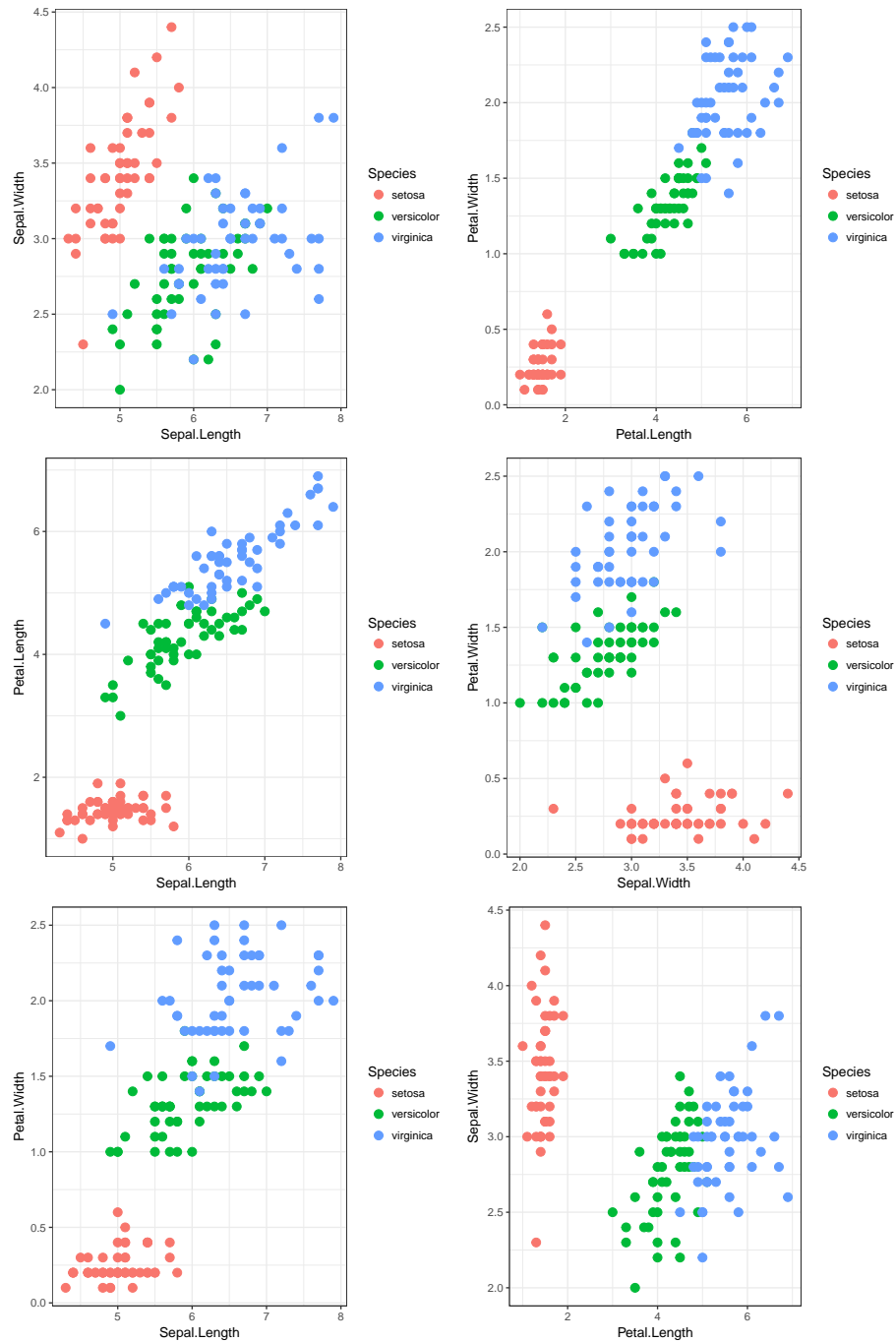
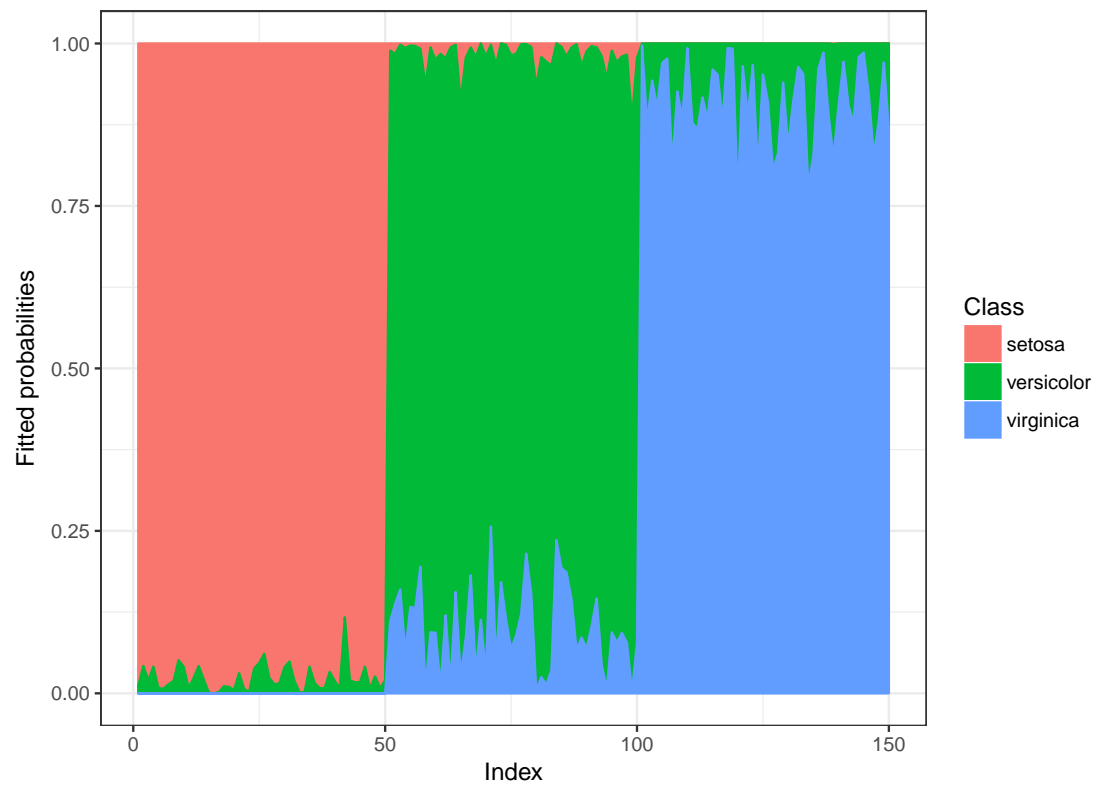


