SmartFly: Train model and validate via cross-validation

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January 12, 2015

Load prepared data from the previous step "Prepare Data For Modeling"

```
rm(list=ls()) #clear memory
load("../02_prepare_data_for_modeling/prepared_data.Rdata")
```

Model a flight being delayed as dependent of the taxi time in:

```
# fit a boosted tree model via the gbm package (that also requires package e1071)
library(caret)
set.seed(825)
intercept <- rep(1, length(training$is_delayed))</pre>
glmnetFit1 <- train(is_delayed ~ intercept + taxi_time_in, data=training,</pre>
                 method = "glmnet",
                 metric="ROC",
                 tuneGrid = eGrid,
                 trControl = cctrl4.
                 ## following options are to be passed through for glmnet()
                 family="binomial",
                 standardize = FALSE)
## Warning in train.default(x, y, weights = w, ...): The metric "ROC" was not in the result
set. Accuracy will be used instead.
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## Warning in nominalTrainWorkflow(x = x, y = y, wts = weights, info = trainInfo, : There
were missing values in resampled performance measures.
```

Check out the model result:

```
glmnetFit1
## glmnet
```

```
##
## 3687183 samples
##
        20 predictor
##
         2 classes: 'delayed', 'on_time'
##
## No pre-processing
   Resampling: Cross-Validated (3 fold)
##
##
   Summary of sample sizes: 2458122, 2458122, 2458122
##
##
  Resampling results across tuning parameters:
##
##
     alpha
                lambda Accuracy
                                    Kappa Accuracy SD
##
     0.0500000 0.1
                                           0
                         0.7138059
                                    NaN
##
     0.0500000
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                         0.7138059
                                    NaN
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                                           0
     0.0500000 0.3
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     0.5250000 0.5
                         0.7138059
                                    NaN
                                           0
##
     0.5928571 0.1
                         0.7138059
                                    NaN
```

```
##
    0.5928571 0.2
                        0.7138059 NaN
                                          0
                        0.7138059
##
    0.5928571 0.3
                                   NaN
                                          0
    0.5928571 0.4
                        0.7138059
                                          0
##
                                   NaN
                        0.7138059
##
    0.5928571 0.5
                                   NaN
                                          0
##
    0.6607143 0.1
                        0.7138059
                                   NaN
##
    0.6607143 0.2
                        0.7138059
                                   NaN
                                          0
##
    0.6607143 0.3
                        0.7138059
                                   NaN
                                          0
##
    0.6607143 0.4
                        0.7138059
                                   NaN
                                          0
##
    0.6607143 0.5
                        0.7138059
                                   NaN
    0.7285714 0.1
                        0.7138059
##
                                   NaN
                                          0
##
    0.7285714 0.2
                        0.7138059
                                   NaN
                                          0
##
    0.7285714 0.3
                        0.7138059
                                          0
                                   NaN
##
    0.7285714 0.4
                        0.7138059
                                   NaN
##
    0.7285714 0.5
                        0.7138059
                                   NaN
                                          0
##
    0.7964286 0.1
                        0.7138059
                                   NaN
                                          0
##
    0.7964286 0.2
                        0.7138059
                                          0
                                   NaN
    0.7964286 0.3
                        0.7138059
##
                                   NaN
                                          0
##
    0.7964286 0.4
                        0.7138059
                                   NaN
                                          0
##
    0.7964286 0.5
                        0.7138059
                                   NaN
                                          0
    0.8642857 0.1
                        0.7138059
                                   NaN
                                          0
##
                        0.7138059
    0.8642857 0.2
##
                                   NaN
                                          0
##
    0.8642857 0.3
                        0.7138059
                                   NaN
                                          0
##
    0.8642857 0.4
                        0.7138059
                                   NaN
                                          0
##
    0.8642857 0.5
                        0.7138059
                                   NaN
##
    0.9321429 0.1
                        0.7138059
                                          0
                                   NaN
    0.9321429 0.2
                        0.7138059
##
                                   NaN
                                          0
    0.9321429 0.3
                        0.7138059
##
                                   NaN
                                          0
##
    0.9321429 0.4
                        0.7138059
##
    0.9321429 0.5
                        0.7138059
                                   NaN
                                          0
##
    1.0000000 0.1
                        0.7138059
                                   NaN
                                          0
##
    1.0000000 0.2
                        0.7138059
                                   NaN
                                          0
##
    1.0000000 0.3
                        0.7138059
                                   NaN
                                          0
##
    1.0000000 0.4
                        0.7138059
                                          0
                                   NaN
##
    1.0000000 0.5
                        0.7138059
                                   NaN
##
## Accuracy was used to select the optimal model using the largest value.
## The final values used for the model were alpha = 0.05 and lambda = 0.5.
```

Save the model result:

```
save(glmnetFit1, file="glmnetFit1.Rdata")
```