23.1->ipykernel) (0.7.0)
 Requirement already satisfied: wcwidth in /usr/local/lib/python3.10/dist-packages (from prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0->ipython>=7.23.1->ipykernel) (0.2.13)
 Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.1->jupyter-client>=6.1.12->ipykernel) (1.16.0)
 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>

```
In [ ]: !pip install -U pip
!pip install -U setuptools wheel
!pip install -U "mxnet<2.0.0"
!pip install autogluon --no-cache-dir
```

Requirement already satisfied: pip in /usr/local/lib/python3.10/dist-packages (24.0)
 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>
 Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (60.2.0)
 Collecting setuptools
 Using cached setuptools-69.5.1-py3-none-any.whl.metadata (6.2 kB)
 Requirement already satisfied: wheel in /usr/local/lib/python3.10/dist-packages (0.43.0)
 Using cached setuptools-69.5.1-py3-none-any.whl (894 kB)
 Installing collected packages: setuptools
 Attempting uninstall: setuptools
 Found existing installation: setuptools 60.2.0
 Uninstalling setuptools-60.2.0:
 Successfully uninstalled setuptools-60.2.0
 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.
 openxlab 0.0.38 requires setuptools~60.2.0, but you have setuptools 69.5.1 which is incompatible.
 Successfully installed setuptools-69.5.1
 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>
 Requirement already satisfied: mxnet<2.0.0 in /usr/local/lib/python3.10/dist-packages (1.9.1)
 Requirement already satisfied: numpy<2.0.0,>1.16.0 in /usr/local/lib/python3.10/dist-packages (from mxnet<2.0.0) (1.25.2)
 Requirement already satisfied: requests<3,>=2.20.0 in /usr/local/lib/python3.10/dist-packages (from mxnet<2.0.0) (2.28.2)
 Requirement already satisfied: graphviz<0.9.0,>=0.8.1 in /usr/local/lib/python3.10/dist-packages (from mxnet<2.0.0) (0.8.4)
 Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.20.0->mxnet<2.0.0) (3.3.2)
 Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.20.0->mxnet<2.0.0) (3.7)
 Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.20.0->mxnet<2.0.0) (1.26.18)
 Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3,>

=2.20.0->mxnet<2.0.0) (2024.2.2)
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>
Requirement already satisfied: autogluon in /usr/local/lib/python3.10/dist-packages (1.1.0)
Requirement already satisfied: autogluon.core==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon) (1.1.0)
Requirement already satisfied: autogluon.features==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon) (1.1.0)
Requirement already satisfied: autogluon.tabular==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon) (1.1.0)
Requirement already satisfied: autogluon.multimodal==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon) (1.1.0)
Requirement already satisfied: autogluon.timeseries==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon) (1.1.0)
Requirement already satisfied: numpy<1.29,>=1.21 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (1.25.2)
Requirement already satisfied: scipy<1.13,>=1.5.4 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (1.11.4)
Requirement already satisfied: scikit-learn<1.4.1,>=1.3.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (1.4.0)
Requirement already satisfied: networkx<4,>=3.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (3.3)
Requirement already satisfied: pandas<2.3.0,>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (2.0.3)
Requirement already satisfied: tqdm<5,>=4.38 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (4.65.2)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (2.28.2)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (3.7.1)
Requirement already satisfied: boto3<2,>=1.10 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (1.34.104)
Requirement already satisfied: autogluon.common==1.1.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (1.1.0)
Requirement already satisfied: ray<2.11,>=2.10.0 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon) (2.10.0)
Requirement already satisfied: hyperopt<0.2.8,>=0.2.7 in /usr/local/lib/python3.10/dist-packages (from autogluon.core==1.1.0->autogluon) (0.2.7)
Requirement already satisfied: Pillow<11,>=10.0.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (10.0.1)
Requirement already satisfied: torch<2.2,>=2.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.1.2)
Requirement already satisfied: lightning<2.2,>=2.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.1.4)
Requirement already satisfied: transformers<4.39.0,>=4.38.0 in /usr/local/lib/python3.10/dist-packages (from transformers[sentencepiece]<4.39.0,>=4.38.0->autogluon.multimodal==1.1.0->autogluon) (4.38.2)
Requirement already satisfied: accelerate<0.22.0,>=0.21.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.21.0)
Requirement already satisfied: jsonschema<4.22,>=4.18 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (4.19.2)
Requirement already satisfied: sequeval<1.3.0,>=1.2.2 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (1.2.2)
Requirement already satisfied: evaluate<0.5.0,>=0.4.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.4.2)
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Requirement already satisfied: torchvision<0.17.0,>=0.16.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.16.2)
Requirement already satisfied: scikit-image<0.21.0,>=0.19.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.19.3)
Requirement already satisfied: text-unidecode<1.4,>=1.3 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (1.3)
Requirement already satisfied: torchmetrics<1.3.0,>=1.2.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (1.2.1)
Requirement already satisfied: nptyping<2.5.0,>=1.4.4 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.4.1)
Requirement already satisfied: omegaconf<2.3.0,>=2.1.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.2.3)
Requirement already satisfied: pytorch-metric-learning<2.4,>=1.3.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.3.0)
Requirement already satisfied: nlpaug<1.2.0,>=1.1.10 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (1.1.11)
Requirement already satisfied: nltk<4.0.0,>=3.4.5 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (3.8.1)
Requirement already satisfied: opennmt<0.4.0,>=0.3.7 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.3.9)
Requirement already satisfied: defusedxml<0.7.2,>=0.7.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.7.1)
Requirement already satisfied: jinja2<3.2,>=3.0.3 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (3.1.4)
Requirement already satisfied: tensorboard<3,>=2.9 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (2.15.2)
Requirement already satisfied: pyteseract<0.3.11,>=0.3.9 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (0.3.10)
Requirement already satisfied: nvidia-ml-py3==7.352.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (7.352.0)
Requirement already satisfied: pdf2image<1.19,>=1.17.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.multimodal==1.1.0->autogluon) (1.17.0)
Requirement already satisfied: xgboost<2.1,>=1.6 in /usr/local/lib/python3.10/dist-packages (from autogluon.tab

