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Project Synopsis

on

**Fitness app Using ML and Full Stack**

Submitted as a part of course curriculum for

**Bachelor of Technology**

in

**Computer Science**



**Submitted by**

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**2021-2022**

**DECLARATION**

We hereby declare that this submission is our work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

Signature of Students :

Rahul Tyagi (1900290120085)

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Date: 12-12-2021

**CERTIFICATE**

This is to certify that Project Report entitled “ **Health Analysis Using ML**” which is submitted by **Rahul Tyagi, Shreyash Kant** in partial fulfillment of the requirement for the award of degree B. Tech. in the Department of Computer Science of Dr A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

**Date: 12-12-2021 Guide Name:** Assistant Prof. Ankita Jaiswal

**ACKNOWLEDGEMENT**

It gives us a great sense of pleasure to present the synopsis of the B.Tech Mini Project undertaken during B.Tech. Third Year. We owe a special debt of gratitude to **Ankita Jaiswal**, Assistant Professor Department of Computer Science, KIET Group of Institutions, Delhi- NCR, Ghaziabad, for his constant support and guidance throughout the course of our work. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his/her cognizant efforts that our endeavors have seen the light of the day.

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Last but not the least, we acknowledge our friends for their contribution to the completion of the project.

Date : 12-12-2021

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**ABSTRACT**

Chronic diseases are major killers in the modern era. Physical inactivity is a primary cause of most chronic diseases. Most of the people do not know what to eat to maintain their health and what should be the intensity of exercise. These people need a gym trainer and if they can not afford it, fit buddy is here to help them. Physical activity and exercise can be effective treatment strategies for symptoms of both depression and anxiety.Each day is a new opportunity to engage in physical activity and exercise that can bring short and long-term benefits for mood, sleep, and physical health.

Consistency and sustained motivation may be enhanced by peer support(Fit Buddy) or electronic platforms offering exercise programs.

**INTRODUCTION**

Physical activity and exercise can be effective treatment strategies for symptoms of both depression and anxiety.Each day is a new opportunity to engage in physical activity and exercise that can bring short and long-term benefits for mood, sleep, and physical health.

Consistency and sustained motivation may be enhanced by peer support(Fit Buddy) or electronic platforms offering exercise programs

**Problem Statement**

* Chronic diseases are major killers in the modern era. Physical inactivity is a primary cause of most chronic diseases.
* Most of the people do not know what to eat to maintain their health and what should be the intensity of exercise.
* These people need a gym trainer and if they can not afford fit-buddy is here to help them.

**Project Objectives**

* Our aim is to build a Web-application with a Machine Learning model.
* In this machine learning model OpenCV (open source computer vision library) will be used.
* The purpose of using OpenCV is to get visual perception of a user's physique.
* There will be another way of providing input manually**.**

**LITERATURE REVIEW**

**IMPACT OF FITNESS AWARENESS ON PHYSICAL FITNESS AND EXERCISE ACTIVITIES**

Awareness about physical fitness, exercise and health is essential for everyone. The aim of the current research was to analyze the impact of fitness awareness on physical fitness and healthy habits of the visitors in public parks. A sample size of 24 male visitors was selected randomly. 24 comprehensive sessions of physical fitness awareness were conducted. Standardized physical fitness measurements of 20m shuttle run, one-minute push up, standing broad jump, core plank, 100m sprint and 600m running of all participants were recorded before and after the awareness programs. Descriptive statistics were used to explore the test variables. Correlation technique was used to find out the pattern of relationships of variables. T-test was applied to measure the effects of awareness programs on fitness exercise and health of visitors. It was revealed that 600m running and 100m sprint were significantly (p<0.05) correlated with other test variables. Physical fitness awareness had significant (p<0.001) and positive effects on physical fitness and exercise. It will help the people to improve their physical fitness and exercise programs as well.

