Deploying Generative Adversarial Networks to evaluate the coronary arteries patency in CT angiography

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Abstract: Traditional coronary angiography is an invasive method that can lead to safe results concerning the patency of the coronary arteries. Despite method's high accuracy it has major drawbacks because it has risks for patient's safety. On the other hand, with the advancements of medical imaging, this invasiveness can be skipped, and the patient can be examined bloodlessly with CT coronary angiography. Although this method offers a major advantage, it lucks in accuracy. More specifically, some artifacts around the lumen of the artery lead to false evaluation of the patency of the coronary artery. This research project aims to counterbalance this drawback and make CT coronary angiography safer for the evaluation of the coronary arteries patency. The task of the project will be addressed with Genetic Adversarial Networks (GANs). GANs -which is a Deep Learning model- are well-known for their ability to generate synthetic images. The project's rationale is the development of an algorithm that can correspond a CT angiography to traditional angiography and thus all medical parameters that doctors need can be extracted with great accuracy.