UE20CS302 – Machine Intelligence

Mini Project

CALORIE BURNT PREDICTOR

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Problem Statement

1. 1. Home-workouts have become a trend in recent days of pandemic and people are trying to maintain a good physique by doing workouts without going to gym or hiring a personal trainer.
2. 2. Even though there are workout apps which provides set of exercises, they don’t allow the design of personalized workout routine.
3. 3. There is a need of tool to predict the amount of calorie burn to fine tune the workout plan.

Application and Uses

1. 1. The project can widely be used by anyone as it does not target any specific age group or class of people.
2. 2. Anyone interested in designing their own workout routine can use this technology to plan a good workout plan.
3. 3. Once the project is widely in use, it becomes a necessary part of the people’s routine.
4. 4. Since the number of attributes in data is very less, there is a high chance of accurate prediction even with smaller dataset for training the model.

Literature Survey

Title of the paper	Year of Publication	Journal/Conference Name	Advantages	Limitations
Calories Burnt Prediction Using Machine Learning	December 2021	International Journal of All Research Education and Scientific Methods (IJARESM)	It is platform free .Xgboost has a high speed of processing..	the flexibility of the proposed approach cannot be increased without variants .
Calorie Burn Prediction Analysis Using XGBoost Regressor and Linear Regression Algorithms	2022	Proceedings of the National Conference on Emerging Computer Applications	Xgboost uses parallelization, and uses the maximum available computational power of the system.	linear regression gives more mean absolute error

Literature Survey

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Calorie Burn Prediction using Machine Learning	June 2022	International Advanced Research Journal in Science, Engineering and Technology	In conclusion XGBOOST has more accurate results than linear regression model	In conclusion even linear regression can be used to predict the relationship between independent and dependent variables but XG BOOST gives a lesser error compared to linear regression and hence more efficient

Literature Survey

Title of the paper	Year of Publication	Journal/Conference Name	Advantages	Limitations
SURVEY ON APPLICATIONS FOR PREDICTING CALORIES AND NUTRITIONAL VALUES FROM FOOD	April 2020	International Journal of Scientific & Engineering Research	This technique will increase the effectiveness of food identification.	Cannot make personalized classifiers
.Burned Calories Prediction using Supervised Machine Learning: Regression Algorithm	march 2022	2022 Second International Conference on Power, Control and Computing Technologies	This shows that Random Forest Regression is the best model for this study because of its capability to discover complex behaviors in the data being understudy	no limitations mentioned

literature survey

PREDICTION OF USER'S CALORIE ROUTINE USING CONVOLUTIONAL NEURAL NETWORK	2020	International Journal of Engineering Applied Sciences and Technology	The feature-based approach is highly appreciable	CNNs have high computational time
Feature Selection Intent Machine Learning based Conjecturing Workout Burnt Calories			Experimental results shows that the Decision Tree and Gradient Boosting regressors tends to retain 99% before and after feature scaling for the Anova test	too high variance and bias was seen

literature survey

Multi-Task Learning for Calorie Prediction on a Novel Large-Scale Recipe Dataset Enriched with Nutritional Information	-	Institute for Anthropomatics and Robotics, Karlsruhe Institute of Technology	Our experiments demonstrate clear benefits of multi-task learning for calorie estimation, surpassing the single-task calorie regression by 9.9%.	-
The Calorie Burning Calculation System in Jogging Using a Thresholding-Based Accelerometer Sensor	Bro Look at whatsapp messages first	-	easier for athletes to get their calorie burning information while jogging.	-

Proposed Approach

1. 1. Gathering the dataset for training the dataset
2. 2. Cleaning and analysing the data
3. 3. Training multiple types of regression models
4. 4. Using Ensemble model to predict the number calorie that is going to be burnt during the workout

Results and Discussion

The ensemble model used makes use of 4 different week learners trained on different data sets which are equally distributed giving varying amount of mean squared error. The ensembling technique is used to find the average of all the predicted outputs by each of the weak learners to get the best results for the provided inputs. Among the weak learners used, random forest was giving the least MSE. We got a promising results in terms of predicting the calorie value using this regression models for ensembling.

Refrences

1. http://www.ijaresm.com/uploaded_files/document_file/Rachit_Kumar_Singh822z.pdf

2. https://iarjset.com/wp-content/uploads/2022/07/IARJSET.2022.961125.pdf

Thank You