



# FSM Mid-Internship Review



## INTP23 ML-05

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Under Mentorship of  
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**IITD-AIA FOUNDATION FOR SMART MANUFACTURING**

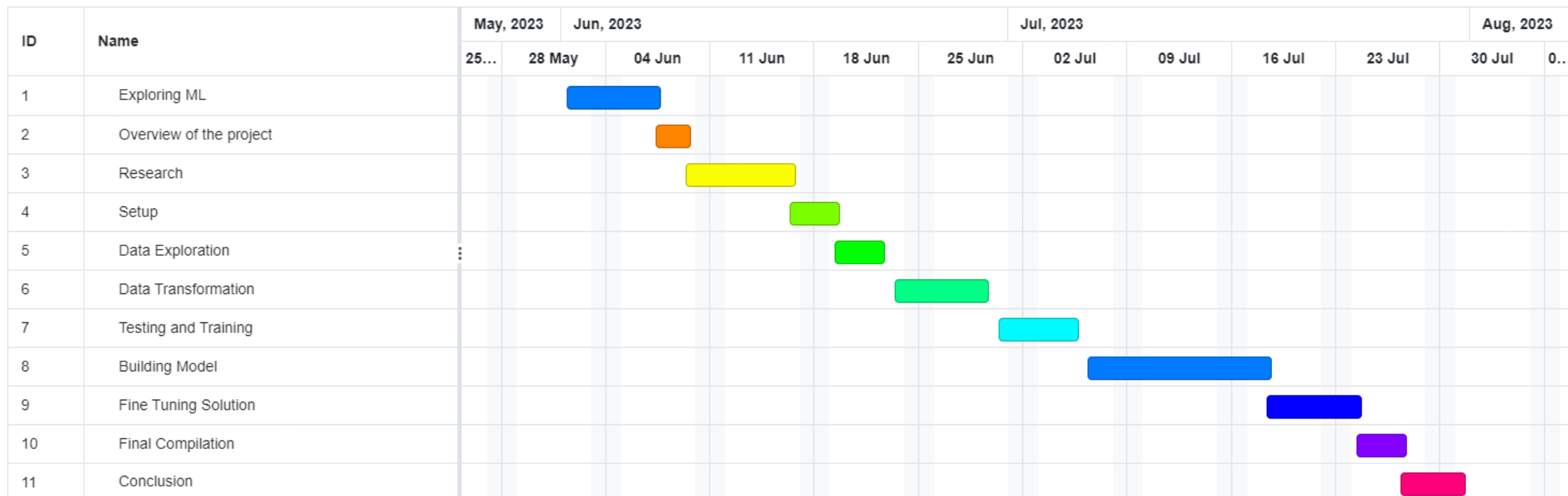


# Objectives

- Learn about shearing machine – 95%
- Practice on NASA Turbine Degradation Dataset – 100%
- Practiced on Kaggle Dataset – 70%
- Worked on Data Preprocessing on FSM Dataset – 0%
- Worked on creating model for FSM Dataset – 0%
- Testing and Processing – 0%



# Timeline - Gantt chart





# Screenshots of development



```
machinepredictive.ipynb x  J pla3.java 1 •
C: > Users > 91923 > Downloads > machinepredictive.ipynb > clf = LogisticRegression()
+ Code + Markdown | ▶ Run All ⌵ Clear All Outputs ↺ Restart | 📄 Variables 📄 Outline ... Python 3.9.7
[ 001 ]
    'Air temperature [K]',
    'Process temperature [K]',
    'Rotational speed [rpm]',
    'Torque [Nm]',
    'Tool wear [min]',
    'Target']

    for i , col in enumerate(num_cols,1):
        print(i , col)

[23] Python
... 1 UDI
    2 Air temperature [K]
    3 Process temperature [K]
    4 Rotational speed [rpm]
    5 Torque [Nm]
    6 Tool wear [min]
    7 Target

    plt.figure(figsize = (15 , 10))
    for i , col in enumerate(num_cols,1):
        plt.subplot(6,1,i)
```

