IP CAMERA BASED ONLINE EXAMINATION SECURITY

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Abstract— Online Examination has become very much popular in today’s IT enabled world. It has replaced all the inconveniences of Offline Examination. But still now there is a big question regarding the security of online examination. True candidate’s authentication during the online exam is a great problem. In this paper, a new methodology has been proposed i.e. IP camera based online exam security.

Keywords— Online Examination, IP Camera, motion detection.

I. INTRODUCTION

As the Internet & web technology is growing faster in this highly IT-enabled world, today’s student generation is getting more attached with the online resources more than the books [1]. The World Wide Web is the largest storehouse of Education resources to students. As per the observed statistics, approximately 5.6 million students opt for at least one online course within a year [2]. The statistic says that the students who take online guidance perform much better than those who are taking face-to-face traditional classroom education. Now-a-days online education system is very much reliable to every student. But there has a big question regarding the online exam security. In the present scheme of online exam, candidates are allocated a particular center where he/she is allowed to take the online exam under the surveillance of a concerned institution/board assigned invigilator. If the invigilator is not strict to his duty then the students may avail the restricted resources (i.e. books, notes, guidance from 3rd party) which will decline the standard of the exam. In this paper, we have proposed a reliable online examination system which is based on strict online security and true candidate authentication. Here the centrally operated control room will take over all the activities going on in the authorized centres through the IP cameras those are configured in every centre.

II. CHALLENGES IN EXISTING ONLINE EXAM SYSTEM

The major drawback of online examinations is that a candidate can easily use of any unauthorized methods and can enjoy outer guidance to score good in the examination [3]. The following are the popular methods that fall in this category:
1) Using books or notes for direct guidance.
2) Taking direct guidance from a person nearby.
3) Using electronic media, stored in computer’s Hard Drive, or that available on the internet.
4) Using mobile phones or pagers to communicate with second person during examination.

III. BRIEF DESCRIPTION OF IP CAMERA

A network camera is a video camera that can be accessed and controlled over any IP network such as a LAN, Intranet, or Internet [4]. By simply using a standard web browser over a high speed Internet connection, users are able to conveniently view a camera’s live video and sometimes audio, from any local or remote location. From individuals who want to keep an eye on their home and the people in it, to businesses looking for surveillance capabilities over offices and warehouse floors, there is a network camera to suit almost any need. Available in Ethernet and Wi-Fi compatible models, network cameras come in a wide variety of categories such as Pan/Tilt/Zoom which enables users to move and change the cameras view, audio enabled units capable of recording sound, to infrared cameras for night use, to name a few. Equipped with a built-in web server and on board processing, the devices, also referred to as IP cameras, combine the capabilities of a video camera with the power of a computer. Unlike web and standard CCTV units, network cameras do not require additional software or a direct PC connection to operate, making it easily placed anywhere along a network. With its own IP address, network cameras connect directly to wired or wireless networks and can be accessed remotely over the internet 24 hours a day. The cameras are easily integrated into existing networks through Universal Plug and Play (UPnP) compatibility. The camera’s images are viewed using a standard web browser such as Internet Explorer and Netscape Navigator or the camera’s included video management software. Typically, when using a web browser, users only have basic control over the camera’s functions such as zoom, image capture and recording. Access to the camera can be limited to authorized users, through the use of password protected accounts, or be left open for public viewing. For quick access to the camera, users can assign an easy-to-remember domain name through Dynamic DNS services. This eliminates having to keep track of a camera’s cumbersome and ever-changing IP address. For advanced viewing and management features, most TRENDnet IP cameras come with IPView Pro, powerful video surveillance software. Some common functions include:
1) Monitor up to 16 cameras on a single screen
2) Set motion detection windows to trigger just-in-time snapshot images
3) Enable automatic email notifications
4) Conduct manual and scheduled recordings
5) Create password protected accounts for authorized viewing
6) Designate automatic archiving to a dedicated hard drive or server.

IV. PROPOSED MODEL

Our proposed method, "wireless IP Cam based online exam security" is basically a video surveillance solution. The convergence of video and computer networking technology is revolutionizing the video security industry. Second generation solutions are entirely computer-based and can readily capitalize on existing IP infrastructure instead of requiring dedicated video cabling. IP cameras with self-contained video server appliances internally generate MPEG, MJPEG, or H.264 images. These images are made available to other devices on the network through a standard IP network interface. Monitoring and recording can be performed by entirely software-based network video recorders (NVRs) running on standard PC hardware. Advanced video analytics software can be used to automatically detect suspicious events or behaviour without having to continuously monitor dozens or hundreds of screens.

In this model, first the invigilator will assign a particular monitor from where the candidate will take exam. Then a reference snapshot of the candidate is taken by the IP camera & the frame is relayed to the control room. In central control room, the operator will thoroughly check the reference snapshot of the candidate whether the candidate is maintaining all the rules and regulations or not. If everything is usual then the candidate is authorized to take the exam otherwise he will be expelled right at that moment. This first authorized frame should be considered as a ‘Intra-frame (I)’. This frame is used for motion detection & unwanted object detection. If some changes is occurred in I frame then ‘Bi-directional frame (B)’ or ‘Predicted frame (P)’ is generated. This is illustrated in the following figures:

Figure 1: The above figures show how I, B, P Frame work
Now, we will discuss how remote IP Cam will be connected with the control room, how motion of frame will be set, how action will be taken when a candidate caught red handed and how FTP upload will be done.

V. CONCLUSION

The proposed method, wireless IP Cam based online exam security is designed for global certification examination like CCNA, CCNP, CCIE, MCSE, MCTS, MCITP, OCJP etc. The number of dummy candidates are increasing day-by-day to crack these exam. As a result we are unable to appreciate actual hidden talents from different parts of world. One bottleneck of this proposed model is its implementation cost. Otherwise this suggested model is quite good from the exam-security point of view.

REFERENCES