

Contact Less Elevator Based on Hand Gestures During Covid 19 Like Pandemics

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Abstract: Today's all world the corona diseases are widely sprayed all country everyone has taken care from corona diseases; the problem is that existing elevator are touch based to up and down and corona sprayed widely in these environment time has become a precious resource. Therefore, completely different methods and techniques are perpetually being used all tools fields of life to avoid wasting as of your time. The aim of this project is to design contactless elevator using the hand-sign detection. We used the Convolutional Neural Network model in this paper to define gesture and control devices using particular gestures. Gesture recognition technology will be easy, powerful and secure in this covid-19 Pandemic situation. In this project we used Machine Learning Methodology to design new Technology. In this system user can show the hand in front of camera, system detect the user hand and recognition of particular hand sign, once process done then CNN algorithm classifies the sign to control the elevator.

Keywords: Hand Sign Detetion, Elevator, CNN, Image Processing, Machine Learning. etc.

I. INTRODUCTION

The implemented system is a touch less interface to manage the control display inside an elevator. The only input of the interface is the movement of the user's hand to select the desired floor. Thus, the control of the elevator is based on gesture recognition. In such an environment, the interface needs to be compliant with the following requirements:

- Users with no distinction of age, education level, habits, and experiences need to be able to control the elevator without a specific and deep training;
- The selection of the floor has to be based only on the user's hand movements, without any physical interface such as a button. Even buttons to turn on the recognition are excluded since the entire interaction has to be touch less;
- As in ordinary elevators, users can select more floors, and the number of false positive should be null.



Problem Statement:

The problem is that existing elevator are touch based to up and down and corona sprayed widely in this environment also so modern-day world, time has become a precious resource.

II. LITERATURE SURVEY

Xibo Wang and Hongshuai Ge and Wenbo Zhang and Yingzhen Li in this paper, carried out an investigation that titled Design of Elevator Running Parameters Remote Monitoring System Based on Internet of Things for a Chinese company, in which they design a system of monitoring of the elevators , First the communication component is installed in the electronic circuit of the elevator and connects to the network using GPRS technology, because the network does not support as much traffic the transport protocol used is UDP, reliable delivery and error correction Assign to the application layer, it is also proposed a thread method that handles multiple queues because not only will it be an elevator that sends information, but it will be a group of several.

Tundong Liu, Xiaosheng Liao and Jianping Zeng in, made a design that entitled: Design of Intelligent Elevator Remote Monitoring System Based on Ethernet, in the article describe the functionality of a sensor connected to the elevator, consists of three circuits and one of They provide the connection to the network via Ethernet, then design the device driver, then develop the socket and database to use. Finally, they make a simulation with a graphical interface to show how it would operate in monitoring device and how, through the interface, to control the elevator.

Hamza Ijaz Abbasi, Abdul Jabbar Siddiqui, in these implemented a Smart Elevator System based on Wireless Multi-hop AdHoc Sensor Networks, a system is proposed for intelligent elevator delivery in order to optimize time and energy in the Normal operation of the elevator, gives guidelines to simulate by means of an application in Java the operation of the elevator and the operation of the system, also shows us the information that should have information packets and gives a starting point for the choice of transport protocol.

Andrés Enrique, Rosso Mateus and José Jairo, Soriano Méndez, in these paper made the development of a building simulator with variable parameters, using java and several free libraries in such a way that data can be obtained to simulate, A posteriori idea is to implement it in groups of elevators for buildings in such a way that efficient management of time and energy is done; Gives a framework for the development of simulations and approaches the implementation of a simulated system so that it can be taken as the starting point in the simulation of the elevator.

Dr. Shaik Abdul Nabi, Dayakar Gurra and Mohd. Anwar Ali, the propose an educational system using cloud hybrid computing so that from the mobile phones can be accessed, they propose to provide the three types of service that are: software as service, infrastructure as service and platform as service. Although the current project does not seek to make an educational platform, however if it provides information on how to structure the application in the cloud.