ular[all]==1.1.0->autogluon) (2.0.3)
Requirement already satisfied: fastai<2.8,>=2.3.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.tabular[all]==1.1.0->autogluon) (2.7.15)
Requirement already satisfied: lightgbm<4.4,>=3.3 in /usr/local/lib/python3.10/dist-packages (from autogluon.tabular[all]==1.1.0->autogluon) (4.1.0)
Requirement already satisfied: catboost<1.3,>=1.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.tabular[all]==1.1.0->autogluon) (1.2.5)
Requirement already satisfied: joblib<2,>=1.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (1.4.2)
Requirement already satisfied: pytorch-lightning<2.2,>=2.1 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (2.1.4)
Requirement already satisfied: gluonts<0.14.4,>=0.14.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.14.3)
Requirement already satisfied: statsforecast<1.5,>=1.4.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (1.4.0)
Requirement already satisfied: mlforecast<0.10.1,>=0.10.0 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.10.0)
Requirement already satisfied: utilsforecast<0.0.11,>=0.0.10 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.0.10)
Requirement already satisfied: orjson==3.9 in /usr/local/lib/python3.10/dist-packages (from autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (3.10.3)
Requirement already satisfied: optimum<1.19,>=1.17 in /usr/local/lib/python3.10/dist-packages (from optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (1.18.1)
Requirement already satisfied: psutil<6,>=5.7.3 in /usr/local/lib/python3.10/dist-packages (from autogluon.common==1.1.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (5.9.5)
Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (from autogluon.common==1.1.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (69.5.1)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from accelerate<0.22.0,>=0.21.0->autogluon.multimodal==1.1.0->autogluon) (24.0)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.10/dist-packages (from accelerate<0.22.0,>=0.21.0->autogluon.multimodal==1.1.0->autogluon) (6.0.1)
Requirement already satisfied: botocore<1.35.0,>=1.34.104 in /usr/local/lib/python3.10/dist-packages (from boto3<2,>=1.10->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (1.34.104)
Requirement already satisfied: jmespath<2.0.0,>=0.7.1 in /usr/local/lib/python3.10/dist-packages (from boto3<2,>=1.10->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (0.10.0)
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Requirement already satisfied: graphviz in /usr/local/lib/python3.10/dist-packages (from catboost<1.3,>=1.1->autogluon.tabular[all]==1.1.0->autogluon) (0.8.4)
Requirement already satisfied: plotly in /usr/local/lib/python3.10/dist-packages (from catboost<1.3,>=1.1->autogluon.tabular[all]==1.1.0->autogluon) (5.15.0)
Requirement already satisfied: six in /usr/local/lib/python3.10/dist-packages (from catboost<1.3,>=1.1->autogluon.tabular[all]==1.1.0->autogluon) (1.16.0)
Requirement already satisfied: datasets>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (2.19.1)
Requirement already satisfied: dill in /usr/local/lib/python3.10/dist-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (0.3.8)
Requirement already satisfied: xxhash in /usr/local/lib/python3.10/dist-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (3.4.1)
Requirement already satisfied: multiprocessing in /usr/local/lib/python3.10/dist-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (0.70.16)
Requirement already satisfied: fsspec>=2021.05.0 in /usr/local/lib/python3.10/dist-packages (from fsspec[http]>=2021.05.0->evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (2023.6.0)
Requirement already satisfied: huggingface-hub>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (0.23.0)
Requirement already satisfied: pip in /usr/local/lib/python3.10/dist-packages (from fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (24.0)
Requirement already satisfied: fastdownload<2,>=0.0.5 in /usr/local/lib/python3.10/dist-packages (from fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.0.7)
Requirement already satisfied: fastcore<1.6,>=1.5.29 in /usr/local/lib/python3.10/dist-packages (from fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.5.33)
Requirement already satisfied: fastprogress>=0.2.4 in /usr/local/lib/python3.10/dist-packages (from fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.0.3)
Requirement already satisfied: spacy<4 in /usr/local/lib/python3.10/dist-packages (from fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (3.7.4)
Requirement already satisfied: pydantic<3,>=1.7 in /usr/local/lib/python3.10/dist-packages (from gluonts<0.14.4,>=0.14.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (2.7.1)
Requirement already satisfied: toolz~0.10 in /usr/local/lib/python3.10/dist-packages (from gluonts<0.14.4,>=0.14.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.12.1)
Requirement already satisfied: typing-extensions~4.0 in /usr/local/lib/python3.10/dist-packages (from gluonts<0.14.4,>=0.14.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (4.11.0)
Requirement already satisfied: future in /usr/local/lib/python3.10/dist-packages (from hyperopt<0.2.8,>=0.2.7->autogluon.core[all]==1.1.0->autogluon) (0.18.3)
Requirement already satisfied: cloudpickle in /usr/local/lib/python3.10/dist-packages (from hyperopt<0.2.8,>=0.2.7->autogluon.core[all]==1.1.0->autogluon) (2.2.1)
Requirement already satisfied: py4j in /usr/local/lib/python3.10/dist-packages (from hyperopt<0.2.8,>=0.2.7->autogluon.core[all]==1.1.0->autogluon) (0.10.9.7)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2<3.2,>=3.0.3->autogluon.multimodal==1.1.0->autogluon) (2.1.5)
Requirement already satisfied: attrs>=22.2.0 in /usr/local/lib/python3.10/dist-packages (from jsonschema<4.22,>=4.18->autogluon.multimodal==1.1.0->autogluon) (23.2.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in /usr/local/lib/python3.10/dist-packages (from jsonschema<4.22,>=4.18->autogluon.multimodal==1.1.0->autogluon) (2023.12.1)
Requirement already satisfied: referencing>=0.28.4 in /usr/local/lib/python3.10/dist-packages (from jsonschema<4.22,>=4.18->autogluon.multimodal==1.1.0->autogluon) (0.35.1)
Requirement already satisfied: rpd-py>=0.7.1 in /usr/local/lib/python3.10/dist-packages (from jsonschema<4.22,>=4.18->autogluon.multimodal==1.1.0->autogluon) (0.18.1)
Requirement already satisfied: lightning-utilities<2.0,>=0.8.0 in /usr/local/lib/python3.10/dist-packages (from lightning<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (0.11.2)

Requirement already satisfied: numba in /usr/local/lib/python3.10/dist-packages (from mlforecast<0.10.1,>=0.10.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.58.1)

Requirement already satisfied: window-ops in /usr/local/lib/python3.10/dist-packages (from mlforecast<0.10.1,>=0.10.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.0.15)

Requirement already satisfied: gdown>=4.0.0 in /usr/local/lib/python3.10/dist-packages (from nlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.1.0->autogluon) (5.1.0)

Requirement already satisfied: click in /usr/local/lib/python3.10/dist-packages (from nltk<4.0.0,>=3.4.5->autogluon.multimodal==1.1.0->autogluon) (8.1.7)

Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.10/dist-packages (from nltk<4.0.0,>=3.4.5->autogluon.multimodal==1.1.0->autogluon) (2023.12.25)

Requirement already satisfied: antlr4-python3-runtime==4.9.* in /usr/local/lib/python3.10/dist-packages (from omegaconf<2.3.0,>=2.1.1->autogluon.multimodal==1.1.0->autogluon) (4.9.3)

Requirement already satisfied: colorama in /usr/local/lib/python3.10/dist-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.4.6)

Requirement already satisfied: model-index in /usr/local/lib/python3.10/dist-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.1.11)

Requirement already satisfied: opendatalab in /usr/local/lib/python3.10/dist-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.0.10)

Requirement already satisfied: rich in /usr/local/lib/python3.10/dist-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (13.4.2)

Requirement already satisfied: tabulate in /usr/local/lib/python3.10/dist-packages (from openmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.9.0)

Requirement already satisfied: coloredlogs in /usr/local/lib/python3.10/dist-packages (from optimum<1.19,>=1.17->optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (15.0.1)

Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from optimum<1.19,>=1.17->optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (1.12)

Requirement already satisfied: onnx in /usr/local/lib/python3.10/dist-packages (from optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (1.16.0)

Requirement already satisfied: onnxruntime>=1.11.0 in /usr/local/lib/python3.10/dist-packages (from optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (1.17.3)

Requirement already satisfied: protobuf>=3.20.1 in /usr/local/lib/python3.10/dist-packages (from optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (3.20.3)

Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.10/dist-packages (from pandas<2.3.0,>=2.0.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (2.8.2)

Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-packages (from pandas<2.3.0,>=2.0.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (2023.4)

Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/dist-packages (from pandas<2.3.0,>=2.0.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (2024.1)

Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from ray<2.11,>=2.10.0->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (3.14.0)

Requirement already satisfied: msgpack<2.0.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from ray<2.11,>=2.10.0->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.0.8)

Requirement already satisfied: aiosignal in /usr/local/lib/python3.10/dist-packages (from ray<2.11,>=2.10.0->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.3.1)

Requirement already satisfied: frozenlist in /usr/local/lib/python3.10/dist-packages (from ray<2.11,>=2.10.0->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.4.1)

Requirement already satisfied: tensorboardX>=1.9 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (2.6.2.2)

Requirement already satisfied: pyarrow>=6.0.1 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (14.0.2)

Requirement already satisfied: aiohttp>=3.7 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (3.9.5)

Requirement already satisfied: aiohttp-cors in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.7.0)

Requirement already satisfied: colorful in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.5.6)

Requirement already satisfied: py-spy>=0.2.0 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.3.14)

Requirement already satisfied: opencensus in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.11.4)

Requirement already satisfied: prometheus-client>=0.7.1 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.20.0)

Requirement already satisfied: smart-open in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (6.4.0)

Requirement already satisfied: virtualenv>=20.21.1,>=20.0.24 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (20.26.2)

Requirement already satisfied: grpcio>=1.42.0 in /usr/local/lib/python3.10/dist-packages (from ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.63.0)

Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (3.3.2)

Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (3.7)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (1.26.18)

Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (2024.2.2)

Requirement already satisfied: imageio>=2.4.1 in /usr/local/lib/python3.10/dist-packages (from scikit-image<0.21.0,>=0.19.1->autogluon.multimodal==1.1.0->autogluon) (2.31.6)

Requirement already satisfied: tifffile>=2019.7.26 in /usr/local/lib/python3.10/dist-packages (from scikit-image<0.21.0,>=0.19.1->autogluon.multimodal==1.1.0->autogluon) (2024.5.3)

Requirement already satisfied: PyWavelets>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from scikit-image<0.21.0,>=0.19.1->autogluon.multimodal==1.1.0->autogluon) (1.6.0)

