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AI Based Content Controlling System using Age Prediction Algorithm and Selenium Tool

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Abstract: ***The internet provides a platform to distribute a vast amount of content to millions of users worldwide. However, the true issue is when users under the age of 18 are denied access to age-restricted content, which over time has a negative impact on the user's physical and mental health. Children are spending more amount of time in surfing the browser and they easily come across all types of content in internet. On the other hand, creating a plan for computing imaginative complexity would ensure children's safety in social networks, which is unmatched among the most important criteria in today's society. This technique will only be used to regulate the website's content. In this proposed work, face detection has been carried out for detecting the age using a Haas cascade classifier and content restriction based on age done by selenium. In general, two sophisticated techniques, such as age estimation and facial recognition, are needed to limit internet access to specified age groups. Then, for a content management system, this proposed work has suggested a new unified framework for face recognition and age detection. This proposed work has developed a system that accurately controls the browser content by combining age recognition and content restriction. In order to regulate the website, selenium is applied after detecting the person's face and estimating their age.***

Keywords: Component, formatting, style, styling, insert.

I. INTRODUCTION

John McCarthy, the father of artificial intelligence, defined it as the science and engineering of developing intelligent machines, particularly clever computer programs. This method teaches a computer, a robot operated by a computer, or a piece of software how to think critically, much like an intelligent person might.

Productivity has increased as a result, and some larger organizations now have access to completely new market opportunities. Uber has already achieved global success by doing just that. Before the current wave of AI, it would have been impossible to envision employing software to connect people with cabs. By using machine learning to evaluate user behaviour and subsequently improve its services, Google became one of the key participants in a wide range of online services. This is based on fields of computer, biology, psychology, linguistics, math, and engineering. One of the main goals of AI is the creation of computer capabilities comparable to human intellect, such as learning, problem-solving, and reasoning.

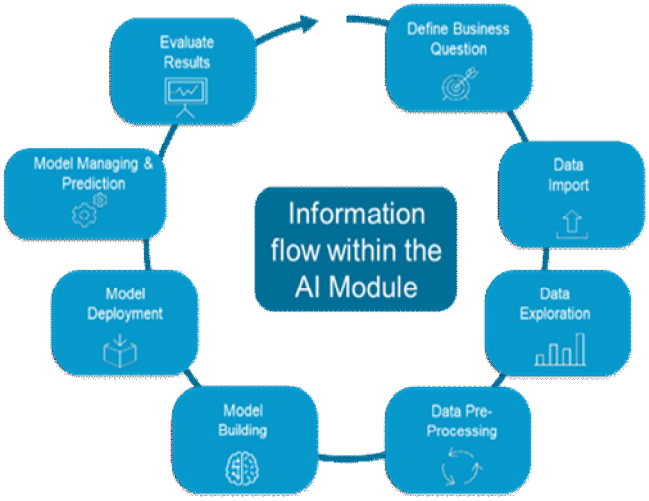


Fig.1 Information flow in AI

The internet offers a wealth of knowledge, but sorting it into good and negative categories is a time-consuming and hard process. Exposure to age-restricted information can lead to addiction, sadness, time wasting, social isolation, loneliness, obesity, cybercrime, and abuse of humans. Easy access to divisive literature and other divisive material, instruction on handling explosives, and gambling, which seriously harms both physical and mental health.

A. Selenium

Selenium is an effective tool for remotely manipulating a web browser. All major browsers and operating systems may use it, and its scripts can be written in many different languages, including Python, Java, C#, and others. In our system model, Python is used in programming. one can automate daily operations like managing your tweets, WhatsApp texts, and even simple things like Google without actually opening a browser using this giving automation, no upper bounds. The system is built to create an Artificial Intelligence (AI) program that uses a web camera to split faces and determine age. Using the Selenium tool, the system can limit the content that a browser searches for based on its age.

II. RELATED WORK

Development of an Application for Parental Control of WhatsApp on Android Mobile Devices: considers that in order to reduce dangers and stop threats against children from materializing, a model is suggested where a system for parental control application for Android smartphones is created. Based on WhatsApp sender and recipient messages, the application transmits them to a central server via an internal mobile procedure, where they are analysed and categorised in line with the nature of the discussion the child is carrying on. The application sends a helpful alert to their parents for the proper parental supervision if threats are found, such as drugs or bullying. A method for semantic categorization is utilised in this process to examine natural language processing. [1]

