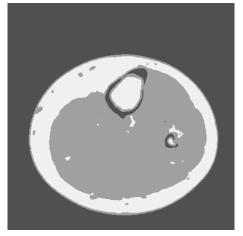All printed documents allowed. Send your code (python or MATLAB® via the campus website (zip files if several files are to be sent).

Segmentation of an MR image

MR stands for Magnetic Resonance.

(a) Image to be segmented.

(b) Result of segmentation. You can do better!

Figure 1: This is an MR image of a human leg. The specialist want to translate the different structures into a FEM (finite element model), and thus has to segment the 3 parts of the leg.

- (1 points) Display the histogram of the image of the leg.

- (3 points) Manually segment (choose the appropriate threshold values) the image of the leg. Give the threshold values.

- (9 points) Code a method that will find the two threshold values automatically.

Notice that there might be some noise (a few small artifacts laying into another class).

- (7 points) Propose an automatic method that will avoid these artifacts. The Fig. 1b is a proposal (but not the best solution that can be reached).