



UNIVERSITI
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Cawangan Melaka

i-JAMCSIIX 2022

International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

ABSTRACT BOOK

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Tadulak● University

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i-JaMCSIIX **2022**

International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

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i-JaMCSIIX

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Target Heart Rate Zone Detector during Exercise based on Real-time Facial Expression using Single Shot Detection Algorithm

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JM007 – Innovation – Local – Category C: Students - UiTM Melaka

Abstract—Monitoring Target Heart Rate (THR) during exercise is important for the athletes to assess the details of their training. However, it is very tiresome to determine the athletes' THR during performing the exercise. It is also very tedious to calculate the THR manually. As a solution, a web application named THR Zone detector is developed to access details about their specified THR according to the percentage intensity of the exercise. The web application requires the user to input of their Rest Heart Rate (RHR), age and level of exercise intensity to produce output of THR zone according to their facial expression. Their facial expression is measure and determine based on Rating of Perceived Exertion (RPE) scale. The object detection machine learning model used in this project is Single Shot Detector (SSD) algorithm. The accuracy of the model is above 70% and the web was graded with B in the usability test by the users. The importance of this study is that it will assist individuals by employing machine learning to the system by accessing their THR zone during exercise via facial expressions. This application can be improved in the future to develop on a more accessible and portable platform, such as a mobile application, making it simpler to undertake physical training in a variety of ways, as more movement can be done.

Keywords—single shot detection algorithm, target heart rate, rating of perceived exertion, exercise, machine learning