Instructions

The required data can be found via the following Google Drive link https://drive.google.com/drive/folders/1vVpu9lgjqHB4UX9xLweQGW4qgAjCaOAh?usp=drive_link. The folder contains a computed tomography image in Nifti format (*CT.nii.gz*) from an open dataset and a corresponding segmentation file (*segmentation.nii.gz*). The segmentation file contains the automatically created three-dimensional delineation of the patient's aorta.

You have two tasks:

1) Load the CT image, resample the image to an isotropic resolution of 3x3x3mm and subsequently create one maximum intensity projection (MIP) along the coronal axis and one MIP along the sagittal axis. Save the resulting images as PNG file with at least 400 dpi.

2) Calculate the volume of the segmented aorta (in *segmentation.nii.gz*) in millilitres.

Please solve the tasks using Python. Feel free to use any libraries and any supportive tools (ChatGPT etc.) as long as you can explain your solution. Python libraries which you may find helpful include Numpy, Nibabel, and Simple-ITK.

Please send your results (2 PNG images containing the MIPs and the volume of the heart in millilitres) along with your code as python file (.py), jupyter notebook (.ipynb) or a link to a GitHub (or similar) repository to **clemens.spielvogel@meduniwien.ac.at** until **Sunday, 11. Feb 17:00 (CET)**.

If you have any questions, please don't hesitate to reach ou to me via clemens.spielvogel@meduniwien.ac.at or +43 1 40400 72350.