Linear Disciminant Analysis

Yichang Liu 501777

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Linear Discriminant Ananlysis

```
library(ISLR)
attach(Smarket)
train = (Year<2005)
Smarket.2005 = Smarket[!train,]
dim(Smarket.2005)
```

```
## [1] 252   9
```

```
Direction.2005 = Direction[!train]
```

```
library(MASS)
lda.fit = lda(Direction~Lag1+Lag2,data=Smarket,subset = train)
lda.fit
```

```
## Call:
## lda(Direction ~ Lag1 + Lag2, data = Smarket, subset = train)
##
## Prior probabilities of groups:
##     Down       Up
## 0.491984 0.508016
##
## Group means:
##             Lag1        Lag2
## Down  0.04279022  0.03389409
## Up   -0.03954635 -0.03132544
##
## Coefficients of linear discriminants:
##             LD1
## Lag1 -0.6420190
## Lag2 -0.5135293
```

```
lda.pred = predict(lda.fit,Smarket.2005)
names(lda.pred)
```

```
## [1] "class"     "posterior" "x"
```

```
lda.class = lda.pred$class
lda.post = lda.pred$posterior
lda.x = lda.pred$x
```

```
table(lda.class,Direction.2005)
```

```
##          Direction.2005
```

```
## lda.class Down  Up
##      Down   35  35
##      Up     76 106
```

```
mean(lda.class == Direction.2005)
```

```
## [1] 0.5595238
```