System for remote parental control and management of rooted smart TVs: explains a system for managing and controlling parental access on rooted smart TVs. In the IT industry, a hack is the breaking of security precautions that the manufacturer or developer implemented. To extend the capabilities of a device or application, or to make it perform functions beyond those for which they were designed, is another definition of hacking. In this post, we'll demonstrate how to develop a system that enables remote management and monitoring of a Samsung Smart TV by hacking (or "rooting") the device. Parental control frequently has relatively few features, generally only a PIN lock. By obtaining arbitrary code execution, we significantly increased the functionality. This solution is manufacturer - independent and may be extended to older TVs without receiving updates. [2]

Face Detection using Haar Cascades to Filter Selfie Face Image on Instagram: introduces a new and novel discipline that uses Instagram as a social networking platform with the most rapid growth in recent years. Instagram is a well-known social networking platform for sharing pictures, videos and also for engaging in communication A popular social media platform for sharing images is Instagram. On Instagram, you can search for images using a specific keyword or the hashtag, which is a common term. Giving a hashtag when clients upload images is completely unregulated. The hashtag, which is occasionally used, is no longer connected to the uploaded picture.

There are some images whose subject matter is dominated by selfies. It explains why the historical image or location of a photograph is currently not fully conveyed. The goal of this study is to filter selfies from search results on Instagram that are only based on hashtags by fusing internet data extraction and human face detection techniques using the Haar Cascade technique. The experiment involved determining a number of hashtags to use as the basis for Instagram photo searches. Results from experiments show that the used method detects human faces with an accuracy rate of 71.48%. The Haar Cascade method can filter selfie pictures with an accuracy rate of 64,6%, according to the results of human facial recognition. They make this assumption because selfie images typically feature a person's face. [3]

Location Based Parental Control-Child Tracking App Using Android Mobile Operating System: explain the systems for proposing a Location Based Parental Control Child-Tracking mobile application. Nowadays, mobile phones have developed into a potent platform and essential component of daily life for interpersonal contact. These new applications are beneficial for tracking whereabouts and emergency situations. For instance, parents may occasionally worry about kidnapping or street wandering by children. Even when their phone is quite close to them, the youngster can find themselves in a scenario where they are unable to reach their parents.

In this study, they took these scenarios into account and presented a location-based parental control and child-tracking application that can obtain a child's SIM information. This solution's primary SIM information allows parents to instruct their child's phone via SMS while it is currently active on their phone. [4]

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III. METHODOLOGY

The major objective is to develop a method for accurately detecting the user's age by facial segmentation by applying artificial intelligence, which may then regulate the browser's content-searching behaviour based on the age determined using a selenium tool.
The model has five phases:

1) Defining Architecture
2) Compiling the Model
3) Running the Segmentation
4) Observing and Collecting Data
5) Evaluating the Result

This model enables the system to achieve higher accuracy levels.

