

Classification of Myocardial Perfusion SPECT Images through Deep Learning

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Myocardial Perfusion Single Photon Emission Computed Tomography (SPECT) is a non-invasive diagnostic imaging technique that utilizes radioactive isotopes to create images of the heart muscle and assess blood flow within the heart. By injecting a small amount of radioactive tracer into the bloodstream, the SPECT scan provides valuable information about the heart's functioning and helps doctors diagnose conditions such as coronary artery disease. This procedure plays a crucial role in guiding treatment decisions and monitoring the effectiveness of interventions for heart-related issues. Deep Learning (DL) is a rapidly evolving field of Artificial Intelligence that has demonstrated remarkable success in image analysis and pattern recognition tasks. Its underlying neural network structures, inspired by the human brain, consist of layers of interconnected nodes that process data and progressively learn representations. The significance of this research study lies in the ability to provide timely and accurate diagnosis of coronary artery disease, enabling appropriate disease management by classifying the patients to healthy and non-healthy. The use of DL algorithms for image analysis has the potential to enhance the effectiveness and accuracy of diagnosis, reducing the need for invasive or time-consuming diagnostic procedures, while improving the quality of life for patients. Potential findings will have a significant impact on the field of cardiovascular medicine and will pave the way for further research in this area.