**The Effects of Regular Exercise on the Physical Fitness Levels**

The present is an experimental study with pre-test, post-test design, and employed quantitative research methods. The total of 65 sedentary male individuals between the ages of 19-45, who had never exercised regularly in their lives, participated in the present research. Of these participants, 35 wanted to be included in the exercise group, while 30 didn’t want to attend exercises and formed the control group. Individuals, who exercised for an hour, 3 days a week, for eight weeks, formed the experiment group of the research. No specific training program was provided for the subjects. They were just asked to do the exercise they liked on the determined days and times in a way not to force their metabolism and these exercises were monitored by the researcher. The present study differs from others in this way, because the participants were asked to participate in free fitness activities willingly, and act without a professional exercise program

**A brief introduction to OpenCV**

The purpose of this paper is to introduce and quickly make a reader familiar with OpenCV (Open Source Computer Vision) basics without having to go through the lengthy reference manuals and books. OpenCV is an open source library for image and video analysis, originally introduced more than decade ago by Intel. Since then, a number of programmers have contributed to the most recent library developments. The latest major change took place in 2009 (OpenCV 2) which includes main changes to the C++ interface. Nowadays the library has >;2500 optimized algorithms. It is extensively used around the world, having >;2.5M downloads and >;40K people in the user group. Regardless of whether one is a novice C++ programmer or a professional software developer, unaware of OpenCV, the main library content should be interesting for the graduate students and researchers in image processing and computer vision areas. To master every library element it is necessary to consult many books available on the topic of OpenCV. However, reading such more comprehensive material should be easier after comprehending some basics about OpenCV from this paper.

**Virtual Gym Instructor**

The purpose of this investigation is thus to develop a system that uses modern technologies to help ﬁght chronic diseases. This system is henceforth referred to as Virtual Gym Instructor. It aims to help individuals increase physical activity through effective exercising, which includes monitoring form, speed and reps, and warn the user when performing incorrect actions. Monitoring will be continuous and real-time feedback

will be given during workouts. Virtual Gym Instructor will use computer vision to improve the physical activity in a similar way as a traditional human gym instructor would. To increase the attraction of the Virtual Gym Instructor, global determinants of physical activity in people are factored in and a complementary social support platform, henceforth known as Keep Up, was developed.

**Deep Residual Learning for Image Recognition**

Deeper neural networks are more difficult to train. We present a residual learning framework to ease the training of networks that are substantially deeper than those used previously. We explicitly reformulate the layers as learning residual functions with reference to the layer inputs, instead of learning unreferenced functions. We provide comprehensive empirical evidence showing that these residual networks are easier to optimize, and can gain accuracy from considerably increased depth. On the ImageNet dataset we evaluate residual nets with a depth of up to 152 layers—8× deeper than VGG nets but still having lower complexity. An ensemble of these residual nets achieves 3.57% error on the ImageNet test set. This result won 1st place on the ILSVRC 2015 classification task. We also present analysis on CIFAR-10 with 100 and 1000 layer

**Image Restoration using Swin Transformer**

In this paper, we propose an image restoration model, namely SwinIR, based on the Swin Transformer. More specifically, SwinIR consists of three modules: shallow feature extraction, deep feature extraction and high-quality image reconstruction modules. Shallow feature extraction module uses a convolution layer to extract shallow feature, which is directly transmitted to the reconstruction module so as to preserve low-frequency information. Deep feature extraction module is mainly composed of residual Swin Transformer blocks (RSTB), each of which utilizes several Swin Transformer layers for local attention and cross-window interaction. In addition, we add a convolution layer at the end of the block for feature enhancement and use a residual connection to provide a shortcut for feature aggregation. Finally, both shallow and deep features are fused in the reconstruction module for high-quality image reconstruction

