

# Magnetocardiography-Based Coronary Artery Disease Detection Using Ensemble Learning Methods

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**Aims:** This study aimed to develop an explainable and accurate coronary artery disease (CAD) model based on magnetocardiography (MCG) signals and ensemble machine learning methods.

**Methods:** The 12-lead ECG and MCG test were performed before coronary angiography or computed tomography angiography. 2013 patients who were suffering from different degrees of coronary artery stenosis and 761 healthy volunteers are enrolled in this study. Oversampling methods were carried out on training data to overcome sample imbalance. An ensemble machine learning model was established on 84 MCG features so as to classify CAD patients. Evaluation metrics were sensitivity (SEN), specificity (SPE), positive predictive value (PPV) and negative predictive value (NPV).

**Results:** The classification result on test data including 832 cases were SEN 92.2%, SPE 82.5% PPV 93.3% and NPV 80.0%.

**Conclusions:** The method seems to be applicable in identifying CAD patients with different degrees of coronary artery stenosis.