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INTELLIGENCE SURVEILLANCE SUPPORT SYSTEM

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ABSTRACT

In once many decades we've seen an increase in the operation of surveillance systems such as CCTVs and movable monitoring bias. These are static but not intelligent. With the arrival of Artificial Intelligence, fabrics like Computer Vision has increased the compass of including fresh functionalities. This Intelligent Surveillance Support System adds to the conventional monitoring system with advanced real time features similar as face recognition, alarm on theft/ infidelity discovery, callers in/ out discovery and stir discovery. Emphasis is on doing the tasks mentioned over in real time. This is achieved by using optimizedalgorithms available in OpenCV Library which improves the operation of machine perception.

Keywords : ISSS, Computer vision, OpenCV, Face recognition, Theft detection, Motion detection.

INTRODUCTION

The Intelligent Surveillance Support System (ISSS) is a high-tech platform designed to enhance both public and private domains' monitoring infrastructure. Numerous capabilities, including identification, noise detection, motion detection, recording, monitoring, and rectangle selection, are integrated by ISSS. The Tkinter library for Python was used in the development of the system's user interface, which is very easy to use. Users can perform a variety of surveillance activities, including face recognition, motion detection, visitor in/out detection, and alarm on theft detection, by interacting with the graphical interface of the software with ease. In the realm of artificial intelligence, computer vision is a rapidly developing scientific discipline that contributes to the development of computer vision capabilities comparable to those of humans. It is the study of how sophisticated information can be obtained by computers from digital images or videos references. Engineers can benefit by comprehending and automating activities that are performed by the human visual senses. The Intelligent Surveillance SupportSystem is made to be lightweight in order to minimize strain on the hardware it operates on. Afunctional PC or laptop, a webcam with drivers installed, or other video sources such as WIFI, USB, or CCTV cameras linked to the computer, as well as a flashlight or LED or night vision-

enabled camera, would be the very minimum gear needed for this.

Working in real time, the Intelligent Surveillance Support System has many moving parts. In addition to real-time general video recording, the system must monitor the frame, identify the person, detect noises, and identify visitors in the frame of focus. For every application, a distinct set of algorithms is used to accomplish this. We have developed a lightweight, all-in-one solution for this in this paper that works with any kind of Python-capabledevice and any simple camera configuration. The growing need for sophisticated and effective security solutions in today's environment is what drove the development of the Intelligent Surveillance Support System (ISSS). Conventional surveillance systems frequently rely on human operators monitoring and analyzing security footage by hand, which may be laborious,prone to mistakes, and overwhelming. The goal of the ISSS is to overcome these constraints by utilizing real-time analysis and machine perception.

REVIEW OF LITERATURE SURVEY

The Literature check on Intelligence Surveillance Support System illustrated the ramifications and concentrated on OpenCV, an open-source computer vision toolkit for connecting and rooting meaningful data from images. The thing of processing, is to grease a computer's appreciation of an image's content. A collection of libraries handed by OpenCV are used to reuse images until they reach a mature state. This offers the de facto assiduity standard API fortasks related to computer vision. With image processing software, we can handle multiple challenges that arise in real time.

In addition, real-time OpenCV image processing ways are demonstrated, accompanied with guidelines and exemplifications. likewise, the ISSS’s real- time stir discovery capabilities give instant cautions and announcements when unusual exertion is detected, allowing security labor force to respond instantly to implicit pitfalls. By using optimized algorithms available in the OpenCV library, the ISSS ensures effective processing of videotape footage, enabling real- time analysis and decision- making

ANALYSIS AND DESIGN

PROPOSED SYSTEM

The Intelligent Surveillance Support System (ISSS) is a cutting-edge software solution that makes it possible to analyze security footage in real time and detect hidden dangers. To provide a thorough and reliable security result, this system combines sophisticated functions including facial recognition, alarm on theft detection, callers in/out discovery, and stir discovery. The purpose of this software is to increase the safety and security of both public and private areas by improving the efficacy of surveillance systems.The focus of this work is on utilizing the OpenCV Library's optimized algorithms to complete the aforementioned tasks in real time while enhancing machine perception. Giventhe speed at which technology is developing and the growing demand for monitoring in today's environment, The realm of security and surveillance holds great potential for the Intelligent Surveillance Support System.

WORKING:

Improving the general efficacy and efficiency of security and surveillance activities is the main objective of the Intelligent Surveillance Support System. The ISSS decreases human error, speeds up response times, and allows proactive steps to improve safety and security in both public and private areas by automating the detection and identification of possible threats. The International Space Station (ISSS) has great potential to transform the security industry and protect people, companies, and challenging security landscape

BLOCK DIAGRAM

First, there are seven buttons on the GUI, each with a distinct purpose.

