

## Lab 5. Prediction

Using devices such as Jawbone Up, Nike FuelBand, and Fitbit it is now possible to collect a large amount of data about personal activity relatively inexpensively. These types of devices are part of the Quantified self movement—a group of enthusiasts who take measurements about themselves regularly to improve their health, to find patterns in their behavior, or because they are tech geeks. One thing that people regularly do is quantify how much of a particular activity they do, but they rarely quantify how well they do it. In this assignment, your goal will be to use data from accelerometers on the belt, forearm, arm, and dumbbell of 6 participants. They were asked to perform barbell lifts correctly and incorrectly in 5 different ways. More information is available from the website [here](#) (see the section on the Weight Lifting Exercise Dataset).

### Data

The data for this assignment are available from the [link](#) as a zip file. The zip file contains two files:

1. Training data (`pml-training.csv`).
2. Test data (`pml-testing.csv`).

The data for this assignment come from this [source](#).

### Assignment

The goal of the assignment is to predict the manner in which the participants did the exercise. This is the `classe` variable in the training set. You may use any of the other variables to predict with. You should create a report describing how you built your model, how you used cross validation, what you think the expected out of sample error is, and why you made the choices you did. Also you should apply your machine learning algorithm to the 20 test cases available in the test data and add your predictions to the report.

### Making and submitting assignment

Create a separate [R Notebook](#) file named according to the following pattern: “St\_5\_[TEAM\_NUMBER].Rmd”, where TEAM\_NUMBER is the two-digit number of your team, for example, “01”, “15”, etc. This file should contain code chunks that solve the given assignment and some text explanations that make clear what the R code accomplishes. Run each code chunk, to embed the results in your final report. While saving the R Notebook file,

RStudio will also generate an accompanying HTML file named “St\_5\_[TEAM\_NUMBER].nb.html”. Submit obtained HTML file to Google Classroom.

**Grading criteria**

1. Your analysis is fully described in the report.
2. Predictions for 20 test cases are correct.
3. The submitted file is named according to the requested pattern (otherwise **−2 points**).
4. The submitted assignment meets the requirements of academic integrity (otherwise **0 points**).