**Assignment 4**

**Experimental design and stats (covers chapters 3 and 4 from your book)**

Find your own problem that can be tackled by experimental design. It can, but does not need to be, related to your project. You can conduct the experiment as a group, but the discussion, as well as the statistical analysis parts, needs to be individual.

> ***An example*** *of research issue could be: you just got a Leap motion and you became quite good in simple text editing using the Leap. You have two efficient gestures, one for selecting and one for cutting the text. You want to show to the world that these work better than the mouse and keyboard.*

Step one: State a research hypothesis (null and alternative) that you want to investigate.
Step two: chose the appropriate **kind of experimental design** (justify in a few words), (see figure 3.2 on page 45 of your book)
Step three: **design the experiment** (how many trials, how many people should it include, how it should be conducted etc)
Step four: **Conduct your experiment.** Show your results as a table.

Read chapter 4 of your book carefully.

Part 1. Descriptive statistics.
Clean up your experimental data (from the table that you made in Step 4). Make sure that your data set is free from errors and coded if data is not numerical to start with (see pages 70---72 in your book).
1) Find all applicable descriptive statistics such as mean, median, mode, range, variance, deviation (pg. 73 and 74)
2) Can you assume that your data set has a normal distribution? Draw a histogram showing your data.

Part 2. Statistical analysis.
1) Use Excel or any other package that you may be familiar with containing statistical tests. Chose a test, which is appropriate to apply to your own experiment, and apply it to your data.
2) Interpret obtained results (briefly).