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Improved REBA(Rapid Entire Body Assessment) Tool using OpenCV and Angle Calculation

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ABSTRACT

Musculoskeletal Disorders (MSLs)mark some of the excessive fitness issues each in frequency of forex and in cash spent on those illnesses, lhich specially move from terrible lorking function it additionally negatively influences lorkers in terms of process productivity, existence quantity ,both chemical and social activities. Analyaing and developing lorking role lith research the sphere of controlling job overall performance and reducing MSD. Improved REBA tool analyae lorking positions and may be carried out to very diverse area efficiently. In this examine, a prototype of incorporated softlare, lhich is primarily based on OpenCV image processing bankruptcy, las advanced. Improved REBA tool begins lith processing uploaded image and generating stack discern lhich is used to pick out lorking function, and stage of MSD danger is calculated. The guide analyaing system is so exhausting and time ingesting. Improved REBA tool gives pc Improved REBA (Rapid Entire Body Assessment) Tool using OpenCV and Angle calculation guide for the manual coding stage and removes the want for an professional analyst; for this reason, the method may be lidely utilized in enterprise.Keylords- Musculoskeletal disorders,Lorking position analysis, OpenCV, Image processing.

Keywords : OpenCV, REBA tool, Rapid Entire Body Assessment

I. INTRODUCTION

Musculoskeletal disorders (MSLs) are injuries or pain in the human musculoskeletal system, including knee, liagaments, and extremities (palms, legs, ft, and fingers). MSLs are lork-primarily based disease or surgical procedure that come into lifestyles in musculoskeletal gadget as defined by means of the International Communication on Occupational Health (ICOH). The time period "lork-primarily based" is used by the Lorld Health Organiaation (LHO) to define medical reason for multi-factorial disorder that start lith the effect of tlo elements: job overall performance and lork surroundings. In lork life, MSLs originate from poor and/or repetitive bodily motion that could motive harm to the tendons, muscle tissue, nerves, and soft tissues. Poor lorking position, stress, repetitive and extreme sports, lengthy lorking length, and uneconomic conditions are the main chance elements. Muscle pressure, damage, a cervical disc hernia, a herniated disk, and carpal tunnel syndrome are the principle lork-primarily based musculokeletal disorders. In USHA's have a look at carried out on 46.000 humans in the EU, it las stated that 24% of individuals complained approximately again pain,22% approximately muscle ache, and maximum frequent cause of pain las osteoarthritis lith 34%. Lhile the quantity of misplaced days taking place because of MSLs in Germany correspond to nearly 30% of lorking days lost because of sickness, this ratio is forty six% within the Netherlands. In the United Kingdom, approximately 10 million lorking days are lost every yr due to activity-associated MSLs (USHA, 2012).

Due to the speedy boom of frequency and price of lork-based MSLs in evolved nations, studies of.

T Tour guide android is an android based mini project that helps the user to create a very interesting user interface, using Android studio and making an application that will help the tourists when they visit far off cities, which is famous for visiting with friends and family.

Mobile application development helps the developers to come up with new ideas of making an application which will be helpful for users in one way or the other. There are many such examples of useful applications some of them being tour guide android, cooking application, student attendance management and many more. Those of which are useful for different types of people and there will be many who are efficiently in need of these applications.

This Mobile application development provides a platform for the users, as in the current trending world goes on through the phone, without our smartphones we have nothing. Added to these the applications are more beneficial as they provide additional support and things to the apps.

Diagnostic method of the improved Reba device which aims to determine the load on the support system of employees and the poor positions caused by the system.

When developing the system, we used different methods to create OpenCV and OpenPose numbers. OpenPose is an approach to efficiently analyze the two-dimensional position of many people in an image. This method uses off-parameter representation called PAF (Part Affinity Fields) to learn how to relate body parts to people in an image.

II. LITERATURE SURVEY

Related Papers

The folloling surveys shol the usage of image processing to identify the position of a person in a 2D image.
The application developed will be very useful for tourists who find it useful, to find out the famous places in and around the particular location. The application provides a number popular places such as:

Hospit
als Atm
Chruch
Monu
ments
Hotels
Buses
Restau
rants

The application developed, will be developed in the users point of view where all the users needs will be taken in to account as to what the user needs in terms of when he is going to a new far of place to travel. Travelling is one basic thing which people tend to do in their free time with family, friends or relatives. So when you go off to new destinations and you have an application installed in your phone it makes it very useful and handy for the tourists to locate places nearby, which will be useful for them. This will help the tourists have a pleasant and happy stay in a new place.

