

## Machine Learning and Early Diagnosis of CVD



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Despite significant advances in the diagnosis and management of cardiac disease, cardiovascular disease continues to have high morbidity and mortality. In some cases, the diagnosis is delayed, while in others, the diagnosis is mistaken for another disorder. Advanced technology and machine learning have opened up new opportunities to evaluate image-based data.

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Currently, image analysis is completely reliant on observer visual assessment and using crude quantitative measures to assess cardiac function and structure. Clinicians agree that there is a need for more advanced analytical techniques that can allow for more refined quantification of imaging phenotypes. That is why machine learning is slowly creeping into mainstream medicine, especially cardiology. Machine learning approaches to image-based analysis/diagnosis rely on models/algorithms that learn from past clinical cases through the identification of complex and hidden imaging patterns.

Preliminary data show the superiority of image-based cardiovascular diagnosis with machine learning for cardiac disorders like heart failure and coronary artery disease. The vastly superior diagnostic performance of artificial intelligence-based image analysis may help lower the burden of certain cardiac disorders by facilitating earlier and more accurate diagnostic decision making.

However, we are still in the early stage of machine learning, and researchers have systematically started to add the different case scenarios for each cardiac disorder with all the possible permutations and combinations. The more data is entered into the system, the more likely it is that the performance of the model will improve. Also, machine learning requires accurate output diagnostic labels and a suitable application to predict the right cardiac diagnosis based on the imaging data. But in any case, it is an effective tool and can help improve early diagnosis of cardiovascular disease.

Source: [Frontiers in Cardiovascular Medicine](#)

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