III. METHODOLOGY

The hand sign-based elevator used CNN methodology to control the elevator based on user hand sign. A CNN consists of two parts, a convolutional part, whose goal is to locate the features with the most impact on the classification, and a fully-connected part, that aggregates the most relevant features, in order to correctly classify each trace.

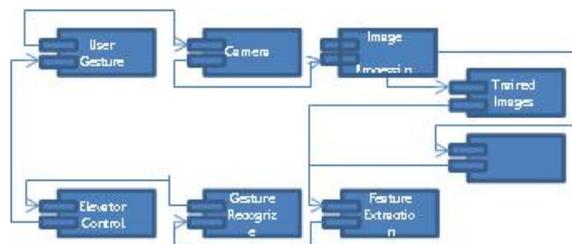


Figure 1: The flowchart of methodology implemented

Method

For prediction task, Convolutional Neural Network are Used. Deep learning models are pre-trained on the dataset were Used For prediction. Dataset contains more than 100 images Which is Divided into 5 categories. These pre-trained models are Then Further trained on the dataset by inserting additional layers and freezing some of the initial layers.

IV. CONVOLUTIONAL NEURAL NETWORK

A Convolutional Neural Network (ConvNet/CNN) isa Deep Learning algorithm which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other. The pre-processing required in a ConvNet is much lower as compared to other classification algorithms.

While in primitive methods filters are hand-engineered, withenough training, ConvNets have the ability to learn these filters/characteristics.

Convolutional Layer:

The convolutional layer is the mostimportant layer in CNN. The product of the output layer is obtained from the input by filtering in special conditions inthis layer. This layer is made up of neurons that are shapedlike cubical blocks.

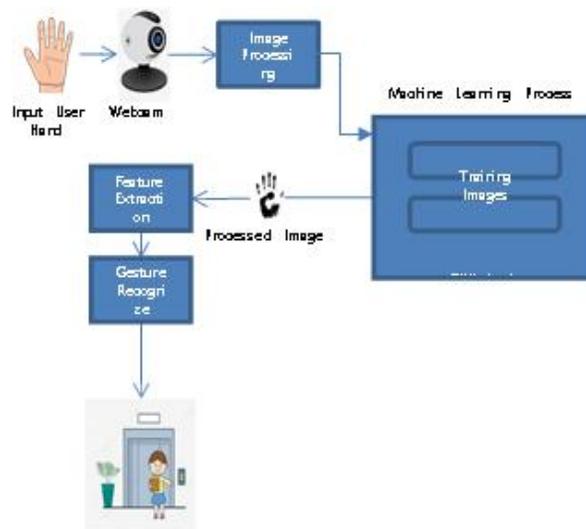
Pooling Layer:

After each convolution layer, the pooling layer performs the next operation. These layers are used to keep the scale of the neurons as small as possible. These aretiny rectangular grids that take a small slice of the convolutional layer and filter it to produce a result from thatblock. The most widely used layer is peak pooling, which retrieves the block's maximum pixel.

Completely Connected Layers:

A fully connected layer in a convolutional neural network (CNN) is created by the connection of all preceding neurons. Since it is completely connected, like an artificial neural network, it reduces spatialinformation. It is made up of neurons that start at the input and end at the output.

