The training recommendations are mainly based on two parts. The first part is aimed at users with specific goals and plans to exercise a particular body part. In this part, I am using a dataset that contains 2,909 different exercises, along with the corresponding equipment and fitness levels (Beginner, Intermediate, Expert). The dataset also includes some ratings and descriptions, although there are significant amount of missing values, requiring data preprocessing techniques like imputation. For this part, I plan to use a Random Forest model with the goal of predicting a score based on user input, such as their fitness level (e.g., beginner), available equipment, and the body part or type of workout they want to target. Random Forest can effectively manage datasets with many features. In the exercise recommendation system, where user inputs (for example,level, equipment, target body part.) can be varied, Random Forest automatically assesses the importance of each feature and makes reasonable predictions.The model will recommend the top three exercises base on the predicted ratings, and if fewer than three are found, it will appropriately relax the criteria to get enough recommendations.

The second part is set up for the purpose of user weight loss, in this part, the core is a calorie calculator based on the knowledge learned from the dataset according to the user's height, weight, age, and gender 同predict the amount of calories burned per hour at different exercise intensities. The source of the dataset I use is data received from a health center from 15,000 participants aged 20-76. In the dataset, although there is no clear mention of what kind of fitness activity is performed, we can know the intensity of the exercise based on the heart rate and age it provides. In general, 220 minus age is someone's maximum heart rate, and the ratio of current heart rate to maximum heart rate can be defined as exercise intensity. This allows us to recommend common types of exercise at different intensities to give out a more personal workout plan, and to indicate the heart rate that people need to achieve according to their age. Based on this data, I use DNN for model training. Once trained, the model can output calorie burn under some exercise intensity conditions based on the physical condition parameters entered by the user. I also set a daily calorie intake standard of 2000 for men and 1500 for women, and calculated their BMR according to different weight ranges, that is, the calories that would be burned if they did nothing, and the goal of weight loss was to make up for the extra calorie difference by adding extra training to achieve weight loss. At the same time, weight loss is a dynamic process, in general, under the same conditions, the calories consumed will be less as the weight decreases, and the BMR will be less after weight loss, which requires an increase in the amount of training, therefore, this system will also prompt the amount of training that needs to be increased in the case of how much weight is lost, so as to complete a more accurate and personalized weight loss program.