- **Monitor(Module 5) :**By comparing successive frames and varying the silhouettes in thethresholder difference image, the program employs OpenCV to detect agitation in a VHS stream and assists in identifying missing objects.

- **Rectangle (Module 2) :** By comparing consecutive videotape frames, this point detects movement in a zone of interest designated by the stoner. If stir is found, the textbook displays"stir" in green and "NO-stir." it concludes when the escape key is hit, as shown by the red textbook else.

- **Noise(Module 1):**This point uses thresholding, figure finding, and frame comparison to identify movement in a videotape that the dereliction camera recorded. If stir is found, thetextbook displays "stir"; if not, it displays "NOMOTION" in the red textbook.

- **Record (Module 4):** At this moment, the dereliction camera records a time-stamped videotape, which is stored in AVI format at 640x480 resolution and 20 frames per second.The video can be paused and saved by hitting the "Esc" key.

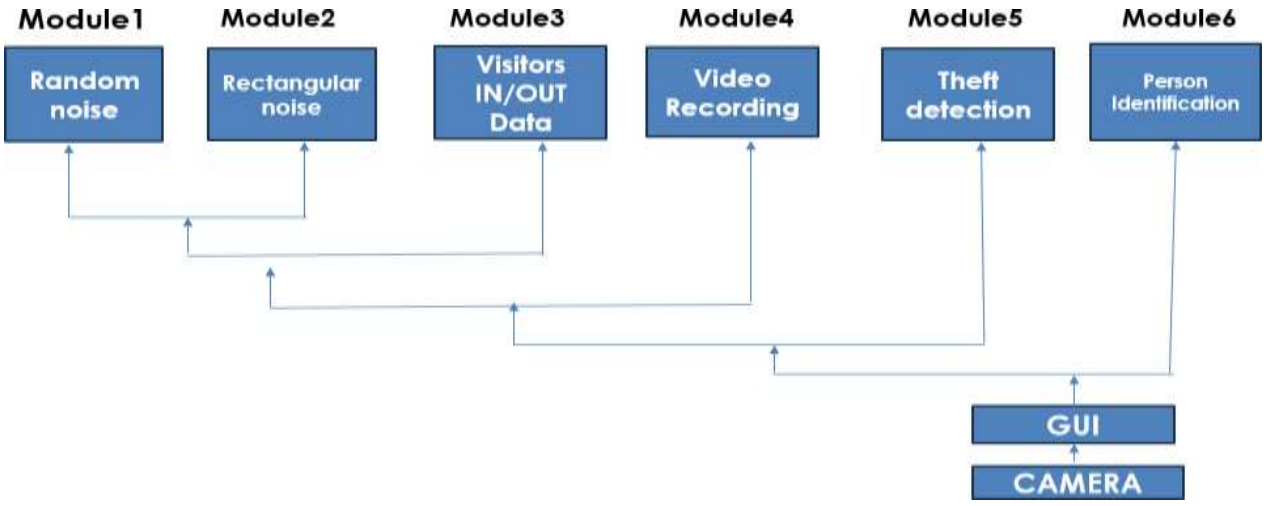

Figure1 shows the suggested model's architecture

- **In-Out (Module 3):**This point tracks the direction of movement of a caller in front of the camera and detects agitation using OpenCV and date-time libraries. Time-stamped photos aresaved in the "in" or" out" brochure, based on the caller's autonomous movement to the left or right.

- **Identify(Module 6):** This point defines three functions: "train()", "identify()", and "collect_data()", which are used with OpenCV, Haar falls, and LBPH to recognize faces. Forthe purpose of adding new faces and feting existing faces in real time from a webcam, the functionalities are combined with a Tkinter GUI.