Requirement already satisfied: threadpoolctl>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from scikit-learn<1.4.1,>=1.3.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (3.5.0)

Requirement already satisfied: statsmodels>=0.13.2 in /usr/local/lib/python3.10/dist-packages (from statsforecast<1.5,>=1.4.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.14.2)

Requirement already satisfied: absl-py>=0.4 in /usr/local/lib/python3.10/dist-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (1.4.0)

Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.10/dist-packages (from tensorboa

rd<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (2.27.0)
Requirement already satisfied: google-auth-oauthlib<2,>=0.5 in /usr/local/lib/python3.10/dist-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (1.2.0)
Requirement already satisfied: markdown<=2.6.8 in /usr/local/lib/python3.10/dist-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (3.6)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (0.7.2)
Requirement already satisfied: werkzeug<=1.0.1 in /usr/local/lib/python3.10/dist-packages (from tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (3.0.3)
Requirement already satisfied: safetensors in /usr/local/lib/python3.10/dist-packages (from timm<0.10.0,>=0.9.5->autogluon.multimodal==1.1.0->autogluon) (0.4.3)
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.105)
Requirement already satisfied: nvidia-cuda-runtime-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.105)
Requirement already satisfied: nvidia-cuda-cupti-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.105)
Requirement already satisfied: nvidia-cudnn-cu12==8.9.2.26 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (8.9.2.26)
Requirement already satisfied: nvidia-cublas-cu12==12.1.3.1 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.3.1)
Requirement already satisfied: nvidia-cufft-cu12==11.0.2.54 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (11.0.2.54)
Requirement already satisfied: nvidia-curand-cu12==10.3.2.106 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (10.3.2.106)
Requirement already satisfied: nvidia-cusolver-cu12==11.4.5.107 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (11.4.5.107)
Requirement already satisfied: nvidia-cuspars-cu12==12.1.0.106 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.0.106)
Requirement already satisfied: nvidia-nccl-cu12==2.18.1 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (2.18.1)
Requirement already satisfied: nvidia-nvtx-cu12==12.1.105 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.1.105)
Requirement already satisfied: triton==2.1.0 in /usr/local/lib/python3.10/dist-packages (from torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (2.1.0)
Requirement already satisfied: nvidia-nvjitlink-cu12 in /usr/local/lib/python3.10/dist-packages (from nvidia-cusolver-cu12==11.4.5.107->torch<2.2,>=2.1->autogluon.multimodal==1.1.0->autogluon) (12.4.127)
Requirement already satisfied: tokenizers<0.19,>=0.14 in /usr/local/lib/python3.10/dist-packages (from transformers<4.39.0,>=4.38.0->transformers[sentencepiece]<4.39.0,>=4.38.0->autogluon.multimodal==1.1.0->autogluon) (0.15.2)
Requirement already satisfied: sentencepiece!=0.1.92,>=0.1.91 in /usr/local/lib/python3.10/dist-packages (from transformers[sentencepiece]<4.39.0,>=4.38.0->autogluon.multimodal==1.1.0->autogluon) (0.1.99)
Requirement already satisfied: contourpy<=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (1.2.1)
Requirement already satisfied: cycler<=0.10 in /usr/local/lib/python3.10/dist-packages (from matplotlib->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (0.12.1)
Requirement already satisfied: fonttools<=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (4.51.0)
Requirement already satisfied: kiwisolver<=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (1.4.5)
Requirement already satisfied: pyparsing<=2.3.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon) (3.1.2)
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.10/dist-packages (from aiohttp<=3.7->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (6.0.5)
Requirement already satisfied: yarl<2.0,>=1.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<=3.7->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.9.4)
Requirement already satisfied: async-timeout<5.0,>=4.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<=3.7->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (4.0.3)
Requirement already satisfied: pyarrow-hotfix in /usr/local/lib/python3.10/dist-packages (from datasets<=2.0.0->evaluate<0.5.0,>=0.4.0->autogluon.multimodal==1.1.0->autogluon) (0.6)
Requirement already satisfied: beautifulsoup4 in /usr/local/lib/python3.10/dist-packages (from gdown<=4.0.0->mlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.1.0->autogluon) (4.12.3)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from google-auth<3,>=1.6.3->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (5.3.3)
Requirement already satisfied: pyasn1-modules<=0.2.1 in /usr/local/lib/python3.10/dist-packages (from google-auth<3,>=1.6.3->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (0.4.0)
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.10/dist-packages (from google-auth<3,>=1.6.3->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (4.9)
Requirement already satisfied: requests-oauthlib<=0.7.0 in /usr/local/lib/python3.10/dist-packages (from google-auth-oauthlib<2,>=0.5->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (1.3.1)
Requirement already satisfied: llvmlite<0.42,>=0.41.0dev0 in /usr/local/lib/python3.10/dist-packages (from numba<=mlforecast<0.10.1,>=0.10.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.41.1)
Requirement already satisfied: flatbuffers in /usr/local/lib/python3.10/dist-packages (from onnxruntime<=1.11.0->optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (24.3.25)
Requirement already satisfied: annotated-types<=0.4.0 in /usr/local/lib/python3.10/dist-packages (from pydantic<3,>=1.7->gluonts<0.14.4,>=0.14.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.6.0)
Requirement already satisfied: pydantic-core==2.18.2 in /usr/local/lib/python3.10/dist-packages (from pydantic<3,>=1.7->gluonts<0.14.4,>=0.14.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (2.18.2)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.0.10)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (2.0.8)

Requirement already satisfied: preshed<3.1.0,>=3.0.2 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (3.0.9)

Requirement already satisfied: thinc<8.3.0,>=8.2.2 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (8.2.3)

Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.1.2)

Requirement already satisfied: srsly<3.0.0,>=2.4.3 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (2.4.8)

Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (2.0.10)

Requirement already satisfied: weasel<0.4.0,>=0.1.0 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.3.4)

Requirement already satisfied: typer<0.10.0,>=0.3.0 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.9.4)

Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in /usr/local/lib/python3.10/dist-packages (from spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (3.4.0)

Requirement already satisfied: patsy<0.5.6 in /usr/local/lib/python3.10/dist-packages (from statsmodels>=0.13.2->statsforecast<1.5,>=1.4.0->autogluon.timeseries==1.1.0->autogluon.timeseries[all]==1.1.0->autogluon) (0.5.6)

Requirement already satisfied: distlib<1,>=0.3.7 in /usr/local/lib/python3.10/dist-packages (from virtualenv!=20.21.1,>=20.0.24->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.3.8)

Requirement already satisfied: platformdirs<5,>=3.9.1 in /usr/local/lib/python3.10/dist-packages (from virtualenv!=20.21.1,>=20.0.24->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (4.2.1)

Requirement already satisfied: humanfriendly<9.1 in /usr/local/lib/python3.10/dist-packages (from coloredlogs->optimum<1.19,>=1.17->optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (10.0)

Requirement already satisfied: ordered-set in /usr/local/lib/python3.10/dist-packages (from model-index->openmm<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (4.1.0)

Requirement already satisfied: opencensus-context<0.1.3 in /usr/local/lib/python3.10/dist-packages (from opencensus->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (0.1.3)

Requirement already satisfied: google-api-core<3.0.0,>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from opencensus->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (2.11.1)

Requirement already satisfied: pycryptodome in /usr/local/lib/python3.10/dist-packages (from opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (3.20.0)

Requirement already satisfied: openxlab in /usr/local/lib/python3.10/dist-packages (from opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.0.38)

Requirement already satisfied: tenacity<6.2.0 in /usr/local/lib/python3.10/dist-packages (from plotly->catboost<1.3,>=1.1->autogluon.tabular[all]==1.1.0->autogluon) (8.3.0)

Requirement already satisfied: markdown-it-py<2.2.0 in /usr/local/lib/python3.10/dist-packages (from rich->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (3.0.0)

Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (2.16.1)

Requirement already satisfied: mpmath<0.19 in /usr/local/lib/python3.10/dist-packages (from sympy->optimum<1.19,>=1.17->optimum[onnxruntime]<1.19,>=1.17; extra == "all"->autogluon.timeseries[all]==1.1.0->autogluon) (1.3.0)