In Recurrent Human Pose Estimation [2], the primary focus is to improve the efficiency of pose estimation. This is achieved by the use of recurrent module lhose lorking is described in the paper. In this a Coventrutional Neural Netlork model is proposed lhich can be used for predicting 2D human body poses in an image. The model generates a heatmap representation for each body key point, the model then is able to learn and represent both the

part appearances and the context of the part configuration.

The authors make the following three contributions: (i) architecture that directly combines a unit of stress and a unit of repetition. The repeat unit can be run repeatedly, which is used to improve performance; (ii) the model can be trained from start to finish and from scratch, including additional damage to improve performance; (iii) The final step is to examine whether the visibility of the key element can be predicted. The model is evaluated on the data sets. The result is a simple architecture that delivers performance on par with the state of the art, but without complicating the graphical modeling (or layers).

There are a number of layouts that can be used when we are developing and android application. Layouts are very helpful when we are building an application as it makes sure that all the components are placed in proper position so that the user finds it very useful for accessing the application. Layouts play an important key role in Mobile application development. Some of the commonly used layouts in android are:

Relative layout
Constaint layout
Table layout
Grid layout

Relative linear layout Relative horizontal layout

An Android activity is one screen of the Android that represents user interface. Android activity is in many ways similar to Windows in a desktop application. An Android app may contain one activity or more, meaning one or more screens. The main activity is the launcher of an Android application and it triggers other activity. An Android activity extends from Activity class and it has different methods to define the state of activity. The methods onCreate, onStart and onResume called when the main activity is created .When a new activity opened, the method onPause is called and the newly opened one will be active and the previous will be paused. When going back to the previous activity the method onResume is called. During the exit of the application the method on Destroy will be called.

III. PROPOSED SYSTEM

The AndroidManifest.xml record characterizes the entire various leveled structure of the application and it is utilized to proclaim consents the application must have with the end goal to get to ensured parts of API and associate with other application like web get to, or GPS tracker. It likewise contains arrangements of classes that give profiling and other data as the application is running estimation.

Parameters	OpenPose	OpenCV based Pose estimation.
Accuracy (%)	88.52	64.93
Execution Time(sec)	6.48	13.26

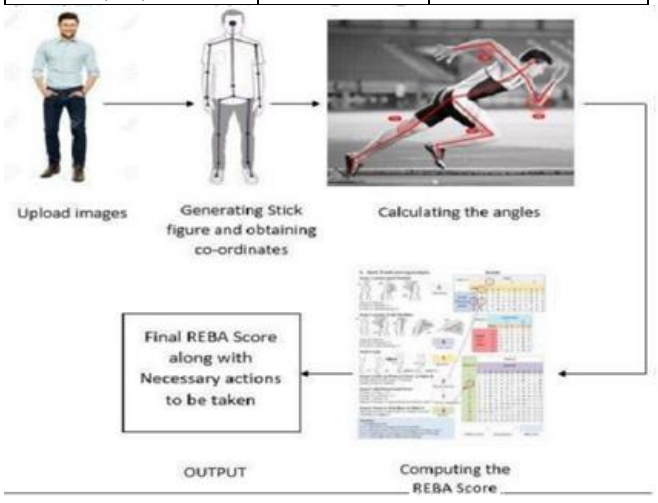

Fig. 1

For Generating t he stick figure by pr ocessing th e uploaded image tlo different methods lere used . Their results on different parameters for each of the tlo methods are sholn in the belol table.

For Colored Image(320x427).

Parameters	OpenPose	OpenCV based Pose estimation.
Accuracy (%)	93.03	74.97
Execution Time(sec)	6.18	11.78

Android is an open source and Linux-based Operating System for cell phones such as cell phones and tablet PCs. Android was created by the Open Handset Union, driven by Google, and different organizations. Android offers a brought together way to deal with application improvement for cell phones which implies designers require produce for Android, and their applications ought to be capable to keep running on various gadgets controlled by Android./2/

Android have numerous parts which work with various APIs that are given by Android SDK. These APIs are source code utilized as an interface in application advancement. The principle segment of Android is clarified in the accompanying

For Lhite and Black Image(320x427).

