**Linear Regression (Language Used: R)**

- **To perform linear regression**

model=lm(cnt~.,data=hour)

summary(model)

-**To compare the performance of two models in order to distinguish significant features**

first=lm(cnt~.,data=hour)

second=lm(cnt~season+yr+hr+holiday+weekday+weathersit+temp+atemp+hum+windspeed,data=hour)

anova(second,first)//to check if removing some features has significant effect on the performance of the model

**Principal Component Regression(Language Used: R)**

-**To install the package and load the 'pls' library**

install.packages("pls")

library(pls)

-**To perform 10 fold cross-validation**

result1 <- pcr(cnt~.,ncomp = 10, data = train, validation = "CV")

plot(RMSEP(result1))//plots the RMSE vs number of components

RMSEP(result1,newdata=test)//uses the trained model on the test data

plot(result1, ncomp = 2, asp = 1, line = TRUE)//shows how the data is spread with respect to the regression line by taking 2 components

**Support Vector Regression(Language Used: R)**

-**To install package and load the 'e1071' library**

install.packages("e1071")

library(e1071)

-**To use different kernels (apart from the ones enlisted, other parameters can also be tuned for the respective kernels)**

model<-svm(formula = cnt ~ ., data = hour1, type = "eps", kernel = "linear", cross = 10)

model<-svm(cnt~.,data=hour,type='eps',kernel='polynomial',degree=2,cost=2,cross=10)

model<-svm(formula = cnt ~ ., data = hour, type = "eps", kernel = "radial", cost = 15, gamma = 0.005, cross = 10)

model<-svm(formula = cnt ~ ., data = hour1, type = "eps", kernel = "sigmoid", cost = 20, gamma = 0.5, epsilon = 0.01, cross = 10)

summary(model)

-**For fine tuning the parameters**

model<- tune.svm(cnt~.,data=hour,type='eps',kernel='radial',gamma = 2^(-1:1), cost = 2^(2:4),cross=10)