Classificação de sinais de EEG com modelos de regressão funcional

Rodrigo Marcel Araujo Oliveira Araujo[1]

Março de 2021

Sumário

[1]Número USP: 9299208

Leitura dos dados de treino

```
alcoholism_train = read.csv("Alcoholism_train.csv", sep = ',')

s2_match_train <- alcoholism_train %>% filter(matching.condition=="S2 match") %>% dplyr::select(subject

head(s2_match_train) %>% kable(caption="Dados Treino")
```

Tabela 1: Dados Treino

subject.identifier	name	sensor.value	channel
a	co2a0000369	-3,15	0
a	co2a0000369	-3,15	0
a	co2a0000369	-3,64	0
a	co2a0000369	-4,13	0
a	co2a0000369	-4,62	0
a	co2a0000369	-4,62	0

Leitura dos dados de teste

```
alcoholism_test = read.csv("Alcoholism_test.csv", sep = ',')

s2_match_test <- alcoholism_test %>% filter(matching.condition=="S2 match") %>% dplyr::select(subject.i

head(s2_match_test) %>% kable(caption="Dados Teste")
```

Tabela 2: Dados Teste

subject.identifier	name	sensor.value	channel
a	co2a0000369	-11,19	0
a	co2a0000369	-11,68	0
a	co2a0000369	-13,14	0
a	co2a0000369	-14,12	0
a	co2a0000369	-14,12	0
a	co2a0000369	-12,17	0

Tratamento dos dados

```
s2_match_train$subject.identifier <-ifelse(s2_match_train$subject.identifier=="a",0,1)
s2_match_test$subject.identifier <-ifelse(s2_match_test$subject.identifier=="a",0,1)

s2_match_train$subject.identifier <- as.factor(s2_match_train$subject.identifier)
s2_match_train$name <- as.factor(s2_match_train$name)
s2_match_train$sensor.value <- as.numeric(s2_match_train$sensor.value)
s2_match_train$channel <- as.factor(s2_match_train$channel)


s2_match_test$subject.identifier <- as.factor(s2_match_test$subject.identifier)
s2_match_test$name <- as.factor(s2_match_test$name)
s2_match_test$sensor.value <- as.numeric(s2_match_test$sensor.value)
s2_match_test$channel <- as.factor(s2_match_test$channel)
```

FDboost

```
sof_binary <- FDboost(
  subject.identifier ~ 1 +
  sensor.value +
  channel +
  name,
  data = s2_match_train,
  family = Binomial(),
  control = boost_control(mstop = 100),
  timeformula = NULL)

predictions <- predict(sof_binary, type = "response")
round_preds <- round(predictions)
table(round_preds, s2_match_train$subject.identifier)
```

```
##
## round_preds       0       1
##           0 1310720       0
##           1       0 1294336
```

Predict test

```
predict_model <- predict(sof_binary, newdata = s2_match_test, type = "response")
table(round(predict_model), s2_match_test$subject.identifier)
```

```
##
##           0       1
##   0 1310720       0
##   1       0 1310720
```