

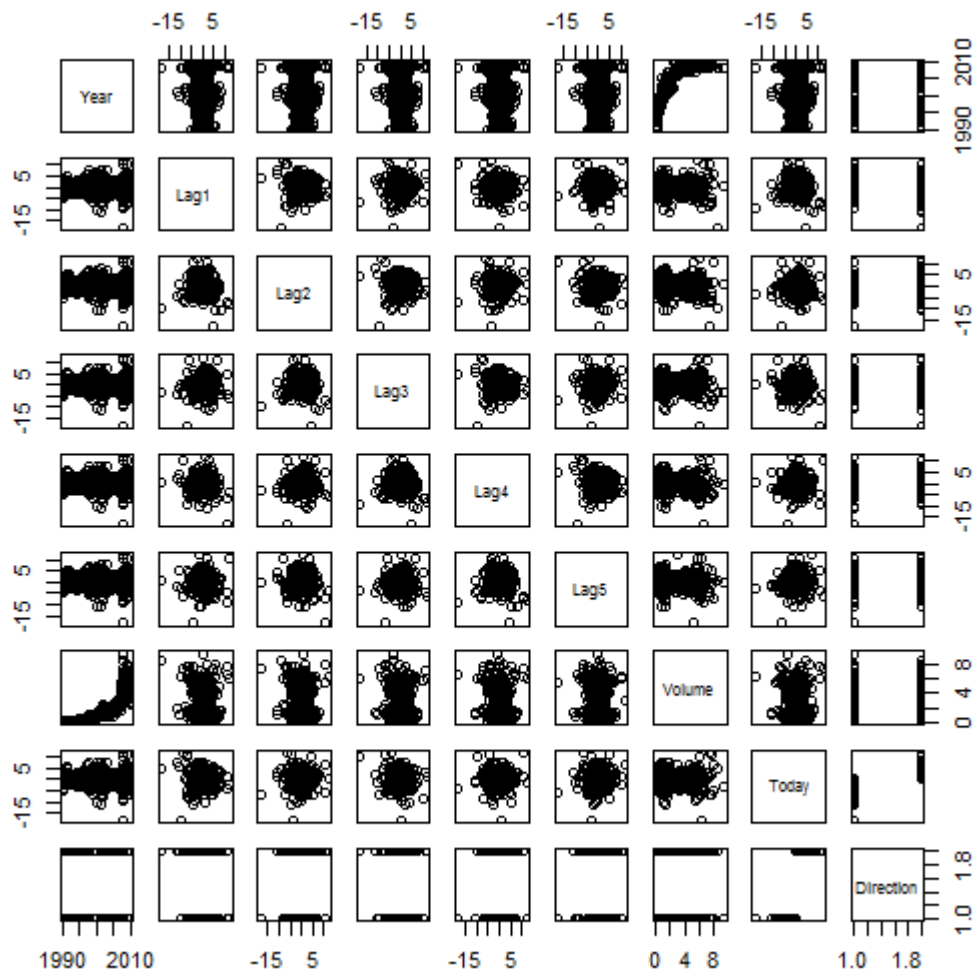
Brief Summary

```
##   Year      Lag1      Lag2      Lag3
## Min. :1990 Min. : -18.195 Min. : -18.195 Min. : -18.195
## 1st Qu.:1995 1st Qu.: -1.154 1st Qu.: -1.154 1st Qu.: -1.158
## Median :2000 Median : 0.241 Median : 0.241 Median : 0.241
## Mean   :2000 Mean   : 0.151 Mean   : 0.151 Mean   : 0.147
## 3rd Qu.:2005 3rd Qu.: 1.405 3rd Qu.: 1.409 3rd Qu.: 1.409
## Max.   :2010 Max.   : 12.026 Max.   : 12.026 Max.   : 12.026

##   Lag4      Lag5      Volume      Today
## Min. : -18.195 Min. : -18.195 Min. : 0.087 Min. : -18.195
## 1st Qu.: -1.158 1st Qu.: -1.166 1st Qu.: 0.332 1st Qu.: -1.154
## Median : 0.238 Median : 0.234 Median : 1.003 Median : 0.241
## Mean   : 0.146 Mean   : 0.140 Mean   : 1.575 Mean   : 0.150
## 3rd Qu.: 1.409 3rd Qu.: 1.405 3rd Qu.: 2.054 3rd Qu.: 1.405
## Max.   : 12.026 Max.   : 12.026 Max.   : 9.328 Max.   : 12.026

## Direction
## Down:484
## Up :605
```

Among the correlation matrix (pairs()) only Year and Volume appear to have a relationship. Other variables did not appear to have significant correlations



-Lag2 is the only variable with a significant effect on the outcome (using binomial logistic regression)

-Binomial logistic regression and LDA provide very close test error rates.

-Out of these different tests, the original LDA and logistic regression have better fits (IE Lower test error rates)

The mean outcomes of these models tell us the average number of outcomes they predicted properly.

The following expected values for the models are based on simplified models using an interaction term between Lag2 and Lag1 (Lag1:Lag2 in R)

$E[\text{GLM}] = 0.5865385$

$E[\text{QDA}] = 0.5769231$

$E[\text{LDA}] = 0.5769231$

$E[\text{KNN}, k=50] = 0.5961538$

$E[\text{KNN}, k=100] = 0.5673077$

Interestingly enough, K-clustering with a K value of 50 is the most accurate model for predicting weekly stock market outcomes.

Unfortunately, because this data is not likely indicative of an index such as the Dow Jones Industrial average, these prediction rates aren't very telling.