MAT300 Curves and Surfaces
Spring 2020

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76.35
Feedback:

CODES: (58/60)

- **Cubic spline works (35/35):** code tested for 2D and 3D with regular mesh in [0,n]. The code works correctly and gives the expected outputs graphically and numerically.

- **Meshes (5/5):** meshes are correct.

- **Outputs in 2D and 3D (5/5):** outputs are correct and consistent with the computations for all the methods and dimensions.

- **Structure of the code (4/5):** the code is well structured, clean as easy to follow. However the feedback for vector and matrix algebra given in the previous project is not implemented.

  RECOMMENDATIONS: in order to speed up your methods, you should implement next time the vector and matrix functions in Octave (see lab MAT250). In particular:

  o cubicspline.m: lines 29-52 you should use vectors to introduce elements in the matrix instead of using double loops (**ALREADY SAID IN FEEDBACK FOR PROJECT 1**). Same for evaluating the spline (lines 86-110). Lines 116-119 and 124-127 you

- **Comments (9/10):** input_data.m does not have header. Cubicspline.m is well commented.

README (3/4): THE FOLLOWING FEEDBACK WAS ALREADY IN PROJECT 1. READ FEEDBACK OF PAST PROJECTS.

- Instructions for running the code: you should say which data the input_data.m file contains, and that the user should modify this file introducing the desired input before running the code.

- Files the zip contains: mention the explanations.pdf files as well.

DOCUMENT: (21.5/36) -30% penalty 15.35

GENERAL RECOMMENDATIONS:

- Revise formulas and notation.
- Dedicate time for observations.

- **Description of the problem (1.5/3):** Vague. You are not saying which type of curve you compute.

RECOMMENDATIONS: Say explicitly that you are computing a cubic spline curve through points, or say at least that the curve is piecewise defined.

- **Mathematical explanation (14/20):** You didn't introduced the two derivative conditions in the system of equations and in the matrix. Apart from that you also have minor errors in the formulas and the explanation of piecewise polynomial.

RECOMMENDATIONS: Writing is one of the most difficult tasks in mathematics. It is convenient to revise it several times.

- **Relation with the code (5/5):** good.

- **Examples (1/3):** you are not comparing the analyitical solution with the numerical one.

RECOMMENDATIONS: revise document.

- **Observations (0/5):** you are not including information from observations. The first two observations that you provide were studied in class. The last one is not true, you can plot many points with a cubic spline.

  RECOMMENDATIONS: in this section you have to test your code with different examples and see the behavior. For instance, how many points can you introduce as input, time of computation, difference among cubic spline and normal interpolation, …