PROBLEMS 1 OUTPUT TERMINAL JUPYTER SERIAL MONITOR DEBUG CONSOLE

\* History restored

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PS C:\Users\91923>



# Screenshots of development

machinepredictive.ipynb | laptopdataclean.ipynb | weatherprediction.ipynb X | J pla3.java 1

C: > Users > 91923 > Downloads > weatherprediction.ipynb > import numpy as np

+ Code + Markdown | Run All Clear All Outputs Restart | Variables Outline ... Python 3.9.7

```
[1] import numpy as np
import pandas as pd

import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.ensemble import RandomForestClassifier
from sklearn.svm import SVC
from sklearn.linear_model import SGDClassifier
from sklearn.metrics import confusion_matrix, classification_report
from sklearn.preprocessing import StandardScaler, LabelEncoder
from sklearn.model_selection import train_test_split, GridSearchCV, cross_val_score
from sklearn.linear_model import LogisticRegression
```

```
[2] df = pd.read_csv("C:\\Users\\91923\\Downloads\\seattle-weather.csv")
df
```

	date	precipitation	temp_max	temp_min	wind	weather
0	2012-01-01	0.0	12.8	5.0	4.7	drizzle
1	2012-01-02	10.9	10.6	2.8	4.5	rain
2	2012-01-03	0.8	11.7	7.2	2.3	rain

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\* History restored

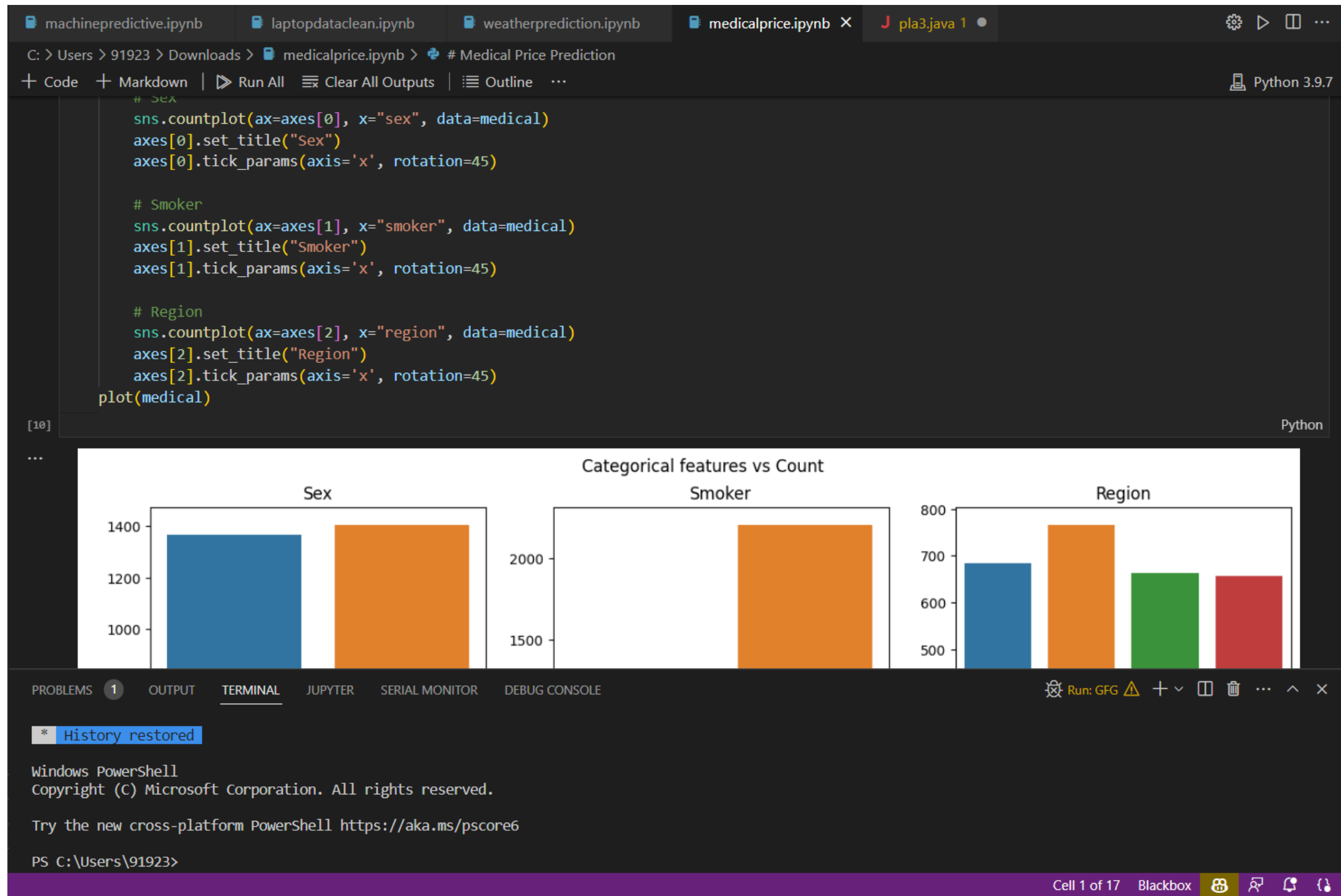
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# Screenshots of development





