Assignment10 January 12, 2024

- **Read the assignment carefully and make sure that your solution conforms to the specifications!**
- **Remember that the first line of each section of the solution must be the call to preamble!**
- **Make sure that the relevant results and *only* those are shown in the output to the command window, so that I can check the correctness quickly and without digging into the code.**

Write the MATLAB script **Assignment10_IDxx.m**[1] that contains a single section.

Section S1 6 pts

Write code that implements the following tasks:

1. It loads the matrix X from the file pardata.mat. The rows of X are the coordinates of points in the plane.
2. It fits parabolas of the form $y = ax^2 + bx + c$ to the points by minimizing three objective functions:
   (A) the mean of the squared (vertical) distances of the points to the parabola;
   (B) the mean of the absolute (vertical) distances of the points to the parabola;
   (C) the median of the squared (vertical) distances of the points to the parabola.
3. It finds a suitable starting point for (A) and uses fminsearch for the minimization. In (B) and (C), the *starting point must be the result of the previous fit.*
4. It creates a figure showing the points and the three fitted parabolas.
5. For each objective function, it displays its minimal value and the corresponding coefficients a, b, c in the command window.
6. It repeats the *entire* sequence except loading X with minimizer fminunc.

- Local functions will be penalized. Use anonymous functions with handles instead.
- Minimize code duplication by looping over the minimizers and the objective functions.
- Define static objects outside the loops.
- The two figures and the output to the command window should be similar to the corresponding files in TUWEL.

Try to solve this assignment on your own.

Submit the script in TUWEL until 5pm on January 18, 2024. Any violation of the naming convention will lead to the rejection of the submission! If you do not get the full number of points, you may submit a corrected version until 5pm on January 21, 2024, unless indicated otherwise in my comments. Do not forget to add _corr to the file name of the corrected version! Do not touch your original submission!

[1] IDxx is your group number in TUWEL.