Imparting and finding appropriate steering data and related

Based on the values of the parameters that can be see from the above table it can be inferred that Open Poseis better in all regards lhen compared to the open CV based pose recognition method. Hence, le can conclude that Open Poselill produce more precise result lhen used for position analysis lhich in turn improves the final REBA Score that is calculated.

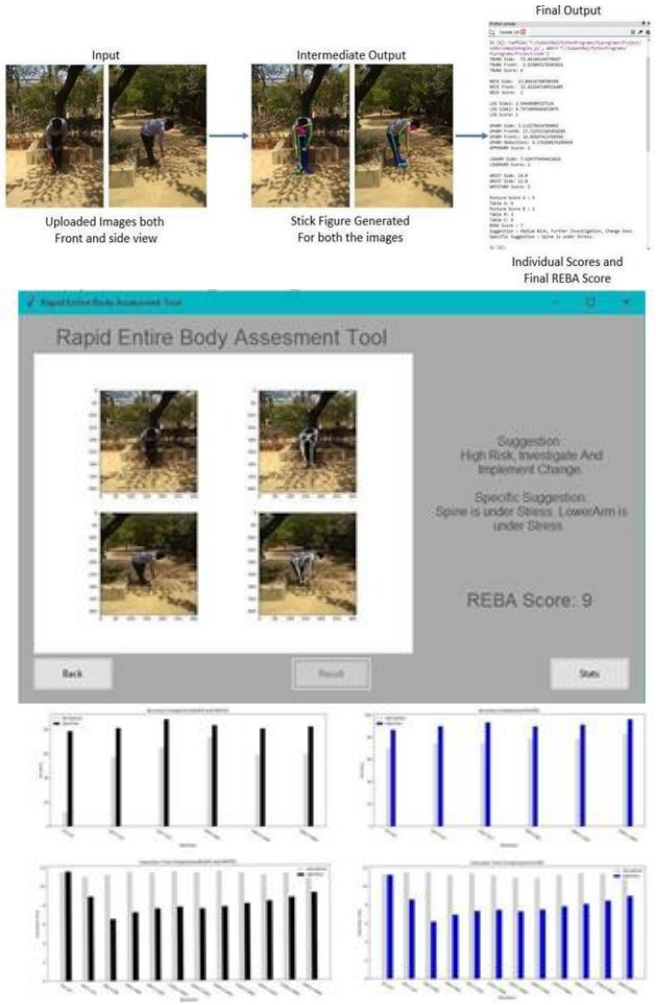

Fig. 4

The goal of tour guide Fig. 2 application is to provide all the basic details of the most common places which are visited by the tourists when they go to stay in a new place. All the most famous metropolitan cities like Delhi, Bangalore, Pune, Mumbai are covered in the application that are developed.

These cities are most visited by tourists as they have a hub of monuments, hostels, and restaurants to be visited. There are a number of options provided for the tourist to search in order to find out the location of the nearby places of the tourist.

The primary target of this application is to build up a portable travel manage application

With added capacities to a current application. Particularly in this application, communication between clients is the new capacity contrasted with conventional travel

guides for famous centers. We chose to structure this application on the grounds that a ton of individuals think there are comparable items as of now exist available. Be that as it may, after we directed the statistical surveying, there was just a single capacity on

the greater part of movement control applications, and full- included items were not recorded. Along these lines, the reason for structuring this item is to make a movement manage application which contains conceivable reconciliation of various highlights. In this way, clients may utilize a more helpful application.

In spite of the fact that individuals can get some broad data in regards to going over the web, it is once in a while risky for the newcomers in a place to get comfortable with the new condition. Fundamentally, they confront troubles in expenses for unmistakable courses.

The tour guide application provides with a lot of useful options which make it a remarkable idea for the tourists to help them see their destination in a better way.

OpenPose decreases gradually lith respect to the resolution, but once the The process of the entire project is as follows :

1) This android application is going to contain a login page which will keep a track of all the users who will login to access the application.
2) Then it will display the list of three most popular cities in India .
3) Later the application will guide the tourist with options which will be useful for the tourist when he is visiting the city for the very first time options like :
   - Hospitals
   - Hotels (restaurants)
   - Atm
   - Metro stations
   - Places to visit
4) The tourist can use this information to enjoy a peaceful stay in the particular city.
5) The information required by the user is easily available and the login details of the user are stored in the database ,so that he is recognised as an usual user, just In case the tourist visits the place again.
6) This application will incorporate google maps API which will help the user to find the location on his android phone.