# Screenshots of development



```
machinepredictive.ipynb  laptopdataclean.ipynb  weatherprediction.ipynb  medicalprice.ipynb  taxi fare.ipynb X  J pla3.java 1 ●  Python 3.9.7

C: > Users > 91923 > Downloads > taxi fare.ipynb > Taxi Fare Visualization

+ Code + Markdown | Run All Clear All Outputs Outline ...

TIT T010=3 6.802[s]
Fold 3 RMSLE: 4.4951

c:\Users\91923\AppData\Local\Programs\Python\Python39\lib\site-packages\lightgbm\sklearn.py:726: UserWarning: 'early_stopping_rounds' argument is
_log_warning("'early_stopping_rounds' argument is deprecated and will be removed in a future release of LightGBM. ")
c:\Users\91923\AppData\Local\Programs\Python\Python39\lib\site-packages\lightgbm\sklearn.py:736: UserWarning: 'verbose' argument is deprecated and
_log_warning("'verbose' argument is deprecated and will be removed in a future release of LightGBM. ")
[500] valid_0's rmse: 4.99753
fit fold=4 11.775[s]
Fold 4 RMSLE: 4.8484

-----
FINISHED | Whole RMSLE: 7.0674

[9] for i in range(1):
    fig, ax = visualize_importance(models, train_feat_df)
    ax.set_title(target[i]+' Imortance', fontsize=20)

... ['fare', 'trip_duration', 'tip', 'distance_traveled', 'miscellaneous_fees', 'surge_applied', 'num_of_passengers']

</>

total_fare Imortance

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PS C:\Users\91923>
```



# Screenshots of development



```
machinepredictive.ipynb  laptopdataclean.ipynb  J pla3.java 1
C: > Users > 91923 > Downloads > laptopdataclean.ipynb > import pandas as pd
+ Code + Markdown | Run All Clear All Outputs Restart Variables Outline ... Python 3.9.7

... (1017, 38)

[28] dt = DecisionTreeRegressor()
      dt.fit(X_train,y_train) Python

... DecisionTreeRegressor()

[29] y_pred = dt.predict(X_test)
      r2_score(y_test,y_pred) Python

... 0.8107094645399501

models = {
    "Random Forest": RandomForestRegressor(),
    "Gradient Boosting": GradientBoostingRegressor(),
    "XGBRegressor": XGBRegressor(),
    "CatBoosting Regressor": CatBoostRegressor(verbose=False),
    "AdaBoost Regressor": AdaBoostRegressor(),
}
```

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# Thank You

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