Requirement already satisfied: googleapis-common-protos<2.0.dev0,>=1.56.2 in /usr/local/lib/python3.10/dist-packages (from google-api-core<3.0.0,>=1.0.0->opencensus->ray[default,tune]<2.11,>=2.10.0; extra == "all"->autogluon.core[all]==1.1.0->autogluon) (1.63.0)

Requirement already satisfied: language-data<1.2 in /usr/local/lib/python3.10/dist-packages (from langcodes<4.0.0,>=3.2.0->spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.2.0)

Requirement already satisfied: mdurl<0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py==2.2.0->rich->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (0.1.2)

Requirement already satisfied: pyasn1<0.7.0,>=0.4.6 in /usr/local/lib/python3.10/dist-packages (from pyasn1-modules==0.2.1->google-auth<3,>=1.6.3->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (0.6.0)

Requirement already satisfied: oauthlib<3.0.0 in /usr/local/lib/python3.10/dist-packages (from requests-oauthlib==0.7.0->google-auth-oauthlib<2,>=0.5->tensorboard<3,>=2.9->autogluon.multimodal==1.1.0->autogluon) (3.2.2)

Requirement already satisfied: blis<0.8.0,>=0.7.8 in /usr/local/lib/python3.10/dist-packages (from thinc<8.3.0,>=8.2.2->spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.7.11)

Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.10/dist-packages (from thinc<8.3.0,>=8.2.2->spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.1.4)

Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in /usr/local/lib/python3.10/dist-packages (from weasel<0.4.0,>=0.1.0->spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (0.16.0)

Requirement already satisfied: soupsieve>1.2 in /usr/local/lib/python3.10/dist-packages (from beautifulsoup4->gdown==4.0.0->nlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.1.0->autogluon) (2.5)

Requirement already satisfied: oss2==2.17.0 in /usr/local/lib/python3.10/dist-packages (from openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (2.17.0)

Collecting setuptools (from autogluon.common==1.1.0->autogluon.core==1.1.0->autogluon.core[all]==1.1.0->autogluon)

Downloading setuptools-60.2.0-py3-none-any.whl.metadata (5.1 kB)

Requirement already satisfied: PySocks!=1.5.7,>=1.5.6 in /usr/local/lib/python3.10/dist-packages (from requests[socks]->gdown==4.0.0->nlpaug<1.2.0,>=1.1.10->autogluon.multimodal==1.1.0->autogluon) (1.7.1)

Requirement already satisfied: marisa-trie==0.7.7 in /usr/local/lib/python3.10/dist-packages (from language-data==1.2->langcodes<4.0.0,>=3.2.0->spacy<4->fastai<2.8,>=2.3.1->autogluon.tabular[all]==1.1.0->autogluon) (1.1.1)

Requirement already satisfied: crcmod==1.7 in /usr/local/lib/python3.10/dist-packages (from oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (1.7)

Requirement already satisfied: aliyun-python-sdk-kms==2.4.1 in /usr/local/lib/python3.10/dist-packages (from oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (2.16.3)

Requirement already satisfied: aliyun-python-sdk-core==2.13.12 in /usr/local/lib/python3.10/dist-packages (from oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (2.15.1)

Requirement already satisfied: cryptography==2.6.0 in /usr/local/lib/python3.10/dist-packages (from aliyun-python-sdk-core==2.13.12->oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (42.0.7)

Requirement already satisfied: cffi==1.12 in /usr/local/lib/python3.10/dist-packages (from cryptography==2.6.0->aliyun-python-sdk-core==2.13.12->oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (1.16.0)

Requirement already satisfied: pycparser in /usr/local/lib/python3.10/dist-packages (from cffi==1.12->cryptography==2.6.0->aliyun-python-sdk-core==2.13.12->oss2==2.17.0->openxlab->opendatalab->openmmim<0.4.0,>=0.3.7->autogluon.multimodal==1.1.0->autogluon) (2.22)

Downloading setuptools-60.2.0-py3-none-any.whl (953 kB)

953.1/953.1 kB 14.9 MB/s eta 0:00:00

Installing collected packages: setuptools

Attempting uninstall: setuptools

Found existing installation: setuptools 69.5.1

Uninstalling setuptools-69.5.1:

Successfully uninstalled setuptools-69.5.1

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.

cvxpy 1.3.4 requires setuptools>65.5.1, but you have setuptools 60.2.0 which is incompatible.

Successfully installed setuptools-60.2.0

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>

```
In [ ]: from autogluon.tabular import TabularDataset, TabularPredictor
```

```
In [ ]: predictor = TabularPredictor(label="Outcome", problem_type = 'binary', eval_metric = 'accuracy').fit(train_data
```

No path specified. Models will be saved in: "AutogluonModels/ag-20240514_102117"

Presets specified: ['best quality']

Setting dynamic_stacking from 'auto' to True. Reason: Enable dynamic_stacking when use_bag_holdout is disabled. (use_bag_holdout=False)

Stack configuration (auto_stack=True): num_stack_levels=1, num_bag_folds=8, num_bag_sets=1

Dynamic stacking is enabled (dynamic_stacking=True). AutoGluon will try to determine whether the input data is affected by stacked overfitting and enable or disable stacking as a consequence.

Detecting stacked overfitting by sub-fitting AutoGluon on the input data. That is, copies of AutoGluon will be sub-fit on subset(s) of the data. Then, the holdout validation data is used to detect stacked overfitting.

Sub-fit(s) time limit is: 300 seconds.

Starting holdout-based sub-fit for dynamic stacking. Context path is: AutogluonModels/ag-20240514_102117/ds_sub_fit/sub_fit_ho.

Running the sub-fit in a ray process to avoid memory leakage.

Spend 136 seconds for the sub-fit(s) during dynamic stacking.

Time left for full fit of AutoGluon: 164 seconds.

Starting full fit now with num_stack_levels 1.

Beginning AutoGluon training ... Time limit = 164s

AutoGluon will save models to "AutogluonModels/ag-20240514_102117"

===== System Info =====

AutoGluon Version: 1.1.0

Python Version: 3.10.12

Operating System: Linux

Platform Machine: x86_64

Platform Version: #1 SMP PREEMPT_DYNAMIC Sat Nov 18 15:31:17 UTC 2023

CPU Count: 2

Memory Avail: 10.12 GB / 12.67 GB (79.9%)

Disk Space Avail: 75.09 GB / 107.72 GB (69.7%)

=====

Train Data Rows: 614

Train Data Columns: 8

Label Column: Outcome

Problem Type: binary

Preprocessing data ...

Selected class <--> label mapping: class 1 = 1, class 0 = 0

Using Feature Generators to preprocess the data ...

Fitting AutoMLPipelineFeatureGenerator...

Available Memory: 10365.09 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_metadata_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', []) : 2 | ['BMI', 'DiabetesPedigreeFunction']

('int', []) : 6 | ['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin', ...]

]

Types of features in processed data (raw dtype, special dtypes):

('float', []) : 2 | ['BMI', 'DiabetesPedigreeFunction']

('int', []) : 6 | ['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin', ...]

]

0.1s = Fit runtime

8 features in original data used to generate 8 features in processed data.

Train Data (Processed) Memory Usage: 0.04 MB (0.0% of available memory)

Data preprocessing and feature engineering runtime = 0.17s ...

AutoGluon will gauge predictive performance using evaluation metric: 'accuracy'

To change this, specify the eval_metric parameter of Predictor()

Large model count detected (112 configs) ... Only displaying the first 3 models of each family. To see all, set `verbosity=3`.

