

Automated Wireless Presentation System with Facial Images

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Abstract—In a wireless presentation system with multiple presenters, some form of control which determines which presenter should be allowed to present at what time, should be put in place in order for a conference to proceed in a professional and well-organized manner. In this paper, a new method to schedule presentations using facial images is described. Using biometric information like facial images in wireless presentation systems is desirable because it makes the systems easy to use for both the conference moderator and also presenters and ease-of-use of a system, among other things often determine whether a product will be successful or not. Using facial images in a wireless presentation system is also highly practical because presenter devices such as laptops and smart phones are usually already equipped with webcams.

Keywords—wireless presentation, facial authentication, machine learning, deep learning, classifiers, spoof, photo attack

I. INTRODUCTION

Rapid advancement in the field of wireless communication and information technology has made it possible to stream videos over wireless at high quality and with low delay. One such application of this possibility is a wireless presentation box [1] [2] [3], which is designed to be connected to a large screen display such as a projector or television. Fig. 1 shows a wireless presentation system. By having a Wi-Fi interface and acting as a Wi-Fi access point (AP), the wireless presentation box allows Wi-Fi devices to connect to it. With custom software, a connected device can act as a presenter device where the screen of its desktop is streamed to the wireless presentation box to be displayed on the display connected to the wireless presentation box in real-time.

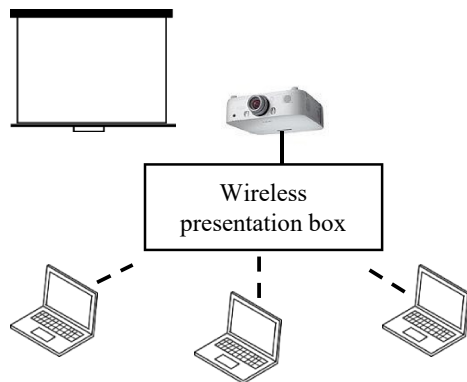


Fig. 1: A wireless presentation system

With the possibility of multiple presenter devices connected to a wireless presentation box, some form of presentation flow control has to be put in place. In one wireless

presentation box implementation [3], two presentation control flow modes are available: i) democratic, and ii) moderator. In the democratic mode, every presenter is treated with equal priority and the last presenter to push gets to present. Obviously, a high level of maturity or discipline among the presenters are required to ensure that the meeting proceeds in a professional and well-organized manner. In the moderator mode, a designated moderator needs to login to the wireless presentation box to manually control the presentation flow. Once login-ed, the moderator has full power to decide which presenter gets to present at what time.

With the two presentation control flow modes, a large number of use cases are covered. However, it would be nice if instead of having a moderator to manually control which presenter gets to present at what time, a complete schedule of the conference is prepared in advance thus elevating much work and reduce the possibility of an error on the moderator side during an actual conference.

In this paper, we detailed a new presentation flow control where the moderator can schedule in advance a conference schedule which presenters are allowed to present at what time by first uploading the facial images of the presenters to the wireless presentation box. This paper is organized as follows. In the next section, we detail the design of a method to schedule presentation using presenter faces. In Section III, we describe several classifiers models that can be used to implement facial authentication. Results and discussion are provided in Section IV, and finally, we conclude in Section V.

II. SCHEDULING PRESENTATION WITH PRESENTER FACES

To schedule a conference session, a moderator is presented with a web interface to create a session by defining session parameters such as: i) session name, ii) the slots (non-overlapping start and end times), and iii) the information of the presenters that are allowed to present during each time slot.

When the created conference is created, it is then applied by the moderator during actual conference time. During this time, any presenters can opt to present, however, prior to presenting, the presenter will have to first authenticate with the wireless presentation box to see if he/she is actually on the allowed list of presenters to present during that time slot.

Various kind of information can be used for authentication such as password and biometrics such as a fingerprint or facial image. In this paper, we propose to use facial image whether to allow or disallow a presenter from presenting. Thus, when a presenter opts to present by clicking on the ‘Start presenting’ button in the presenter software, the