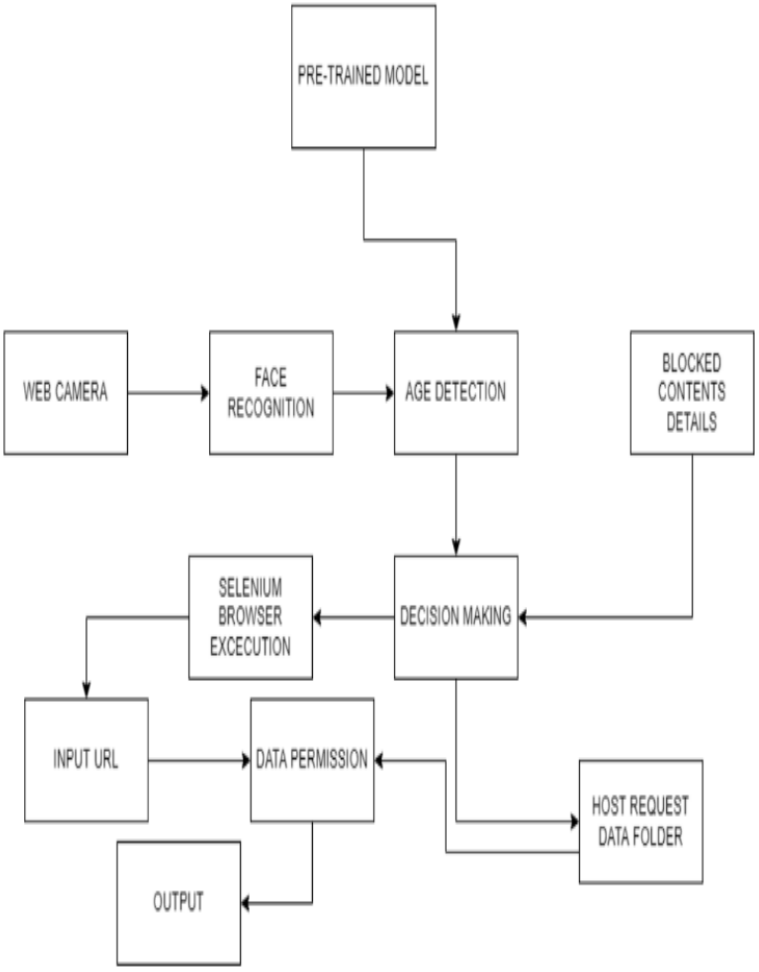


Fig. 2 Workflow of Age estimation and content filtering

IV. SYSTEM IMPLEMENTATION

The proposed system was created using AI architecture that automatically determines the age from the web camera, which is processed using python script. After determining the age, if it is greater than 18, it permits all contents. Otherwise, it adds the block list dataset to the selenium tool, which takes complete control of the browser and blocks inappropriate websites for the given age.
The proposed system has the following modules:

1) Web Camera Activation
2) Face Segmentation
3) Age Classification
4) Content Controlling System

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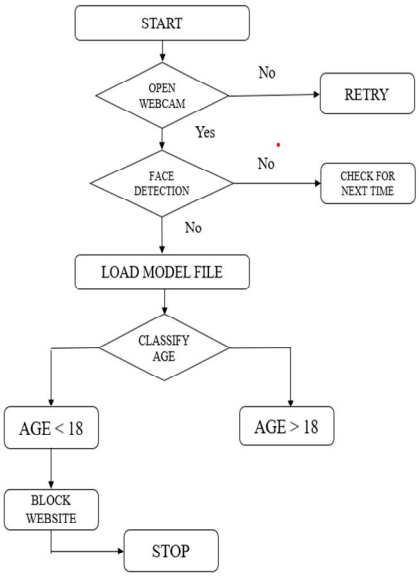


Fig 3: Flowchart diagram of proposed model

A. Web camera Activation

The system model is built starting from activating the webcam. The system launches the OpenCV framework-based web camera and takes a picture.

B. Face Segmentation

Then, the face segmentation is used to determine the age. Using OpenCV, the algorithm detects and segments the face in the collected picture.

The Haar cascade is a technique for identifying objects, irrespective of their size or location in the image. The Haar feature for face detection consists of two parallel rectangles situated across the cheek and eye areas. These rectangles are placed in connection to a detection window that acts as the bounding box for the target item. The Haar Cascade Classifier plays a pivotal role in face segmentation.

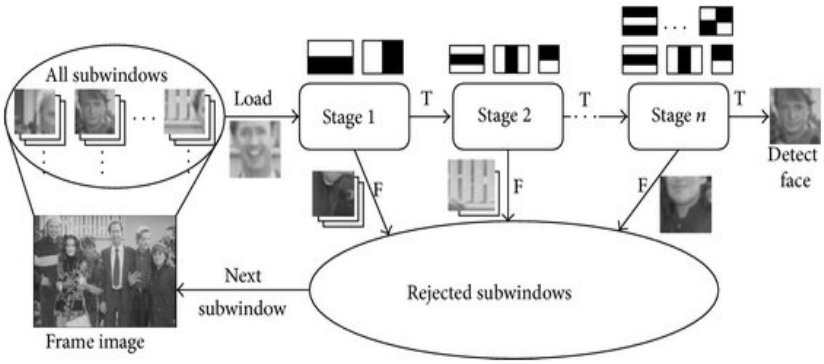


Fig 4: Cascade structure for Haar classifiers

This algorithm is not overly complex and can run in real-time. In still images or moving videos, it uses an Object Detection Algorithm to spot faces.

C. Age Classification

To determine the age classification to categorize the user if they are below or above 18. The pre-trained neural network model for age categorization is then given the segmented picture.

Age detection is typically carried out in two steps:

1) Identify faces in the image/video stream input
2) Remove the face, then use the age detection algorithm to determine the person's age.

