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The Development and Deployment of a Cloud-Based Intelligent Monitoring System

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Abstract

The use of cloud computing has positive results for businesses. Several companies now utilise it because of how well it makes money and how easily it can be expanded. In addition, its heightened security and privacy make it a worthy choice for business owners and financiers (Yong, et al., 2012). The cloud has the potential to greatly reduce costs for small companies. With the help of cloud computing, sharing and cooperation across industries has become more efficient and less expensive. Having a "pay as you go" method is beneficial to users. Cloud computing not only allows for more swiftness in business dealings, but also more versatility in staffing and resource scheduling.

In comparison to buying a server outright, "pay as you go" saves money and reduces waste (Kambatala, et al., 2014). While the "total cost" of hardware continues to decrease, the prices of cloud computing and cloud storage are decreasing at a faster rate. " A cloud-based system makes it less of a hassle to keep tabs on progress and inform customers of any shifts. Therefore, it is consistent with the allocation of funds and the utilisation of resources.

There is now "any corporation has access to its own services through the internet" thanks to the development of cloud computing (Armbrust, et al., 2009). A projected 33.2% of 2016 worldwide IT budgets will go toward cloud-based services. Various integrated cloud-based technologies are used in the "real world" of corporations nowadays (Devasena, 2014).

Keyword: Cloud-Based Services, Cloud Computing, Real World Operations

INTRODUCTION

Every "company has to be secure (Frank, 2011). The conventional method of securing a home is to erect a "high wall." If an unlawful invasion is not discovered in a timely manner, then there is no proof or clues that can be used to trace down the perpetrators. Closed-circuit television (CCTV) is an essential part of the traditional security system (Norris, Moran, & Armstrong, 1998). Our community is protected by CCTV as part" of our security system.

Camera control, "video display and recording, and data transfer are all features of visual surveillance, which is an application of computer engineering. Analogue and digital monitoring, as well as the front-facing camera, transmission cable and video monitoring platform, are all part of the traditional video surveillance system (Hossain, et al., 2012). Real-time monitoring and recording and replaying surveillance footage are the two basic roles of classical video surveillance, which is known as" "passive monitoring" because of its lack of cognitive management.

In order for "real-time monitoring to work, security employees must be present in order to monitor the screen and take action when an odd occurrence occurs. At a very short notice, amid a vast number of surveillance films, it is exceedingly difficult to locate the proof required. Another problem with traditional video surveillance systems is that they have a hard time getting surveillance footage from one location to another, and this" wastes a lot of time and money.

Literature Review

It is becoming "increasingly difficult for traditional CCTV systems to keep up with the rapid advancement of computer networks, digital image processing, and data transmission technology (BaoHong & Yan, 2015). Analog security systems like CCTV and DVRs are still used by many businesses, warehouses, schools, hospitals, supermarkets, etc. (Soulsby, 2012). (Digital video records). Conventional surveillance systems are unable to fulfil the demands of big data analysis, storage, and sharing because of the complexity of the network environment and the different brands of video-recording" devices. It is now more important than ever to have a cloud-based surveillance system (CISS).

Businesses "benefit from cloud computing. As a result of its profitability and scalability, it has been adopted by many businesses. Business owners and investors value its privacy and increased security above everything else (Yong, et al., 2012). Because of the cloud, small businesses may save a large amount of money. Cloud computing has made cross-industry collaboration and sharing easier and more" cost-effective. The "pay-as-you-go" strategy is the most favourable economic aim for users. Cloud computing has the potential to make trade decisions easier, but it also provides greater flexibility in hiring and reserving resources.

"Pay-as-you-go" saves "waste and lowers the cost of running a server compared to purchasing one (Kambatala, et al., 2014). Cloud computing and storage prices are dropping faster than WAN expenses, for example, despite the fact that hardware costs are declining. Tracking and reporting changes to consumers is easier" with a cloud-based solution. Thus, the expenditures and the usage of resources are in line with each other.

Cloud "computing has progressed to the point where every company has access to its own services over the internet (Armbrust, et al., 2009). As a service, cloud computing is predicted to account for 32.8 percent of the world's IT spending in 2016. There" are a number of cloud-based business solutions that are coupled together (Devasena, 2014).

