SURVILLIENCE CAMERA OPTIMIZATION USING MATLAB AND AI

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Abstract: Limitations in the ability of humans to vigilantly monitor video surveillance live footage led to the demand for artificial intelligence that could better serve the task. Humans watching a single video monitor for more than twenty minutes lose 95% of their ability to maintain attention sufficient to discern significant events. With two monitors this is cut in half again. Given that many facilities have dozens or even hundreds of cameras, the task is clearly beyond human ability. In general, the camera views of empty hallways, storage facilities, parking lots or structures are exceedingly boring and thus attention is quickly attenuated. When multiple cameras are monitored, typically employing a wall monitor or bank of monitors with split screen views and rotating every several seconds between one set of cameras and the next, the visual tedium is quickly overwhelming. While video surveillance cameras proliferated with great adoption by users ranging from car dealerships and shopping plazas to schools and businesses to highly secured facilities such as nuclear plants, it was recognized in hindsight that video surveillance by human officers (also called "operators") was impractical and ineffective. Extensive video surveillance systems were relegated to merely recording for possible forensic use to identify someone, after the fact of a theft, arson, attack or incident. Where wide angle camera views were employed, particularly for large outdoor areas, severe limitations were discovered even for this purpose due to insufficient resolution. In these cases it is impossible to identify the trespasser or perpetrator because their image is too tiny on the monitor.

Keywords: surveillance cameras, video monitor, camera views.

1. INTRODUCTION

21st century is the world of science. Today science and technology is making a rapid progress. In the past few decades technology has scaled new heights, what seemed impossible just years ago is now being seen everywhere and even bettered with each passing day. Every day, scientists are coming with new inventions and ways to solve problems. As we know that every act of human is motivated by some or another reasons, so is our project. By this project are trying to make things easier and simpler and focus on the main points that are written in an image by using MATLAB. Here we add features to existing CCTV cam working that can be partially classified under Artificial Intelligence. Here we are continuously processing the data by capturing live proceedings and check it with reference data image and whenever it found any change with previous stored data than only it goes for storage of Image otherwise it remain unprocessed. At the end we got multiple images stored on a variable with only use as a storage of multiple images only at the time when movement is detected on camera range

2. METHODOLOGY AND PROCEDURE

The project aims to make a tool which can convert a digital captured image into data format. Our aim of making this project is to help those people who wants only specific part in particular format of image. The system is hereby designed in such a manner that a person can easily operate it using a Graphical User Interface that we have designed in our MATLAB Code.

Here firstly we take a reference image by triggering the push button on the GUI for the task. The button commands the trigger to take a reference image and the software asks the user to ensure the image.

First of all we have taken an image through any device and save it in desired format so that it can be acceptable by MATLAB to be read.

1. The next step of our project is IMAGE PREPROCESSING in MATLAB. This image with 3 frame background and we can see lot of noise in background. Then first of all we have performed image data on this jpg image..

2. When we got a GUI for button based operation handling image then we access the appearing on the reference of the image. Then after this we get new images which just contain only two pixel value.

3. After this second stage of now we go for root mean square error calculation between previous reference image and new live captured image. Now with the threshold it compare overall error calculation and store the image of desired changes

4. After above processing on the images we show storage data image one by one that help us to find out the movement and activity specific time snaps which takes lesser memory and less time consuming in analysis.

3.   RESULTS AND DISCUSSIONS

We all are in midst of revolution ignited by fast development in computer technology and imaging. Against common belief, computers are not able to match humans in calculation related to image processing and analysis. But with increasing sophistication and power of the modern computing, computation will go beyond conventional, Von Neumann sequential architecture and would contemplate the optical execution too. Parallel and distributed computing paradigms are anticipated to improve responses for the image processing results.

A wide research is being done in the Image processing technique.

1. Cancer Imaging – Different tools such as PET, MRI, and Computer aided Detection helps to diagnose and be aware of the tumors.

2. Brain Imaging – Focuses on the normal and abnormal development of brain, brain ageing and common disease states.

3. Image processing – This research incorporates structural and functional MRI in neurology, analysis of bone shape and structure, development of functional imaging tools in oncology, and PET image processing software development.

4. Imaging Technology – Development in image technology have formed the requirement to establish whether new technologies are effective and cost beneficial. This technology works under the following areas:

·   Magnetic resonance imaging of the knee

·   Computer aided detection in mammography

·   Endoscopic ultrasound in staging the oesophageal cancer

·   Magnetic resonance imaging in low back pain

·   Ophthalmic Imaging – This works under two categories:

5. Development of automated software- Analyzes the retinal images to show early sign of diabetic retinopathy

6. Development of instrumentation – Concentrates on development of scanning laser ophthalmoscope

4.   CONCLUSION

The idea of designing an AI Camera can actually ease the surveillance industry and also the optimization will help in improving the memory consumption status for the images and recordings by the surveillance cameras. The key objective of the whole thing in the design is to decrease the co

The use of MATLAB platform is hereby much more reliable as because the chances of errors and minors mistakes is minimized by the software itself and hence is easy to code and improvise the whole code according to the user need.

This hereby makes our design more handy and compatible to user. The concept of image matching and processing is getting more handy nowadays as because it is being used in identifying tumors and cancer symptoms in human body by matching it with the other reference healthy human body images.

Our objective is to present the idea of using the image matching and image processing in a different and much more beneficial way.

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