

ABSTRACT

Cardiovascular disease is a class of disease that involves the heart or blood vessels. Of the several diseases amongst CVD, Coronary Artery Disease is the most common and lethal. In this project, we have proposed an automated diagnosis of CAD by analyzing the stenosis present in the coronary arteries. The project uses Faster R-CNN with Inception ResNetv2 as the backbone architecture to detect stenosis regions with coronary arteries from CCTA images. Faster R-CNN is a state-of-the-art object detection algorithm that can accurately identify and localize objects within an image. Inception-ResNetv2 is a deep convolutional neural network architecture that combines the advantages of the Inception and ResNet architectures, and is used as the backbone network for the Faster R-CNN model. The project involves fine-tuning the Inception ResNetv2 backbone architecture on the training set using transfer learning, where pretrained weights from dataset are updated during training on the dataset for coronary artery stenosis detection. This allows the model to learn to detect stenosis regions with high accuracy. Once trained, the model can automatically detect and highlight regions of interest in medical images that may contain stenosis, allowing medical professionals to quickly identify and diagnose the condition. This automated approach can save time and improve the accuracy of diagnosis, and can also help to reduce inter-observer variability that is common in manual analysis of medical images.