User-specified model hyperparameters to be fit:

{

'NN_TORCH': [{}, {'activation': 'elu', 'dropout_prob': 0.10077639529843717, 'hidden_size': 108, 'learn_i

```
ng_rate': 0.002735937344002146, 'num_layers': 4, 'use_batchnorm': True, 'weight_decay': 1.356433327634438e-12,
'ag_args': {'name_suffix': '_r79', 'priority': -2}}, {'activation': 'elu', 'dropout_prob': 0.11897478034205347,
'hidden_size': 213, 'learning_rate': 0.0010474382260641949, 'num_layers': 4, 'use_batchnorm': False, 'weight_de
cay': 5.594471067786272e-10, 'ag_args': {'name_suffix': '_r22', 'priority': -7}}],
'GBM': [{'extra_trees': True, 'ag_args': {'name_suffix': 'XT'}}, {}], 'GBMLarge'],
'CAT': [{}, {'depth': 6, 'grow_policy': 'SymmetricTree', 'l2_leaf_reg': 2.1542798306067823, 'learning_r
ate': 0.06864209415792857, 'max_ctr_complexity': 4, 'one_hot_max_size': 10, 'ag_args': {'name_suffix': '_r177',
'priority': -1}}, {'depth': 8, 'grow_policy': 'Depthwise', 'l2_leaf_reg': 2.7997999596449104, 'learning_rate':
0.031375015734637225, 'max_ctr_complexity': 2, 'one_hot_max_size': 3, 'ag_args': {'name_suffix': '_r9', 'prior
ity': -5}}],
'XGB': [{}, {'colsample_bytree': 0.6917311125174739, 'enable_categorical': False, 'learning_rate': 0.01
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'priority': -8}}, {'colsample_bytree': 0.6628423832084077, 'enable_categorical': False, 'learning_rate': 0.08775
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ity': -16}}],
'FASTAI': [{}, {'bs': 256, 'emb_drop': 0.5411770367537934, 'epochs': 43, 'layers': [800, 400], 'lr': 0.
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, 'emb_drop': 0.05070411322605811, 'epochs': 29, 'layers': [200, 100], 'lr': 0.08974235041576624, 'ps': 0.10393
466140748028, 'ag_args': {'name_suffix': '_r102', 'priority': -11}}],
'RF': [{'criterion': 'gini', 'ag_args': {'name_suffix': 'Gini', 'problem_types': ['binary', 'multiclass
']}}, {'criterion': 'entropy', 'ag_args': {'name_suffix': 'Entr', 'problem_types': ['binary', 'multiclass']}},
{'criterion': 'squared_error', 'ag_args': {'name_suffix': 'MSE', 'problem_types': ['regression', 'quantile']}]
,
'XT': [{'criterion': 'gini', 'ag_args': {'name_suffix': 'Gini', 'problem_types': ['binary', 'multiclass
']}}, {'criterion': 'entropy', 'ag_args': {'name_suffix': 'Entr', 'problem_types': ['binary', 'multiclass']}},
{'criterion': 'squared_error', 'ag_args': {'name_suffix': 'MSE', 'problem_types': ['regression', 'quantile']}]
,
'KNN': [{'weights': 'uniform', 'ag_args': {'name_suffix': 'Unif'}}, {'weights': 'distance', 'ag_args':
{'name_suffix': 'Dist'}}],
}
AutoGluon will fit 2 stack levels (L1 to L2) ...
Fitting 110 L1 models ...
Fitting model: KNeighborsUnif_BAG_L1 ... Training model for up to 109.19s of the 163.79s of remaining time.
0.7003 = Validation score (accuracy)
0.02s = Training runtime
0.03s = Validation runtime
Fitting model: KNeighborsDist_BAG_L1 ... Training model for up to 109.12s of the 163.73s of remaining time.
0.6971 = Validation score (accuracy)
0.01s = Training runtime
0.01s = Validation runtime
Fitting model: LightGBMXT_BAG_L1 ... Training model for up to 109.07s of the 163.68s of remaining time.
Fitting 8 child models (S1F1 - S1F8) | Fitting with ParallelLocalFoldFittingStrategy (2 workers, per: c
pus=1, gpus=0, memory=0.02%)
0.7866 = Validation score (accuracy)
28.12s = Training runtime
0.02s = Validation runtime
Fitting model: LightGBM_BAG_L1 ... Training model for up to 76.59s of the 131.19s of remaining time.
Fitting 8 child models (S1F1 - S1F8) | Fitting with ParallelLocalFoldFittingStrategy (2 workers, per: c
pus=1, gpus=0, memory=0.02%)
0.785 = Validation score (accuracy)
28.31s = Training runtime
0.03s = Validation runtime
Fitting model: RandomForestGini_BAG_L1 ... Training model for up to 43.02s of the 97.62s of remaining time.
0.7459 = Validation score (accuracy)
1.63s = Training runtime
0.21s = Validation runtime
Fitting model: RandomForestEntr_BAG_L1 ... Training model for up to 41.1s of the 95.71s of remaining time.
0.7573 = Validation score (accuracy)
1.08s = Training runtime
0.13s = Validation runtime
Fitting model: CatBoost_BAG_L1 ... Training model for up to 39.86s of the 94.46s of remaining time.
Fitting 8 child models (S1F1 - S1F8) | Fitting with ParallelLocalFoldFittingStrategy (2 workers, per: c
pus=1, gpus=0, memory=0.03%)
0.7834 = Validation score (accuracy)
27.52s = Training runtime
0.02s = Validation runtime
Fitting model: ExtraTreesGini_BAG_L1 ... Training model for up to 9.24s of the 63.85s of remaining time.
0.741 = Validation score (accuracy)
1.12s = Training runtime
0.21s = Validation runtime
Fitting model: ExtraTreesEntr_BAG_L1 ... Training model for up to 7.84s of the 62.44s of remaining time.
0.7394 = Validation score (accuracy)
1.02s = Training runtime
0.17s = Validation runtime
Fitting model: NeuralNetFastAI_BAG_L1 ... Training model for up to 6.6s of the 61.21s of remaining time.
Fitting 8 child models (S1F1 - S1F8) | Fitting with ParallelLocalFoldFittingStrategy (2 workers, per: c
pus=1, gpus=0, memory=0.00%)
0.7834 = Validation score (accuracy)
49.02s = Training runtime
0.23s = Validation runtime
Fitting model: WeightedEnsemble_L2 ... Training model for up to 163.83s of the 9.02s of remaining time.
Ensemble Weights: {'LightGBMXT_BAG_L1': 1.0}
0.7866 = Validation score (accuracy)
0.23s = Training runtime
0.0s = Validation runtime
Fitting 108 L2 models ...
Fitting model: LightGBMXT_BAG_L2 ... Training model for up to 8.75s of the 8.67s of remaining time.
Fitting 8 child models (S1F1 - S1F8) | Fitting with ParallelLocalFoldFittingStrategy (2 workers, per: c
pus=1, gpus=0, memory=0.04%)
```



```

0.8192 = Validation score (accuracy)
26.08s = Training runtime
0.02s = Validation runtime
Fitting model: WeightedEnsemble_L3 ... Training model for up to 163.83s of the -27.69s of remaining time.
Ensemble Weights: {'LightGBMXT_BAG_L2': 1.0}
0.8192 = Validation score (accuracy)
0.26s = Training runtime
0.0s = Validation runtime
AutoGluon training complete, total runtime = 192.0s ... Best model: "WeightedEnsemble_L3"
TabularPredictor saved. To load, use: predictor = TabularPredictor.load("AutogluonModels/ag-20240514_102117")

```

```
In [ ]: predictor.fit_summary()
```

```

*** Summary of fit() ***
Estimated performance of each model:

```

	model	score_val	eval_metric	pred_time_val	fit_time	pred_time_val_marginal	fit_time_marginal
0	LightGBMXT_BAG_L2	0.819218	accuracy	1.062718	163.908467	0.019158	
26.076876	2	True	12				
1	WeightedEnsemble_L3	0.819218	accuracy	1.064200	164.171968	0.001482	
0.263501	3	True	13				
2	LightGBMXT_BAG_L1	0.786645	accuracy	0.018997	28.118349	0.018997	
28.118349	1	True	3				
3	WeightedEnsemble_L2	0.786645	accuracy	0.020678	28.352640	0.001680	
0.234292	2	True	11				
4	LightGBM_BAG_L1	0.785016	accuracy	0.030928	28.306852	0.030928	
28.306852	1	True	4				
5	CatBoost_BAG_L1	0.783388	accuracy	0.015483	27.523235	0.015483	
27.523235	1	True	7				
6	NeuralNetFastAI_BAG_L1	0.783388	accuracy	0.225359	49.015925	0.225359	
49.015925	1	True	10				
7	RandomForestEntr_BAG_L1	0.757329	accuracy	0.126644	1.078608	0.126644	
1.078608	1	True	6				
8	RandomForestGini_BAG_L1	0.745928	accuracy	0.210569	1.625404	0.210569	
1.625404	1	True	5				
9	ExtraTreesGini_BAG_L1	0.741042	accuracy	0.207468	1.123782	0.207468	
1.123782	1	True	8				
10	ExtraTreesEntr_BAG_L1	0.739414	accuracy	0.167873	1.015274	0.167873	
1.015274	1	True	9				
11	KNeighborsUnif_BAG_L1	0.700326	accuracy	0.025311	0.015829	0.025311	
0.015829	1	True	1				
12	KNeighborsDist_BAG_L1	0.697068	accuracy	0.014929	0.008334	0.014929	
0.008334	1	True	2				

```

Number of models trained: 13
Types of models trained:
{'StackerEnsembleModel_LGB', 'StackerEnsembleModel_CatBoost', 'StackerEnsembleModel_KNN', 'StackerEnsembleModel_RF', 'StackerEnsembleModel_NNFastAiTabular', 'WeightedEnsembleModel', 'StackerEnsembleModel_XT'}
Bagging used: True (with 8 folds)
Multi-layer stack-ensembling used: True (with 3 levels)
Feature Metadata (Processed):
(raw dtype, special dtypes):
('float', []) : 2 | ['BMI', 'DiabetesPedigreeFunction']
('int', []) : 6 | ['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin', ...]
Plot summary of models saved to file: AutogluonModels/ag-20240514_102117SummaryOfModels.html
*** End of fit() summary ***