0.1 Iris data set

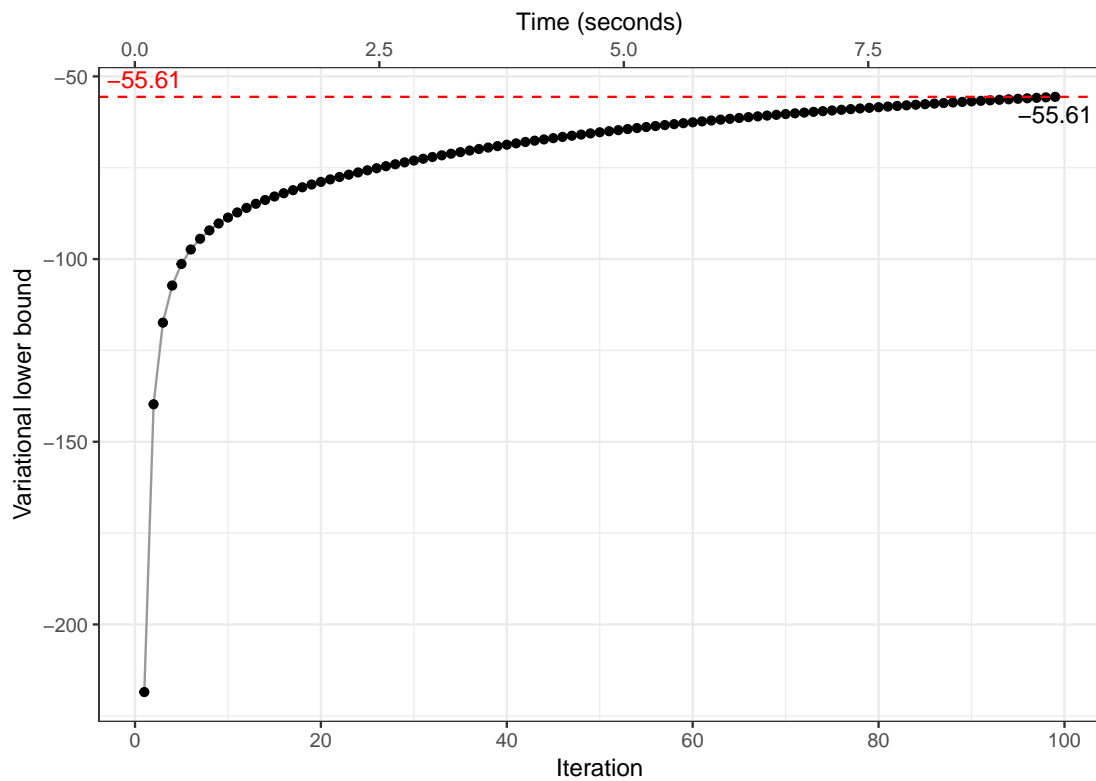


```
R> (mod <- iprobit_mult(y, X, silent = TRUE))  
## Lower bound value = -55.60715  
## Iterations = 100
```

```
##
##           Class = 1 Class = 2 Class = 3
## Intercept -0.21708  1.20009  -1.13551
## lambda    -0.35226  -0.35226  -0.35226
R> plot(mod)
```



```
R> iplot_lb(mod)
```

