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## Cardiac Remodelling Prediction using Deep Learning

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Left Ventricular (LV) remodeling involves changes in the ventricular size, shape and function. Hence, analysis and prediction of LV remodeling is important to improve patient survival, emergency medical response and treatment strategies after acute myocardial infarction (AMI). As cardiac magnetic resonance imaging (MRI) is increasingly used in clinical assessment of cardiovascular diseases, the overwhelming size of a typical cardiac MRI image dataset poses a significant challenge for a time-efficient image quantification and interpretation for the cardiac expert. Furthermore, there is scarce study on classification and prediction of LV remodeling using multiple cardiac MRI derived data (oedema, infarct size and micro vascular obstruction at onset) and textual data. Therefore, it is critically important to propose an approach in mining meaningful patterns from multimodal data (image and text) from Sarawak Big Heart Data. We used a Deep Learning approach for the prediction of LV remodeling that can assist cardiac experts in LV remodeling prediction by analysing the images acquired from cardiac MRIs for faster decision making in clinical cardiac health management and prevention of cardiovascular mortality. This approach will then be realised in a proof of concept and will be compared with the existing manual images analysis by cardiac experts in term of sensitivity, specificity, positive and negative predictive value. In line with the Malaysia National Key Economic Area (NKEA), this research will address on a focus area in the Strategic Thrust 2 – Improving Well Being for All in the Eleventh Malaysia Plan and contribute to the coding of AMI, clinical management and treatment strategies for the improvement in system delivery for better health outcomes.

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