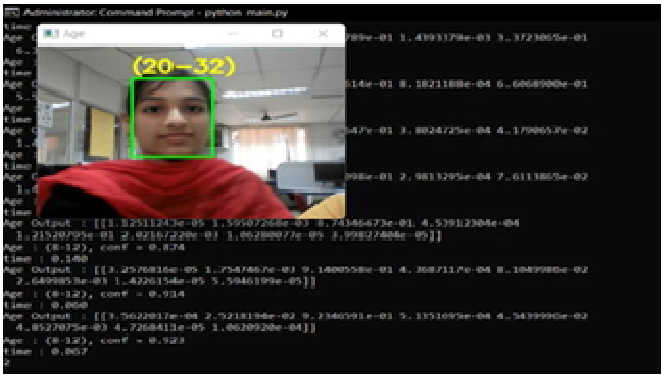


Fig 4: Displaying age of a person

D. Content Controlling System

The final step is the content controlling system. Once the user's age has been determined, the appropriate contents are authorized in accordance with that determination. The command is then delivered to the temporary host URL request folder, where Selenium opens the browser so the user may begin surfing. Selenium stops incoming data if a user inputs an undesirable URL, preventing the page from opening.

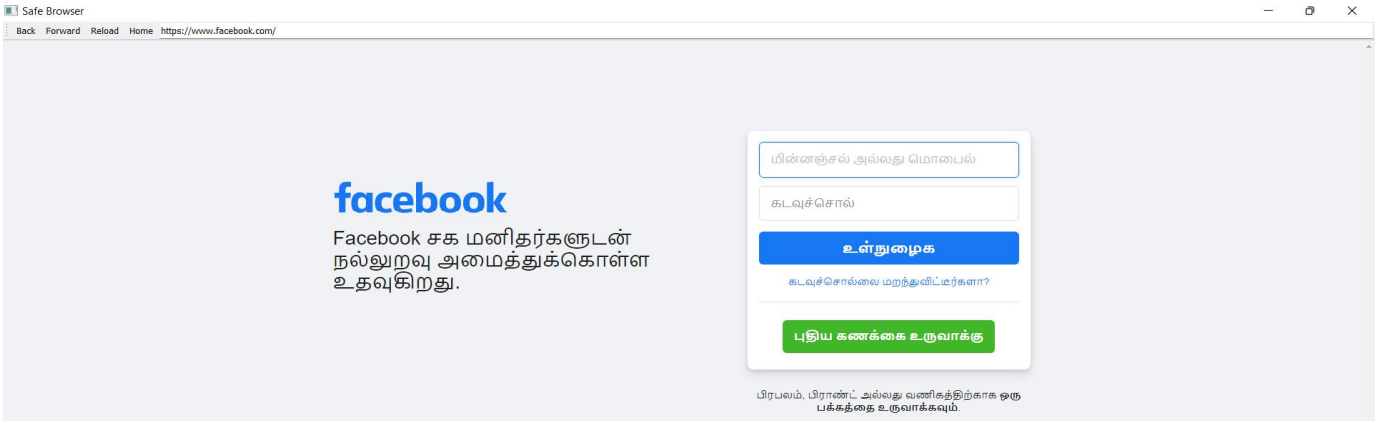


Fig 4: Displaying the access of website of person above 18

In the model, Face book website is marked as an age restricted website for demo purpose. After, classifying the age, it directly takes to the browser. In browser, the user tries to access the Face book which is marked under age-restricted website. As the person age is above 18, the person gains the access to website. If the person age is under 18, the access to the website will be denied.

