

# Time Series Analysis with Pandas

Perform time series analysis with pandas, including resampling, rolling statistics, and lagging using dataset(<https://www.kaggle.com/datasets/brendan45774/test-file>).

```
In [31]: import pandas as pd
import numpy as np
df = pd.read_csv('tested.csv')

df['Rolling_Fare'] = df['Fare'].rolling(window=5).mean()

df['Lagged_Fare'] = df['Fare'].shift(1)

df['Rolling_Age'] = df['Age'].rolling(window=3).mean()

df['Lagged_Survived'] = df['Survived'].shift(2)
print(df.head(10))
```

|   | PassengerId | Survived | Pclass | \ |
|---|-------------|----------|--------|---|
| 0 | 892         | 0        | 3      |   |
| 1 | 893         | 1        | 3      |   |
| 2 | 894         | 0        | 2      |   |
| 3 | 895         | 0        | 3      |   |
| 4 | 896         | 1        | 3      |   |
| 5 | 897         | 0        | 3      |   |
| 6 | 898         | 1        | 3      |   |
| 7 | 899         | 0        | 2      |   |
| 8 | 900         | 1        | 3      |   |
| 9 | 901         | 0        | 3      |   |

|   | Name   | Sex    | Age  | SibSp | Parch | \ |
|---|--|--------|------|-------|-------|---|
| 0 | Kelly, Mr. James                             | male   | 34.5 | 0     | 0     |   |
| 1 | Wilkes, Mrs. James (Ellen Needs)             | female | 47.0 | 1     | 0     |   |
| 2 | Myles, Mr. Thomas Francis                    | male   | 62.0 | 0     | 0     |   |
| 3 | Wirz, Mr. Albert                             | male   | 27.0 | 0     | 0     |   |
| 4 | Hirvonen, Mrs. Alexander (Helga E Lindqvist) | female | 22.0 | 1     | 1     |   |
| 5 | Svensson, Mr. Johan Cervin                   | male   | 14.0 | 0     | 0     |   |
| 6 | Connolly, Miss. Kate                         | female | 30.0 | 0     | 0     |   |
| 7 | Caldwell, Mr. Albert Francis                 | male   | 26.0 | 1     | 1     |   |
| 8 | Abraham, Mrs. Joseph (Sophie Halaut Easu)    | female | 18.0 | 0     | 0     |   |
| 9 | Davies, Mr. John Samuel                      | male   | 21.0 | 2     | 0     |   |

|   | Ticket    | Fare    | Cabin | Embarked | Rolling_Fare | Lagged_Fare | Rolling_Age | \ |
|---|-----------|---------|-------|----------|--------------|-------------|-------------|---|
| 0 | 330911    | 7.8292  | NaN   | Q        | NaN          | NaN         | NaN         |   |
| 1 | 363272    | 7.0000  | NaN   | S        | NaN          | 7.8292      | NaN         |   |
| 2 | 240276    | 9.6875  | NaN   | Q        | NaN          | 7.0000      | 47.833333   |   |
| 3 | 315154    | 8.6625  | NaN   | S        | NaN          | 9.6875      | 45.333333   |   |
| 4 | 3101298   | 12.2875 | NaN   | S        | 9.09334      | 8.6625      | 37.000000   |   |
| 5 | 7538      | 9.2250  | NaN   | S        | 9.37250      | 12.2875     | 21.000000   |   |
| 6 | 330972    | 7.6292  | NaN   | Q        | 9.49834      | 9.2250      | 22.000000   |   |
| 7 | 248738    | 29.0000 | NaN   | S        | 13.36084     | 7.6292      | 23.333333   |   |
| 8 | 2657      | 7.2292  | NaN   | C        | 13.07418     | 29.0000     | 24.666667   |   |
| 9 | A/4 48871 | 24.1500 | NaN   | S        | 15.44668     | 7.2292      | 21.666667   |   |

|   | Lagged_Survived |
|---|-----------------|
| 0 | NaN             |
| 1 | NaN             |
| 2 | 0.0             |
| 3 | 1.0             |
| 4 | 0.0             |
| 5 | 0.0             |
| 6 | 1.0             |
| 7 | 0.0             |
| 8 | 1.0             |
| 9 | 0.0             |

In [ ]: