STT 811

In-Class Assignment 10

This problem will use the OJ dataset. Note that you will use Purchase as the target (no need to convert to 0/1)

1. Split the data into training and test datasets (with a 75/25 split).
    ```
    oj <- ISLR2::OJ
    split_pct <- 0.75
    n <- length(oj$Purchase)*split_pct # train size
    row_samp <- sample(1:length(oj$Purchase), n, replace = FALSE)
    train <- oj[row_samp,]
    test <- oj[-row_samp,]
    ```

2. Build a LDA and QDA model for your target based on PriceDiff and LoyalCH. Compute the confusion matrix for both the train and test datasets. How do they compare?
    ```
    oj_train_lda <- lda(data = train_oj, Purchase ~ PriceDiff + LoyalCH)
    test_pred_lda <- predict(oj_train_lda,test_oj)

    test_cm <- confusionMatrix(as.factor(test_pred_lda$class), reference = as.factor(test_oj$Purchase))
    test_cm$table


                Reference
    Prediction      CH  MM
            CH     144  26
            MM      25  73


    oj_train_qda <- qda(data = train_oj, Purchase ~ PriceDiff + LoyalCH)
    test_pred_qda <- predict(oj_train_qda,test_oj, type = "response")

    test_cm <- confusionMatrix(as.factor(test_pred_qda$class), reference = as.factor(test_oj$Purchase))
    test_cm$table


                Reference
    Prediction     CH  MM
            CH    123  38
            MM     46  61
    ```