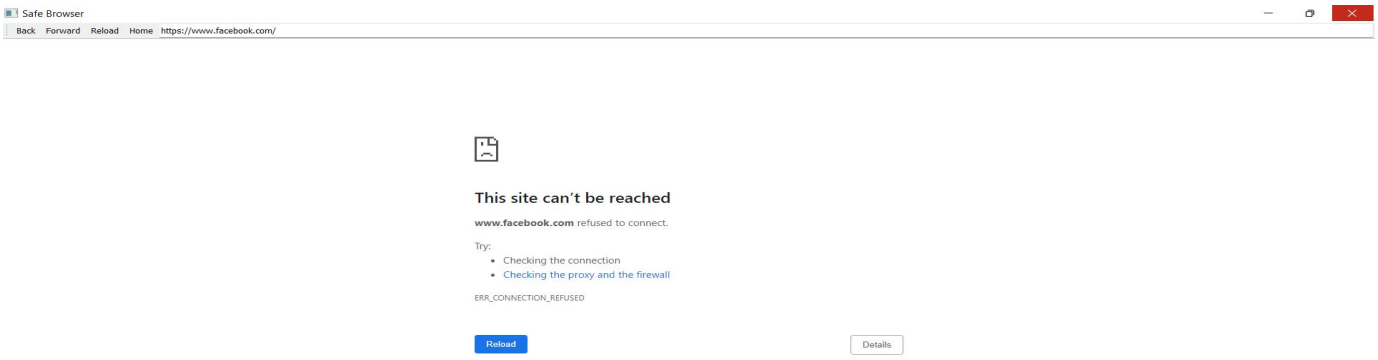


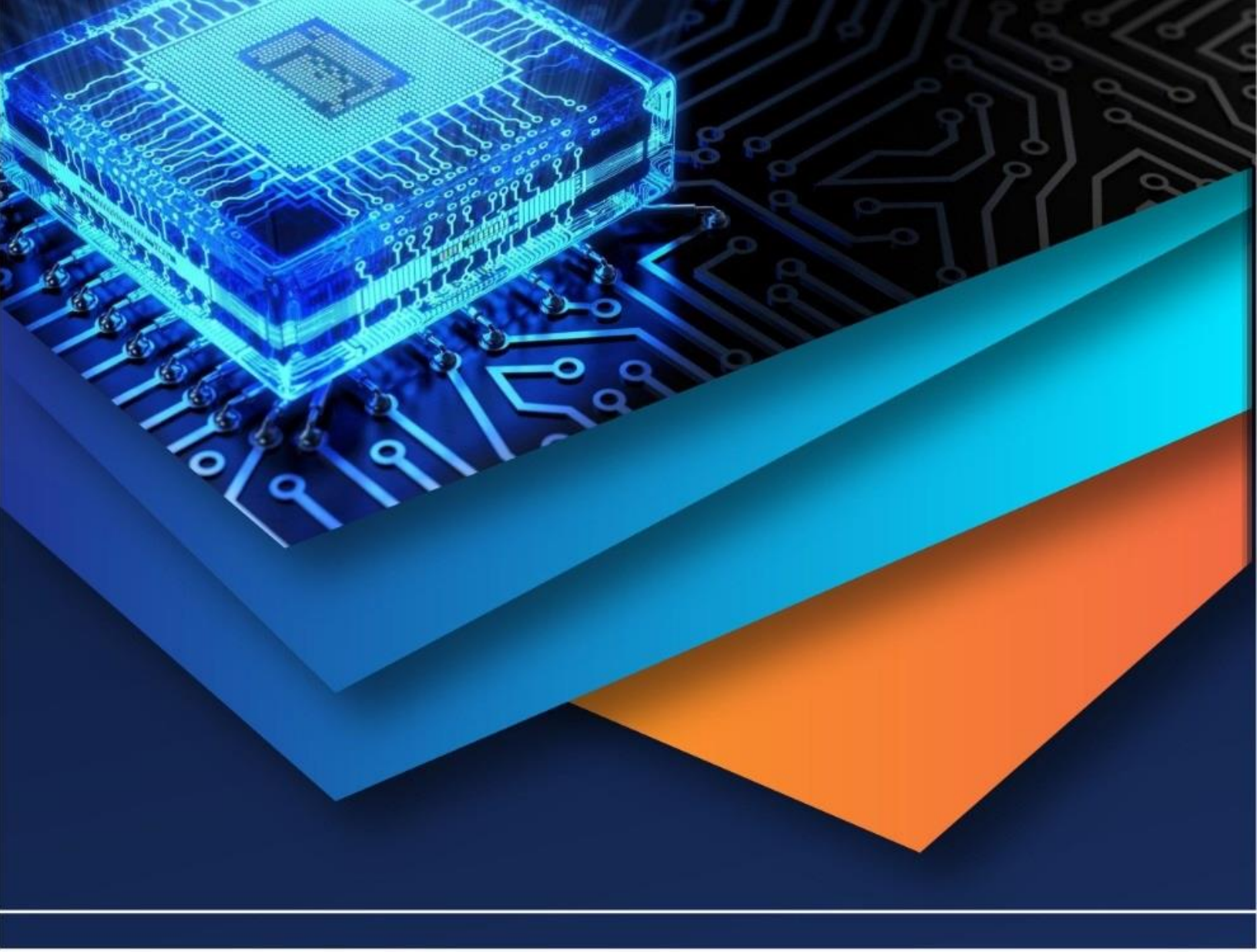
Fig 5: Displaying the access of website of person below 18

V. CONCLUSIONS

In conclusion, this proposed work offers a secure solution to this issue where Parenting is built on a foundation of concern for children's safety. Digital friendships, environments, and occurrences are becoming more and more ingrained in children's life. As a result, the suggested approach provides the solution to block the age restricted site using facial recognition. The first two modules are combined, and a facial picture is extracted from the web camera and segmented using Haar cascade classifier. In subsequent work, age identification is predicted for the segmented face using deep learning caffe model, and harmful websites are banned for persons of a certain age using selenium tools, where the blocked websites are added if the person is found to be a minor and restricted from accessing the website.

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