When it comes "to online transactions, cloud computing is simple and easy to use because one can operate from anywhere. For their clients, accountants employ cloud computing to generate an accessible monthly" charge.

In surveillance, "cloud computing is becoming increasingly common. Visual surveillance requires large data storage facilities, which may be prohibitively expensive for any business to acquire and maintain. In addition, any business that keeps data for a long length of time must either release it or replace the storage devices. In addition, if the storage discs are damaged or destroyed, the footages will be lost, and hence backup is essential. For corporations, cloud computing means they don't have to" worry about managing their storage facilities because their video can be accessed at any time.

It has been "proven that a cloud-based visual surveillance system, known as Video Surveillance as a Service (VSaaS), is superior to existing video surveillance systems (Jiang, Sekar & Zhang, 2012). Dynamic technology, cyber security, and" remote access are crucial components in the VSaaS function.

Statement of the Problem

Cloud computing "solutions contain many data centres, which ensures that the system is both dependable and redundant. An company would need additional hardware to protect any failures in order to maximise uptime with typical web platforms" (Yadav & Singh, 2016).

As a result of greater "usage of hardware, a business might save money on energy bills. Data centres are not utilised in full when a business manages its own data centre. Cloud-based surveillance allows any firm to profit from upfront capital expenses that allow them to deploy their resources in other enterprises, as the" system has saved advantages for the organisation (Wo, et al., 2011).

As opposed to "employing an entire IT department, cloud-based surveillance systems make use of pooled resources like IT experts and staff assistance at a reduced cost. By converting to a VSaaS, businesses may save money on IT expenditures. All hardware is utilised in cloud computing systems, allowing infrastructures to be shared as servers. In addition, the platform provides for a reduction in the amount of effort" required to sustain it.

Objective of the Study

- To use "NVA's computer vision functionalities in this cloud-based visual" surveillance system, as required.

Research Questions

- How "can this cloud-based visual surveillance system incorporate the requisite computer vision features from" NVA?

