



## Rationale

The intima-media thickness (IMT) of the carotid arteries is a validated predictor of cardiovascular accidents and is associated with several cardiovascular diseases. The IMT is typically measured manually, and manual measurements present a high inter/intra-operator variability, as they depend on many factors, e.g., the structure of interest, the resolution, contrast and quality of the images, and the expert experience, especially when considering manually annotating large databases. These suboptimal manual annotations are generally used as ground truth (GT) for training automatic methods. This procedure often leads to underperformance of automatic methods.

## Methods

The aim of this thesis is to develop an automatic cardiovascular risk framework based on CNN segmentation methods using hybrid ground truth. Hybrid GTs can be obtained by combining the object localization made by the expert operator with objective image features (gradients, contrast, etc.). In this way, reliable deep learning methods can be trained from objective and robust GTs.

