



**INFORMATICS  
INSTITUTE OF  
TECHNOLOGY**

INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER

**BMI Classification and Exercise Recommendation System using  
Image Processing**

A Final Project Report by

Mr. Sasanka Dahanayake

Supervised by

Mr. Asanjay Fernando

Submitted in partial fulfilment of the requirements for the BEng in Software Engineering  
degree at the University of Westminster.

**July 2022**

© The copyright for this project and all its associated products resides with Informatics  
Institute of Technology

### **Abstract**

Obesity is one of the most dangerous diseases that could happen to someone, this occurs from inheritance or environmental factors but mainly as a result of eating disorders with the lack of physical activities involved. Obesity is considered dangerous as it could reduce life expectancy or be the risk of other diseases that involves but is not limited to, heart disease, diabetes, high blood pressure, and certain cancer. However, this complex disease can be tackled by progressive weight loss through a healthier diet and following a proper exercising schedule. Several problems cause an individual to not focus on exercising, beginning with motivation, affordability, and time. Motivation is possibly the biggest problem as they struggle with exercising and focusing on a healthier diet plan isn't easy for someone that's used to having an eating disorder. Affordability is another problem, for those that cannot afford the resources for working out. Time involves the lack of space in their schedule to fit in a workout plan and adhere to it, this may be due to various personal reasons like work or education.

A system that allows the health and fitness enthusiast to classify the body type to recognize who is at the risk of obesity and have a proper workout plan that strictly focuses on the progressive weight loss journey with calisthenic workouts for their body predicted for them through deep learning-based body type classification with convolutional neural network (CNN).

This research is conducted to evaluate these problems and introduce a solution that tackles the aforementioned problems through deep learning. This is not the final phase of the research conducted and can further be improved by implementing new features or working out a different approach compared to what the author had done. The possibilities are limitless and the system can be further improved in terms of research and development.

**Keywords:** BMI, Weight Loss, Web Application, Obesity Disease, Exercise Recommendation, Workout Plan, Machine Learning, Deep Learning, Image Processing, Convolutional Neural Network