**Usability Evolution Process For Model Driven Web**

**Development**

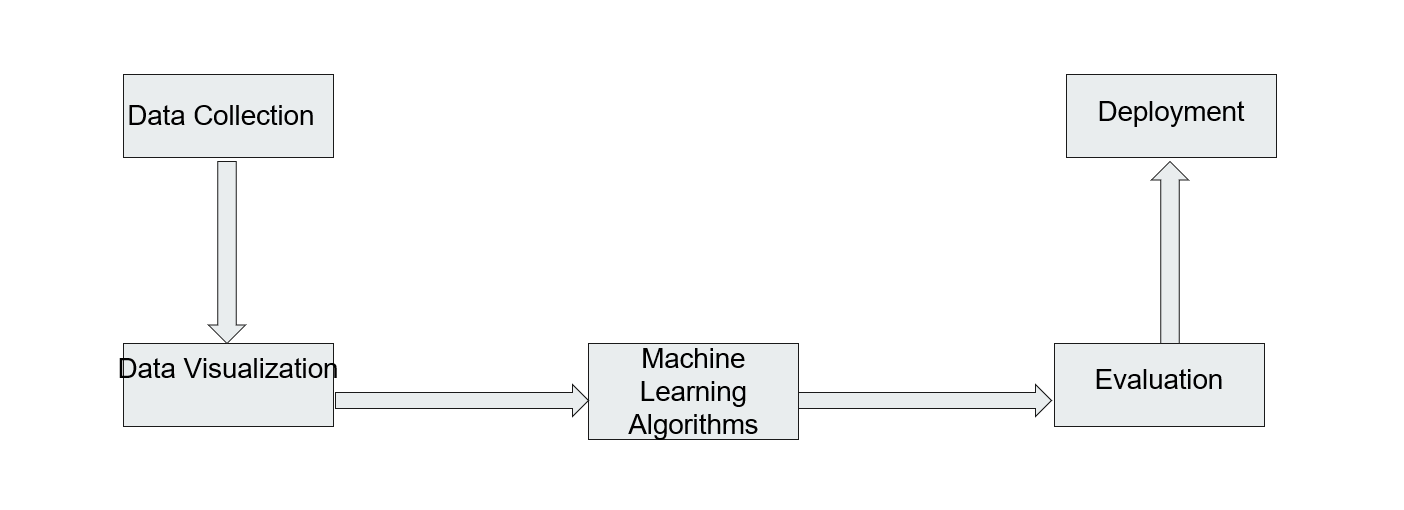
Usability in Web applications is a crucial factor since the ease or difficulty that users experience with this kind of system will determine their success or failure. Web applications are increasing its importance in industrial domains; thereby, the need for usability evaluation methods that are specifically crafted for the Web domain has become critical.

Usability evaluations methods for Web applications can be supported by a quality model which defines usability as a quality characteristic that is decomposed into specific attributes that are easier to measure. Although there are several proposals in this field, most of these approaches, only consider usability evaluation at final stages when the product is almost completed where correcting its usability problems is more difficult.

**Guidance in Web Application Design**

The paper introduces a new situational method for Web ap- plications design. The purpose of the approach is to respond to the fol- lowing limits of web development methods: they do not cover all design aspects and they lack flexibility and guidance. The approach consists of the construction, on the ∞y, of new methods based on existing meth- ods components, that are redefined and stored in method repositories to be selected and assembled in a new method. The approach provides two types of guidance: (1) guidance in the selection of the most appropriate process-model, (2) guidance in the selection of the most appropriate method components.

**Methodology Flowchart**



**OUTCOME**

* We are aiming to deploy a web application so anyone can use it from anywhere by simply using their smartphones or laptops.
* We are hoping that our efforts that we are putting in building this project will help someone to get the best advice from our buddy.

**References**

[1] IMPACT OF FITNESS AWARENESS ON PHYSICAL FITNESS AND EXERCISE ACTIVITIES.

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[6] SwinIR: Image Restoration Using Swin Transformer

[7] Towards a Usability Evaluation Process for Model-Driven Web Development

[8]  Guidance in Web Applications Design

[9] Responsive Web Design: Enriching the User Experience