```

```

Out[ ]: {'model_types': {'KNeighborsUnif_BAG_L1': 'StackerEnsembleModel_KNN',
'KNeighborsDist_BAG_L1': 'StackerEnsembleModel_KNN',
'LightGBMXT_BAG_L1': 'StackerEnsembleModel_LGB',
'LightGBM_BAG_L1': 'StackerEnsembleModel_LGB',
'RandomForestGini_BAG_L1': 'StackerEnsembleModel_RF',
'RandomForestEntr_BAG_L1': 'StackerEnsembleModel_RF',
'CatBoost_BAG_L1': 'StackerEnsembleModel_CatBoost',
'ExtraTreesGini_BAG_L1': 'StackerEnsembleModel_XT',
'ExtraTreesEntr_BAG_L1': 'StackerEnsembleModel_XT',
'NeuralNetFastAI_BAG_L1': 'StackerEnsembleModel_NNFastAiTabular',
'WeightedEnsemble_L2': 'WeightedEnsembleModel',
'LightGBMXT_BAG_L2': 'StackerEnsembleModel_LGB',
'WeightedEnsemble_L3': 'WeightedEnsembleModel'},
'model_performance': {'KNeighborsUnif_BAG_L1': 0.7003257328990228,
'KNeighborsDist_BAG_L1': 0.6970684039087948,
'LightGBMXT_BAG_L1': 0.7866449511400652,
'LightGBM_BAG_L1': 0.7850162866449512,
'RandomForestGini_BAG_L1': 0.745928338762215,
'RandomForestEntr_BAG_L1': 0.757328990228013,
'CatBoost_BAG_L1': 0.7833876221498371,
'ExtraTreesGini_BAG_L1': 0.741042345276873,
'ExtraTreesEntr_BAG_L1': 0.739413680781759,
'NeuralNetFastAI_BAG_L1': 0.7833876221498371,
'WeightedEnsemble_L2': 0.7866449511400652,
'LightGBMXT_BAG_L2': 0.8192182410423453,
'WeightedEnsemble_L3': 0.8192182410423453},
'model_best': 'WeightedEnsemble_L3',
'model_paths': {'KNeighborsUnif_BAG_L1': ['KNeighborsUnif_BAG_L1'],
'KNeighborsDist_BAG_L1': ['KNeighborsDist_BAG_L1'],
'LightGBMXT_BAG_L1': ['LightGBMXT_BAG_L1'],
'LightGBM_BAG_L1': ['LightGBM_BAG_L1'],
'RandomForestGini_BAG_L1': ['RandomForestGini_BAG_L1'],
'RandomForestEntr_BAG_L1': ['RandomForestEntr_BAG_L1'],
'CatBoost_BAG_L1': ['CatBoost_BAG_L1'],

```

```

'ExtraTreesGini_BAG_L1': ['ExtraTreesGini_BAG_L1'],
'ExtraTreesEntr_BAG_L1': ['ExtraTreesEntr_BAG_L1'],
'NeuralNetFastAI_BAG_L1': ['NeuralNetFastAI_BAG_L1'],
'WeightedEnsemble_L2': ['WeightedEnsemble_L2'],
'LightGBMXT_BAG_L2': ['LightGBMXT_BAG_L2'],
'WeightedEnsemble_L3': ['WeightedEnsemble_L3']],
'model_fit_times': {'KNeighborsUnif_BAG_L1': 0.015828847885131836,
'KNeighborsDist_BAG_L1': 0.008334159851074219,
'LightGBMXT_BAG_L1': 28.118348598480225,
'LightGBM_BAG_L1': 28.306852340698242,
'RandomForestGini_BAG_L1': 1.625403642654419,
'RandomForestEntr_BAG_L1': 1.0786075592041016,
'CatBoost_BAG_L1': 27.523234844207764,
'ExtraTreesGini_BAG_L1': 1.1237821578979492,
'ExtraTreesEntr_BAG_L1': 1.0152738094329834,
'NeuralNetFastAI_BAG_L1': 49.01592493057251,
'WeightedEnsemble_L2': 0.23429179191589355,
'LightGBMXT_BAG_L2': 26.076876163482666,
'WeightedEnsemble_L3': 0.2635011672973633},
'model_pred_times': {'KNeighborsUnif_BAG_L1': 0.025310754776000977,
'KNeighborsDist_BAG_L1': 0.014928579330444336,
'LightGBMXT_BAG_L1': 0.0189971923828125,
'LightGBM_BAG_L1': 0.030928373336791992,
'RandomForestGini_BAG_L1': 0.21056890487670898,
'RandomForestEntr_BAG_L1': 0.12664413452148438,
'CatBoost_BAG_L1': 0.015482902526855469,
'ExtraTreesGini_BAG_L1': 0.20746755599975586,
'ExtraTreesEntr_BAG_L1': 0.16787266731262207,
'NeuralNetFastAI_BAG_L1': 0.22535943984985352,
'WeightedEnsemble_L2': 0.0016803741455078125,
'LightGBMXT_BAG_L2': 0.01915764808654785,
'WeightedEnsemble_L3': 0.001482248306274414},
'num_bag_folds': 8,
'max_stack_level': 3,
'num_classes': 2,
'model_hyperparams': {'KNeighborsUnif_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True,
'use_child_oof': True},
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'max_base_models': 25,
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'save_bag_folds': True,
'use_child_oof': True},
'LightGBMXT_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True},
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'save_bag_folds': True},
'RandomForestGini_BAG_L1': {'use_orig_features': True,
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'max_base_models_per_type': 5,
'save_bag_folds': True,
'use_child_oof': True},
'RandomForestEntr_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True,
'use_child_oof': True},
'CatBoost_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True},
'ExtraTreesGini_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True,
'use_child_oof': True},
'ExtraTreesEntr_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True,
'use_child_oof': True},
'NeuralNetFastAI_BAG_L1': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True},
'WeightedEnsemble_L2': {'use_orig_features': False,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True},
'LightGBMXT_BAG_L2': {'use_orig_features': True,
'max_base_models': 25,
'max_base_models_per_type': 5,
'save_bag_folds': True},