Exit

SCHEMATIC DIAGRAM

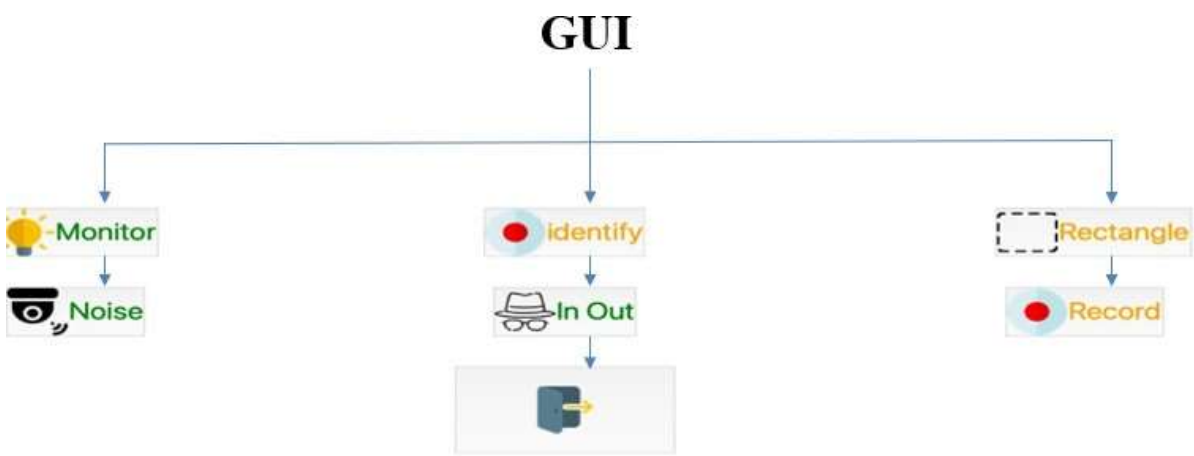

Fig 2: GUI

Intelligence surveillance system has received growing attention due to the increasing demand on security and safety, capable of recognizing faces in real time. The recent developments in sensor devices, computer vision, and machine learning have an important role in enabling suchIntelligent surveillance system will automatically recognize faces and track it on live video streams from surveillance cameras in public or commercial places.

ADVANTAGES:

1. **Real-Time Monitoring:** Intelligence Surveillance Support system enables real-timemonitoring and analysis of security footage, allowing swift responses to potential threats.

2. **Enhanced Safety and security:** By improving surveillance efficiency, Intelligencesurveillance support system enhances safety in both public and private spaces.

3. **Lightweight design:** Intelligence surveillance support system is designed to be lightweightand efficient, minimizing hardware burden

APPLICATIONS:

Traffic Management: Monitoring traffic flow, detecting accidents, and managing congestion.

Environmental Monitoring: Detecting forest fires, pollution, and Natural Disasters.

Access Control: Managing entry and exit points in secure facilities.**Event Security**: Ensuring safety during large gatherings or events.

RESULT

Figure-3: Rectangular Noise Detection

Figure-4: Noise Detection - NO MOTION

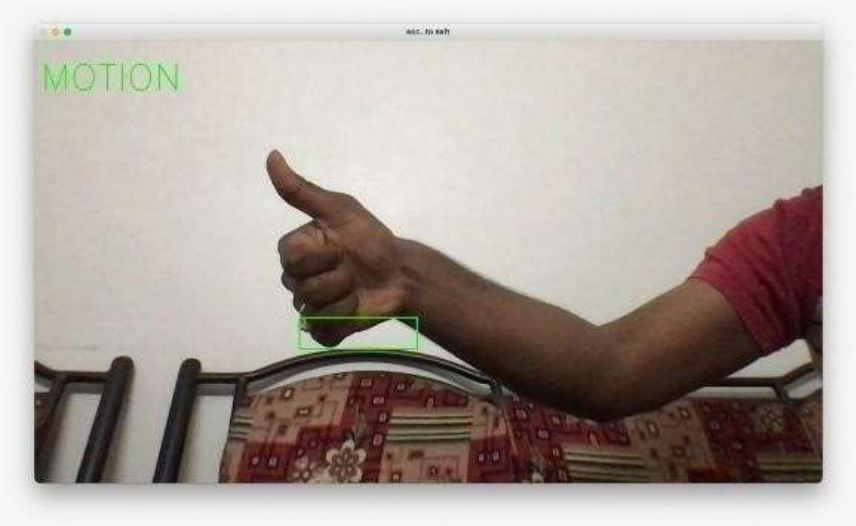

Figure-5: Noise Detection – MOTION

Figure-6:Visitor found and will be stored in visitors file

Figure-7: Identifying the object removed from the table

CONCLUSION

To sum up, the OpenCV library's optimized algorithms and cutting- edge capabilities are utilized by the Intelligent Surveillance Support System (ISSS), an advanced software solution, to improve security and surveillance operations. The ISSS offers a complete and dependable security solution that boosts the efficacy and efficiency of surveillance systems by offering real-time monitoring and analysis of security footage. The ISSS's real-time motion detection, in/out visitor identification, facial recognition, and theftdetection capabilities are among its key features. Proactive threat identification, effective person monitoring, security breach prevention, and immediate alerts for anomalous activity aremade possible by these capabilities. By automating these procedures and utilizing machine perception, the ISSS lowers response times, minimizes human error, and improves overall security and safety of both public and private areas.

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