V. SYSTEM ARCHITECTURE



VI. SCREENSHOTS OF IMPLEMENTATION

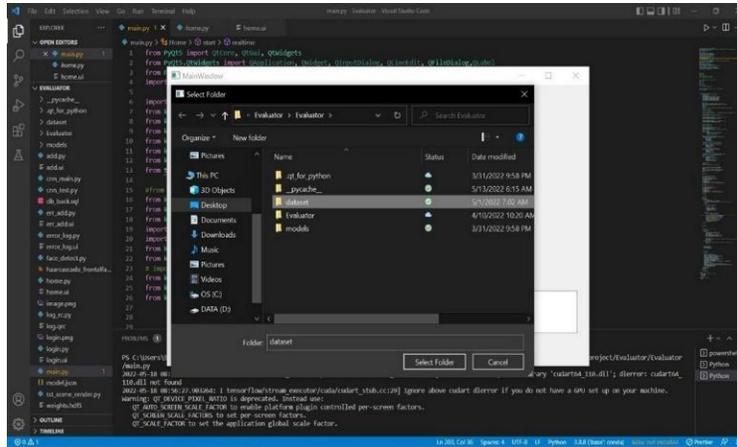


Figure: Selecting Dataset

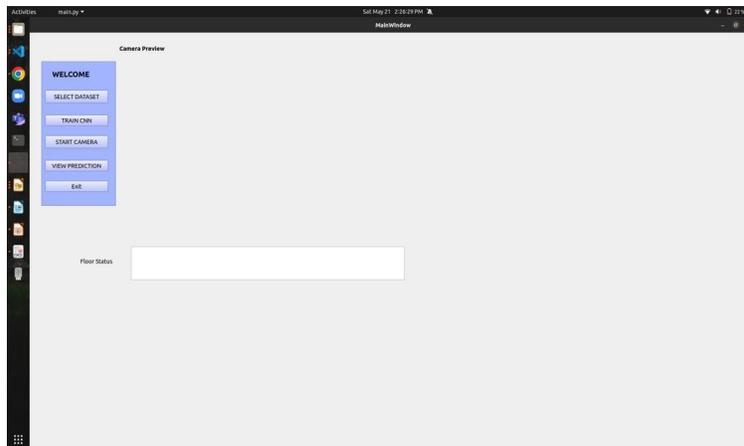


Figure: Home Page

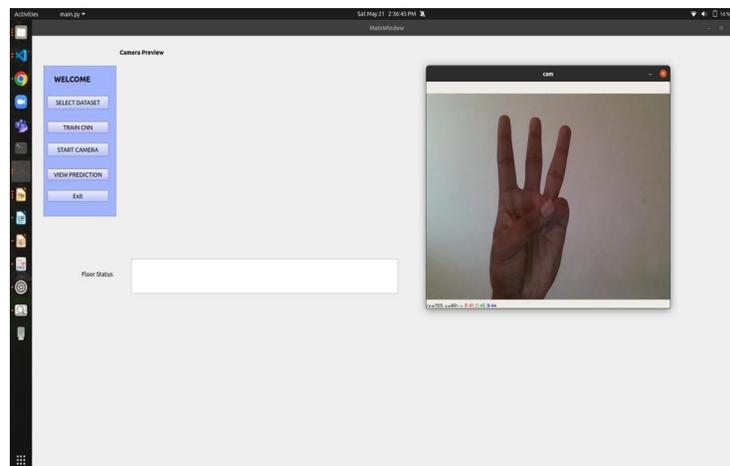


Figure: Staring Camera and Providing Input

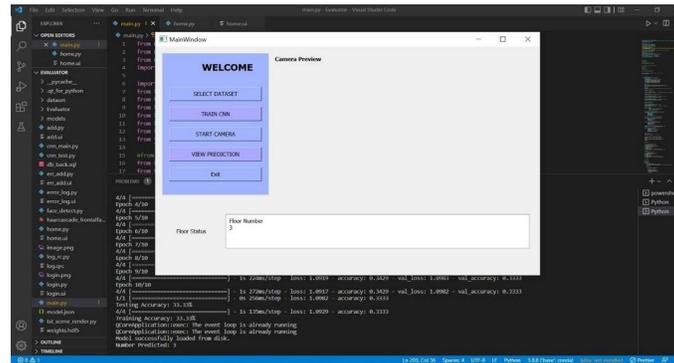


Figure: Output Image

VII. CONCLUSIONS

Hence, in this project, we are trying to reduce hand contact with lift considering the covid-19 situation. We will be doing it using gesture recognition method. The model will be used for gesture recognition is CNN with a sequential classifier. The scope of the project is to enhance the recognition capability for various lighting conditions and achieving more accuracy. Implementing and identifying the greater number of gestures.

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