

Hope Artificial Intelligence



Classification Assignment

Problem Statement or Requirement:

A requirement from the Hospital, Management asked us to create a predictive model which will predict the Chronic Kidney Disease (CKD) based on the several parameters. The Client has provided the dataset of the same.

1.) Identify your problem statement

The hospital management wants to build a predictive machine learning model that can predict a patient have Chronic Kidney Disease (CKD) or not. based on several medical parameters.

2.) Tell basic info about the dataset (Total number of rows, columns)

399 rows × 25 columns

3.) Mention the pre-processing method if you're doing any (like converting string to number – nominal data)

Convert string to numerical for 'dm_no', 'dm_yes', 'cad_yes', 'appet_poor', 'appet_yes', 'pe_poor', 'pe_yes', 'ane_no', 'ane_yes' by using one hot encoding it is nominal

4.) Develop a good model with good evaluation metric. You can use any machine learning algorithm; you can create many models. Finally, you have to come up with final model.

```
from sklearn.model_selection import GridSearchCV # built model for grid search
from sklearn.ensemble import RandomForestClassifier
param_grid = {
    'criterion': ['gini', 'entropy', 'log_loss'],
    'max_depth': [None, 5, 10, 15],
    'n_estimators': [100, 200]
}

grid= GridSearchCV(RandomForestClassifier(),param_grid, refit=True, verbose=3, n_jobs=-1, scoring= 'f1_weighted')
grid.fit(x_train,y_train)
```

predictive machine learning model that can predict a patient have Chronic Kidney Disease (CKD) or not. based on several medical parameters. Compared with a all other algorithms random forrest has better roc auc ,accuracy and f1-score

5.) All the research values of each algorithm should be documented. (You can make tabulation or screenshot of the results.)

Model	ROC AUC Score	Accuracy
Random Forest	0.9967	0.97
LGBost (LightGBM)	0.9943	0.97

XGBoost	0.9925	0.96
Logistic Regression	0.9940	0.96
Naive Bayes	0.9940	0.96
AdaBoost	0.9931	0.96
Decision Tree	0.9689	0.97
K-Nearest Neighbors	0.9037	0.82

6.) Mention your final model, justify why u have chosen the same.

After evaluate I chose compared random forest Compared with a all other algorithms random forsest has better roc auc ,accuracy and f1-score

Random forest:1. ROC AUC: 0.9967407407407407
2.ACCURACY: 0.97