AIR QUALITY MONITORING

HARDWARE SETUP

Arduino Uno R3

MQ 135 Gas Sensor

PM2.5 Dust and Particulate Matter Sensor

BME-280 Temperature, humidity and pressure sensor

Internet Connection

PYTHON PROGRAM

# importing Randomforest

from sklearn.ensemble import AdaBoostRegressor

from sklearn.ensemble import RandomForestRegressor

# creating model

m1 = RandomForestRegressor()

# separating class label and other attributes

train1 = train.drop (['air\_quality\_index'], axis=1)

target = train ['air\_quality\_index']

# Fitting the model

m1.fit(train1, target)

'''RandomForestRegressor(bootstrap=True, ccp\_alpha=0.0, criterion='mse',

                  max\_depth=None,max\_features='auto',max\_leaf\_nodes=None,

                      max\_samples=None, min\_impurity\_decrease=0.0,

                      min\_impurity\_split=None, min\_samples\_leaf=1,

                      min\_samples\_split=2, min\_weight\_fraction\_leaf=0.0,

                      n\_estimators=100, n\_jobs=None, oob\_score=False,

                      random\_state=None, verbose=0, warm\_start=False)'''

# calculating the score and the score is  97.96360799890066%

m1.score(train1, target) \* 100

# predicting the model with other values (testing the data)

# so AQI is 123.71

m1.predict([[123, 45, 67, 34, 5, 0, 23]])

# Adaboost model

# importing module

# defining model

m2 = AdaBoostRegressor()

# Fitting the model

m2.fit(train1, target)

'''AdaBoostRegressor(base\_estimator=None,learning\_rate=1.0,loss='linear',

                  n\_estimators=50, random\_state=None)'''

# calculating the score and the score is  96.15377360010211%

m2.score(train1, target)\*100

# predicting the model with other values (testing the data)

# so AQI is 94.42105263

m2.predict([[123, 45, 67, 34, 5, 0, 23]])

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| **AQI Level** | **AQI Range** |
| Good | 0 – 50 |
| Moderate | 51 – 100 |
| Unhealthy | 101 – 150 |
| Unhealthy for Strong People | 151 – 200 |
| Hazardous | 201+ |

OUTPUT