```

```
'WeightedEnsemble_L3': {'use_orig_features': False,
  'max_base_models': 25,
  'max_base_models_per_type': 5,
  'save_bag_folds': True}},
'leaderboard':
      model score_val eval_metric pred_time_val fit_time \
0      LightGBMXT_BAG_L2 0.819218 accuracy 1.062718 163.908467
1      WeightedEnsemble_L3 0.819218 accuracy 1.064200 164.171968
2      LightGBMXT_BAG_L1 0.786645 accuracy 0.018997 28.118349
3      WeightedEnsemble_L2 0.786645 accuracy 0.020678 28.352640
4      LightGBM_BAG_L1 0.785016 accuracy 0.030928 28.306852
5      CatBoost_BAG_L1 0.783388 accuracy 0.015483 27.523235
6      NeuralNetFastAI_BAG_L1 0.783388 accuracy 0.225359 49.015925
7      RandomForestEntr_BAG_L1 0.757329 accuracy 0.126644 1.078608
8      RandomForestGini_BAG_L1 0.745928 accuracy 0.210569 1.625404
9      ExtraTreesGini_BAG_L1 0.741042 accuracy 0.207468 1.123782
10     ExtraTreesEntr_BAG_L1 0.739414 accuracy 0.167873 1.015274
11     KNeighborsUnif_BAG_L1 0.700326 accuracy 0.025311 0.015829
12     KNeighborsDist_BAG_L1 0.697068 accuracy 0.014929 0.008334

      pred_time_val_marginal fit_time_marginal stack_level can_infer \
0      0.019158 26.076876 2 True
1      0.001482 0.263501 3 True
2      0.018997 28.118349 1 True
3      0.001680 0.234292 2 True
4      0.030928 28.306852 1 True
5      0.015483 27.523235 1 True
6      0.225359 49.015925 1 True
7      0.126644 1.078608 1 True
8      0.210569 1.625404 1 True
9      0.207468 1.123782 1 True
10     0.167873 1.015274 1 True
11     0.025311 0.015829 1 True
12     0.014929 0.008334 1 True

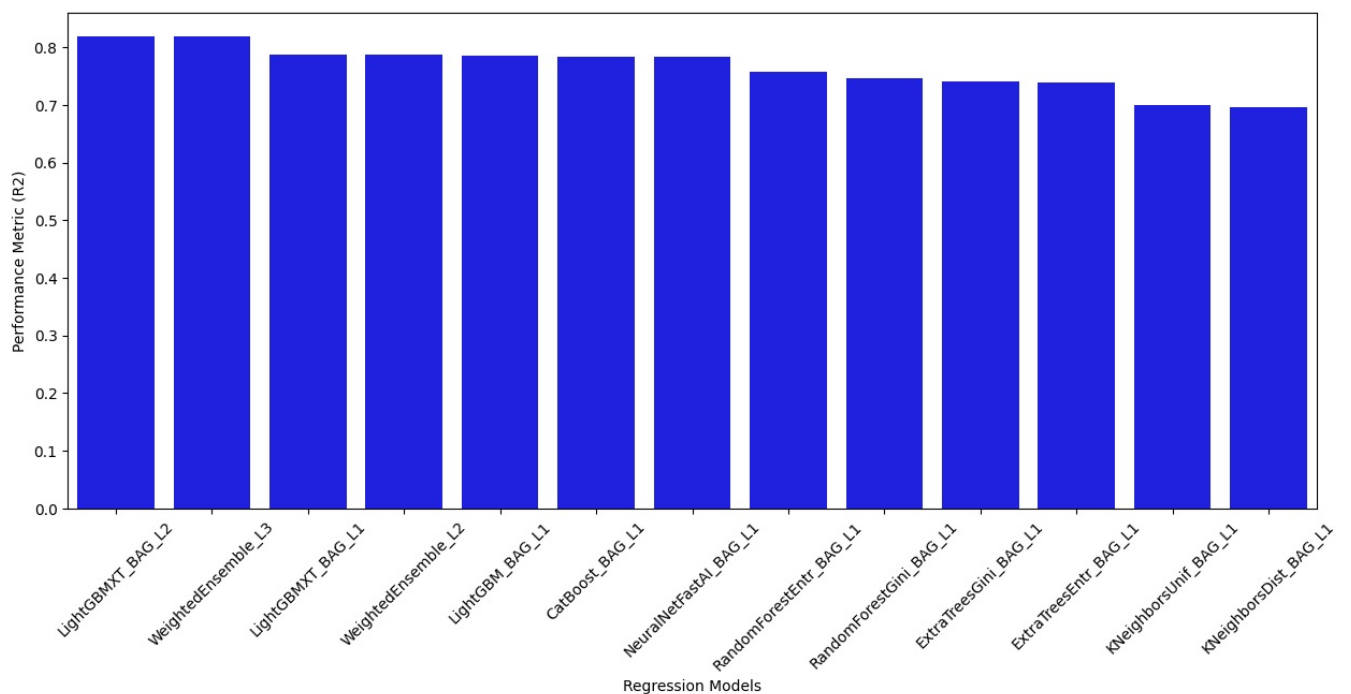
      fit_order
0      12
1      13
2      3
3      11
4      4
5      7
6      10
7      6
8      5
9      8
10     9
11     1
12     2 }
```

```
In [ ]: predictor.leaderboard()
```

```
Out[ ]:
```

	model	score_val	eval_metric	pred_time_val	fit_time	pred_time_val_marginal	fit_time_marginal	stack_level	can_i
0	LightGBMXT_BAG_L2	0.819218	accuracy	1.062718	163.908467	0.019158	26.076876	2	
1	WeightedEnsemble_L3	0.819218	accuracy	1.064200	164.171968	0.001482	0.263501	3	
2	LightGBMXT_BAG_L1	0.786645	accuracy	0.018997	28.118349	0.018997	28.118349	1	
3	WeightedEnsemble_L2	0.786645	accuracy	0.020678	28.352640	0.001680	0.234292	2	
4	LightGBM_BAG_L1	0.785016	accuracy	0.030928	28.306852	0.030928	28.306852	1	
5	CatBoost_BAG_L1	0.783388	accuracy	0.015483	27.523235	0.015483	27.523235	1	
6	NeuralNetFastAI_BAG_L1	0.783388	accuracy	0.225359	49.015925	0.225359	49.015925	1	
7	RandomForestEntr_BAG_L1	0.757329	accuracy	0.126644	1.078608	0.126644	1.078608	1	
8	RandomForestGini_BAG_L1	0.745928	accuracy	0.210569	1.625404	0.210569	1.625404	1	
9	ExtraTreesGini_BAG_L1	0.741042	accuracy	0.207468	1.123782	0.207468	1.123782	1	
10	ExtraTreesEntr_BAG_L1	0.739414	accuracy	0.167873	1.015274	0.167873	1.015274	1	
11	KNeighborsUnif_BAG_L1	0.700326	accuracy	0.025311	0.015829	0.025311	0.015829	1	
12	KNeighborsDist_BAG_L1	0.697068	accuracy	0.014929	0.008334	0.014929	0.008334	1	

```
In [ ]: # Inisialisasi figur matplotlib
f, ax = plt.subplots(figsize = (15, 6))
sns.barplot(x = "model", y = "score_val", data = predictor.leaderboard(), color = "b")
ax.set(ylabel = "Performance Metric (R2)", xlabel = "Regression Models")
plt.xticks(rotation = 45);
```



```
In [ ]: predictor.evaluate(test_df)
```

```
Out[ ]: {'accuracy': 0.7857142857142857,
         'balanced_accuracy': 0.7324517796778683,
         'mcc': 0.4806954733843109,
         'roc_auc': 0.8633923245177967,
         'f1': 0.6292134831460674,
         'precision': 0.6666666666666666,
         'recall': 0.5957446808510638}
```

```
In [ ]: # menilai kinerja model
# Pilih 5 set data uji dan hasilkan prediksi
y_pred = predictor.predict(test_df)
print("Predictions: ", list(y_pred)[:5])
```

