

Propositions accompanying this PhD thesis

# Automatic Quantification of the Aorta and Pulmonary Artery in Chest CT

methods and validation in lung screening

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1. Silent diseases such as aortic dilatation can be detected automatically in an early stage from CT scans performed for other purposes such as lung cancer screening. (*this thesis*)
2. Aortic growth in elderly current and former smokers is consistent with growth in the general population. (*this thesis*)
3. 3D geometry of the aorta and pulmonary artery can be obtained automatically with no human interaction on non-contrast CT scans. (*this thesis*)
4. The 3D volumetric average diameter measurement technique might be a more robust and reproducible technique than diameters measurement in 2D axial slices. (*this thesis*)
5. A relatively small training dataset can result in good accuracy in medical image segmentation tasks by using a well-designed deep learning architecture. (*this thesis*)
6. The total value of a given dataset is derived from the actionable insights learned from analyzing it from all possible perspectives.
7. Measure what is measurable, and make measurable what is not so. (*Galileo Galilei*)
8. Knowledge is disseminated thoroughly only if it is open access and widely available to society.
9. Positive and negative feedback are the training data set for self-efficacy and motivation. A balanced training set results in an optimally trained brain for a healthy academic and personal life.
10. By automating time-consuming daily work, there is more time and opportunity to thrive for new challenges and bigger dreams.
11. In research, problem-solving can be achieved via two strategies: 1) diving deeper into the problem and getting hyper-focused for deep understanding; 2) thinking divergently by considering the big picture for generating new creative and innovative ideas; But none is as important as a cup of tea and a quiet place to relax and think. ☺