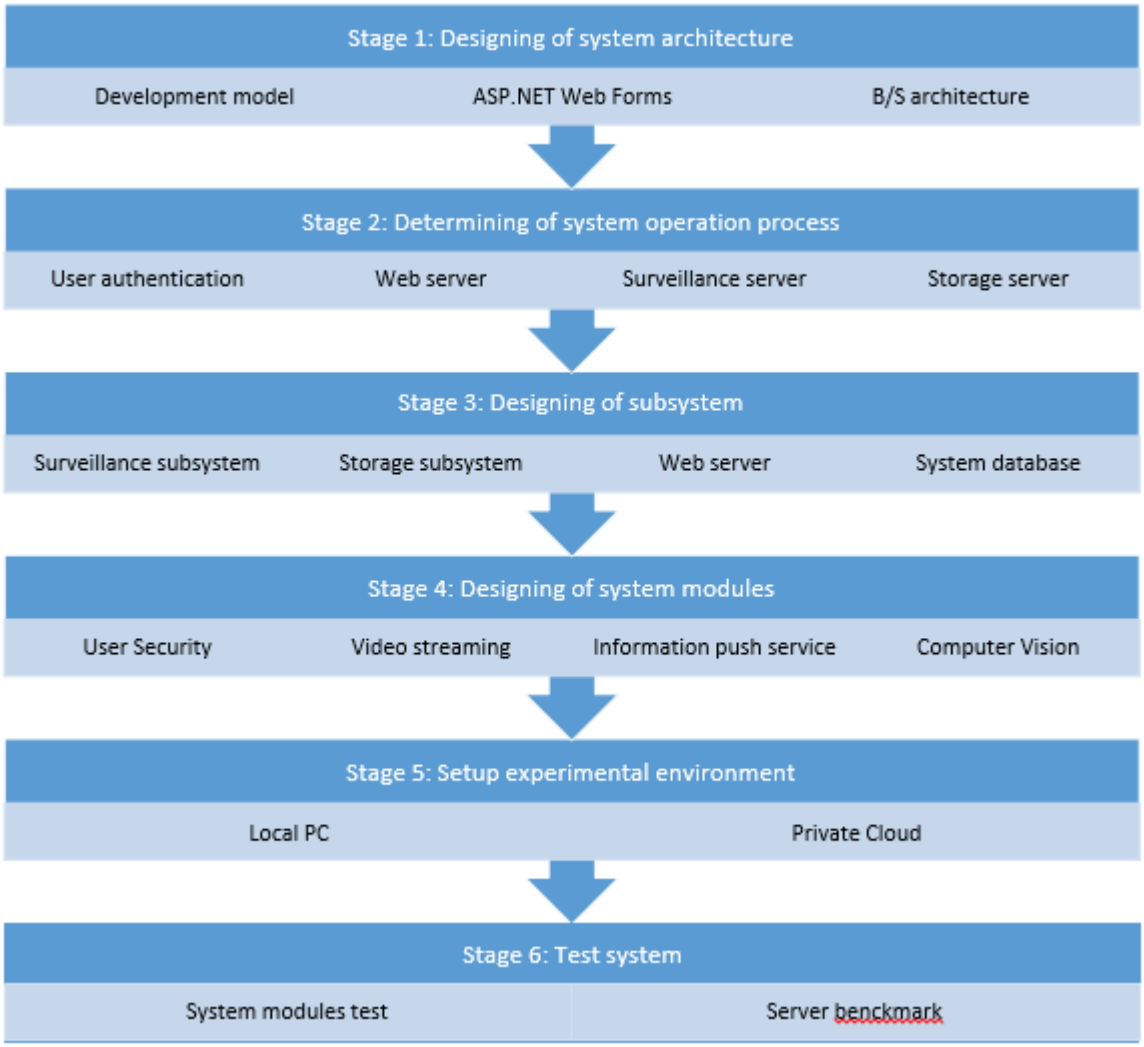
Research Methodology

Microsoft's "ASP.NET platform offers three different methods for verifying a user's identity: Windows authentication, form authentication, and passport authentication. Cookies are used as

a type of authentication in our system, which is based on cookies. As illustrated in the below given figure, each time a user visits a website, cookies" track the user's requests and the sites they see.

Research Design

The goal "of this thesis is to develop and deploy a cloud-based intelligent surveillance system. There are six steps to our study design as seen in the diagram" below.



Data Analysis

The first step is to get the IP camera set up with your network.

The very first step in any "move forward in this unit. According to this argument, the visual feed is the transmitter. Consequently, a media connection might be employed to link "photographing both of them at once.

Second, take a screenshot of the channel's video.

The To Image () method may be used to get the actual image from the video channel once the Take Snapshot () function has started a snapshot using the NVA module.

Third, tell it where to save the picture.

Now, with "using the camera's built-in features, you can snap a photo, give it a title, and store it where you choose. We rename each image with the current date and time so that it would be easy for anybody interested in when a certain event took place to do so "consist of the name itself.

CONCLUSION

Just the basics "principles of software engineering to develop a novel, cloud-based, intelligent surveillance system. Thanks to the installed terminals, we are able to offer our clients real-time monitoring and visual data. Users may use the cloud-based monitoring system from anywhere, so long as they have an active Internet connection. Problems encountered in the first study won't be resolved until after the system is completely deployed. Assuming that everything went as planned, we may now reveal the "findings.

Combination with CV (Computer Vision) systems "cloud-based intelligent surveillance system allows for this module (CISS). Some cameras will have a face detection module included in case that kind of identification is ever needed. In order to automatically identify licence plates in photographs taken in real time, the vehicle plate recognition module will be engaged and the appropriate parameters for car plate identification will be configured. Our concept is a departure from conventional surveillance in that it relies solely on motion detection. Different CV modules can be used for different cameras on the same system "camera.

Limitations of the Study

Firstly, our study is "limited by a lack of resources and equipment, as well as a lack of time for" execution.

PHP will be the "programming language of choice for our project. We decided to switch from C# to ASP.NET for two reasons. As a first step, the IP camera can only be used in conjunction with a computer with a B/S architecture and a web page, thus we have chosen to use C #. Using the common PHP framework OwnCloud, we create a cloud synchronisation system using FTP,

iSCSI LUN, and OwnCloud APP linkage to" perform data synchronisation and push notifications.

License plate "recognition is not included in this release because of environmental and equipment restrictions. Once the camera is properly aligned, we test the licence plate recognition module. Recognized accurately, despite the" low accuracy, however there will be a potential.

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