

## Assignment 10

- A. Write a MATLAB script with the name `Assignment10A_Gruppexx.m`<sup>1</sup> that solves the following problem.

The file `regrdata.txt` contains pairs of observations  $(x_i, y_i)$ . Fit the data with the models

$$\begin{aligned} M_1 : \quad y &= ax + b + \varepsilon, \quad \varepsilon \sim \text{Norm}(0, \sigma^2) \\ M_2 : \quad y &= a\sqrt{x} + b + \varepsilon, \quad \varepsilon \sim \text{Norm}(0, \sigma^2) \end{aligned}$$

Plot the data and both fitted models. Compute the estimate of  $\text{var}[\varepsilon] = \sigma^2$  and determine the model with the better fit.

- B. Write a MATLAB script with the name `Assignment10B_Gruppexx.m`<sup>1</sup> that solves the following problem.

The file `circledata.txt` contains pairs of observations  $(x_i, y_i)$ . Fit a circle to the data by minimizing the sum of squared residuals, under the assumption that the values of  $x$  are known exactly. Plot the data and the fitted circle.

- C. **Optional!** Write a MATLAB script with the name `Assignment10C_Gruppexx.m`<sup>1</sup> that solves the following problem.

The file `planedata.txt` contains points in space with the coordinates  $(x_i, y_i, z_i)$ . Write a function `lms_plane` that fits a plane  $z = ax + by + c$  to the points according to the least-median-of-squares principle and apply it to the data.

☛ Pack all scripts in a zip file with the name `Assignment10_Groupxx.zip`.

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<sup>1</sup>`xx` is your group number