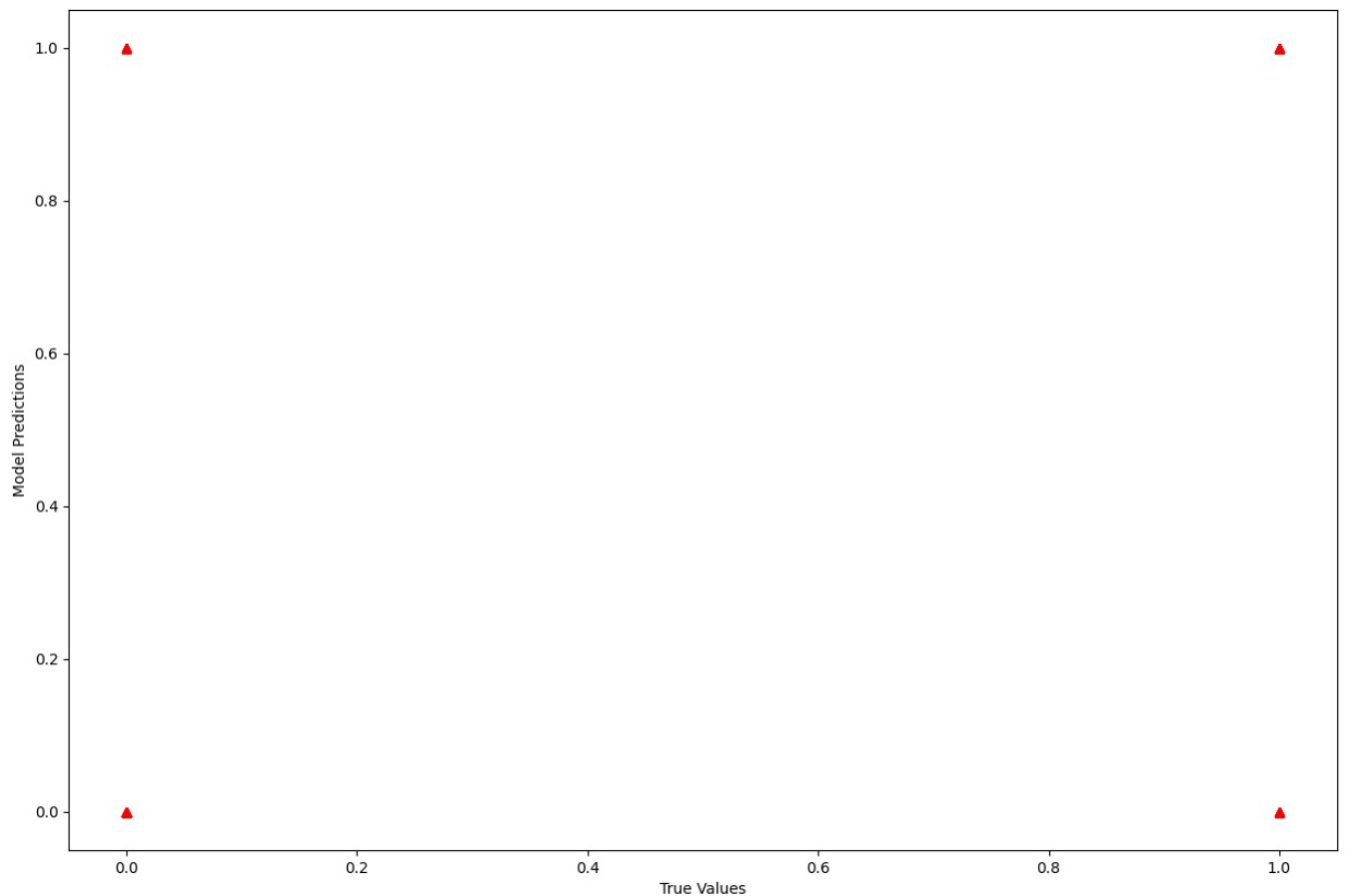
```
Predictions: [1, 0, 0, 1, 0]
```

```
In [ ]: y_test = test_df['Outcome']
y_test #groundtruth
```

```
Out[ ]: 661    1
122     0
113     0
14      1
529     0
..
476     1
482     0
230     1
527     0
380     0
Name: Outcome, Length: 154, dtype: int64
```

```
In [ ]: y_predict = predictor.predict(test_df)
plt.figure(figsize = (15, 10))
plt.plot(y_test, y_predict, "^", color = 'r')
plt.ylabel('Model Predictions')
plt.xlabel('True Values')
```

```
Out[ ]: Text(0.5, 0, 'True Values')
```



```
In [ ]: from sklearn.metrics import r2_score, mean_squared_error, mean_absolute_error
        from math import sqrt
```

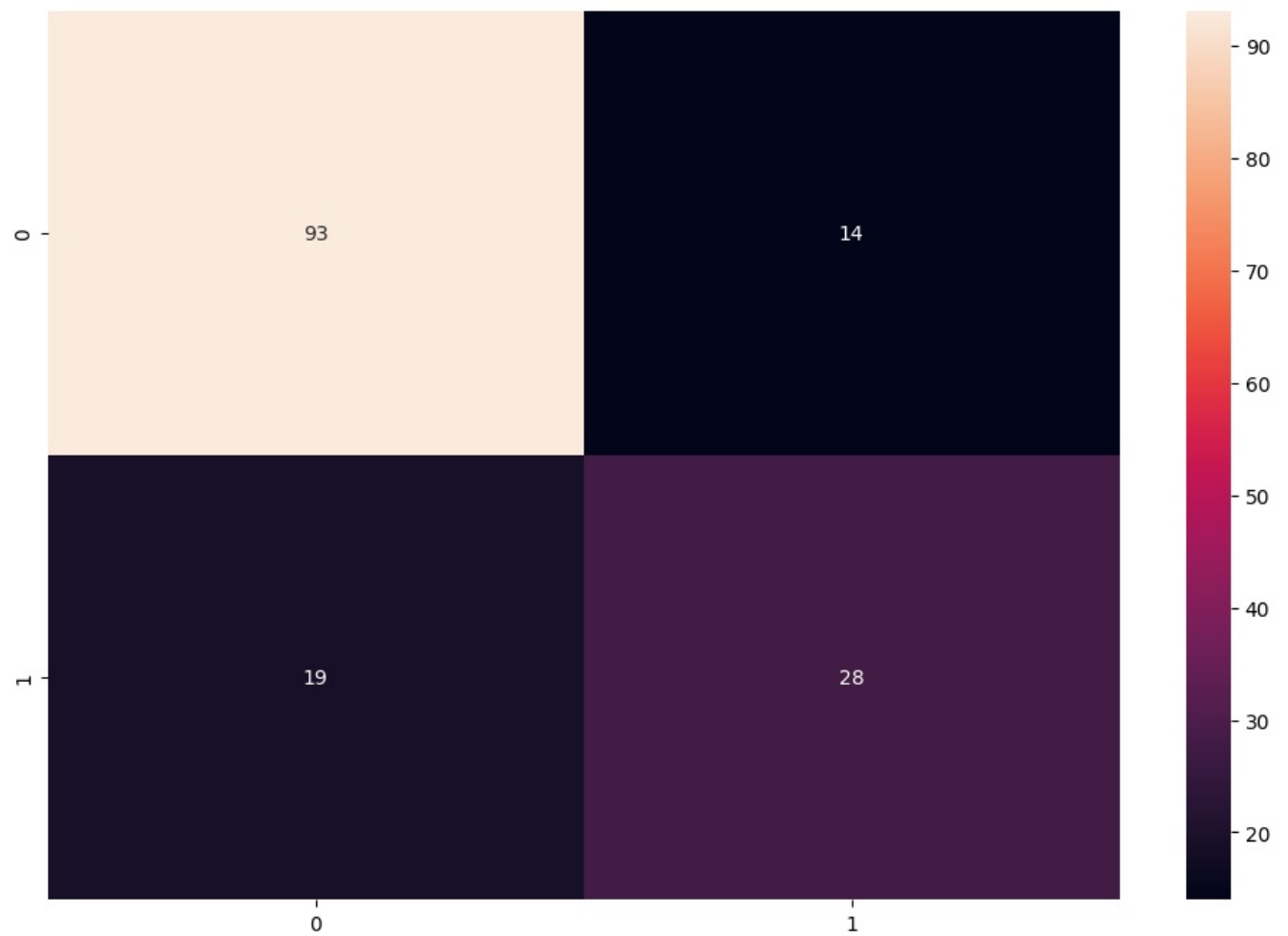
```
RMSE = float(format(np.sqrt(mean_squared_error(y_test, y_predict)), '.3f'))
MSE = mean_squared_error(y_test, y_predict)
MAE = mean_absolute_error(y_test, y_predict)
r2 = r2_score(y_test, y_predict)
```

```
print('RMSE =', RMSE, '\nMSE =', MSE, '\nMAE =', MAE, '\nR2 =', r2)
```

```
RMSE = 0.463
MSE = 0.21428571428571427
MAE = 0.21428571428571427
R2 = -0.01053887452773905
```

```
In [ ]: # Performa pada data latih
        from sklearn.metrics import confusion_matrix
        # Performa pada data uji
        plt.figure(figsize = (12, 8))
        cm = confusion_matrix(y_test, y_pred)
        sns.heatmap(cm, annot=True)
```

```
Out[ ]: <Axes: >
```



```
In [ ]: from sklearn.metrics import classification_report  
print(classification_report(y_test, y_pred))
```

	precision	recall	f1-score	support
0	0.83	0.87	0.85	107
1	0.67	0.60	0.63	47
accuracy			0.79	154
macro avg	0.75	0.73	0.74	154
weighted avg	0.78	0.79	0.78	154

Loading [MathJax]/extensions/Safe.js