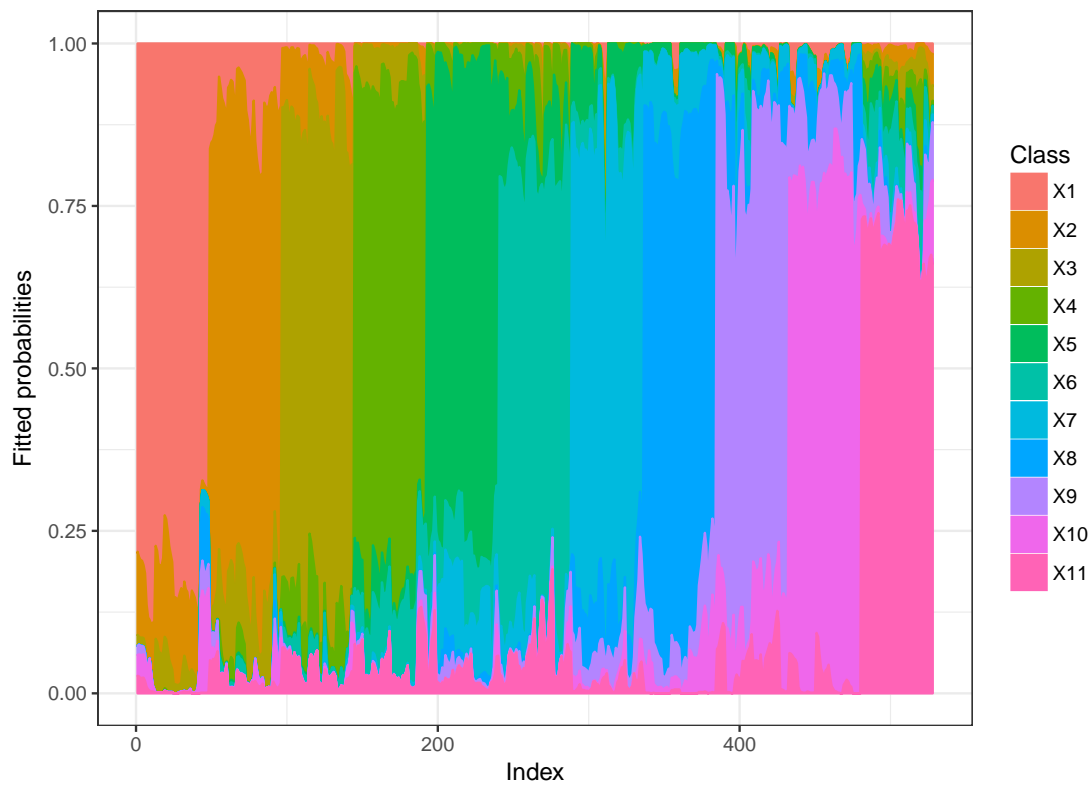


0.2 Vowel recognition data set

```
## class x.1 x.2 x.3 x.4 x.5 x.6 x.7 x.8 x.9 x.10
## 1 1 -3.639 0.418 -0.670 1.779 -0.168 1.627 -0.388 0.529 -0.874 -0.814
## 2 2 -3.327 0.496 -0.694 1.365 -0.265 1.933 -0.363 0.510 -0.621 -0.488
## 3 3 -2.120 0.894 -1.576 0.147 -0.707 1.559 -0.579 0.676 -0.809 -0.049
## 4 4 -2.287 1.809 -1.498 1.012 -1.053 1.060 -0.567 0.235 -0.091 -0.795
## 5 5 -2.598 1.938 -0.846 1.062 -1.633 0.764 0.394 -0.150 0.277 -0.396
## 6 6 -2.852 1.914 -0.755 0.825 -1.588 0.855 0.217 -0.246 0.238 -0.365
```

```
R> set.seed(123)
R> (mod <- iprobit_mult(vow.tr$class, vow.tr[, -1], kernel = "FBM", silent = TRUE))

## Lower bound value = -736.8918
## Iterations = 100
##
## Class = 1 Class = 2 Class = 3 Class = 4 Class = 5 Class = 6
## Intercept -0.11514 0.13838 0.04304 0.07129 0.21767 0.46536
## lambda -0.13430 -0.13430 -0.13430 -0.13430 -0.13430 -0.13430
## Class = 7 Class = 8 Class = 9 Class = 10 Class = 11
## Intercept 0.40117 -0.3387 0.47458 -0.06605 0.67874
## lambda -0.13430 -0.1343 -0.13430 -0.13430 -0.13430
R> plot(mod)
```



```
R> predict(mod, X.test = vow.ts[, -1], y.test = vow.ts[, 1])
## Test error rate: 41 %
```

| | Error rates | |
|------------------------------|-------------|------|
| | Training | Test |
| k-Nearest neighbours | NA | 44 |
| Linear regression | 48 | 67 |
| Linear discriminant analysis | 32 | 56 |
| Neural network | NA | 45 |
| FDA/BRUTO | 6 | 44 |
| FDA/MARS | 13 | 39 |
| I-probit (FBM-0.5) | 0 | 41 |