NailCAD (Nail Computer Aided Diagnosis) Non-Invasive Screening of Coronary Artery Disease Using a Mobile Application

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Coronary Artery Disease (CAD) is one of the leading causes of death worldwide, accounting for 31% of all deaths globally in 2016. This work will investigate the possibility of detecting CAD from images of fingernails, processed using artificial intelligence in an app. The study methodology contained two main phases. First, collecting images to train an AI to look for symptoms on nails and developing an app. Second, testing the app on the public to make additional adjustments to the design and functionality of the app. The device looks for specific symptoms in fingernails correlated with coronary artery disease. Afterward, the app will determine whether the patient has coronary artery disease, based on the difference between each reading for each condition and the average (the closer, the better). There was a correlation between the readings of the AI and the ground truth of the patient (whether the patient has coronary artery disease). Moreover, the app proved accurate and agile, improving in terms of accuracy by 11% from the pilot stage (which consisted of 17 people, 9 that test positive for coronary artery disease, and 8 that test negative) to the secondary stage of testing (which consisted of 22 people, 12 that test positive for coronary artery disease, and 8 that test negative). Concluding, this app seems to provide a non-invasive, safe, and affordable measure to detect coronary artery disease.

Awards Won: