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Comparison of cardiovascular diseases' classification models based on ECG signal

Deep neural networks (DNNs) are becoming a handy tool in the healthcare field. Research work in recent years has led to the creation of solutions that can effectively support the work of medical staff. This paper presents a comparison of deep learning architectures used for the classification of cardiovascular diseases. Models were trained and tested on the PTB-XL dataset, a large publicly available electrocardiography dataset containing electrocardiography (ECG) signals with disease labels assigned by qualified cardiologists. Some architectures achieved promising accuracy despite the poor computational capabilities of the machine used for training.

This study compares architectures, including LSTM, CNN, and GRU layers, inspired by the ones available in scientific publications and CinC challenge entries. However, all of them were modified so they could be trained on a local machine, which has more computational limits than the ones provided by the competition organizer. For this reason, the performance is lower than presented by the owners in their original descriptions. The task performed by the models is to classify correctly occurrence of five classes (four cardiovascular diseases such as: myocardial infarction, ST/T change, conduction disturbance, hypertrophy and one class for average outcome).

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