An Automatic Face Attendance Checking System using Deep Facial Recognition Technique

***Abstract*—Nowadays, as computers are powerful enough for implementing complex algorithms, there are numerous applications that people utilize computers to run. In which, facial recognition is one of the most active fields of applications. In fact, computers can not only automatically identify who a person is, but also operate 24/7, which human beings cannot endure. This leads to the replacement of people by computers in some repetitive and real-time applications.**

In this work, we apply the facial recognition into an attendance checking system that uses faces of registered people to check their attendance. This system has a GUI which allows easy user-to-system interaction. The core of the system is a deep facial recognition technique, which has four stages (e.g., removing motion-blur frames, detecting faces, removing non-frontal-view faces, and recognizing). Particularly, in the recognition phase, we consider this stage as an open-set facial recognition problem, so the system is able to detect people who have not registered in the database before. Also, we boost the performance of the system by utilizing hardware resources of users' computers. Although the system is designed to run with a low-resolution webcam, its performance is reasonably accurate on a private dataset.

***Index Terms*—Face Attendance Checking, Facial Recognition, Deep Learning**

DANH SÁCH SINH VIÊN				
YOUR COURSE/SUBJECT/TITLE				
			1 = prensent	
			blank = absent	
ID	Last Name	First Name	Group	Total

Fig. 1: New standard excel form

DANH SÁCH SINH VIÊN				
TRÍ TUỆ NHÂN TẠO TRONG ĐIỀU KHIỂN				
			1 = prensent	
			blank = absent	
ID	Last Name	First Name	Group	Total
1511844	Lương Hữu Phú	Lộc	1	
1512221	Phạm Ngọc Khôi	Nguyên	1	
1512396	Bùi Tấn	Phát	1	
1512534	Nguyễn Trọng	Phúc	1	

Fig. 2: Excel form contain pre-inputed data

I. Introduction

II. Proposed system

III. Implementation

A. Motion-blur detection

B. Face detection

C. Frontal-view detection

D. Face recognition

E. Graphic User Interface

F. Attendance management

This is the final phase of Face Attendance Checking System. It was designated to mark the presence of one resulted from our algorithm in a file of excel format, namely xlsx extension. To be used by the system, the excel file must meet a stringent format made up of essential contents and be generated by the GUI.

Figure 1 depicts a new standard empty excel table generated by our GUI. After obtaining a new file, we should fill in the table with the desired data (Figure 2). The most special things in this table are column ID and Total. ID is considered a primary key because the algorithm will mark the presence of a specific person via his ID. To help the host in easy attendance management, we designed the column Total with a view to showing the number of absences in all.

Figure 3 depicts an excel file's content after a checking progress finished. The GUI will automatically insert the only one new day column between Group and Total ones and in the tail of previous checked day. Letter 1 will be marked as presence in a cell of this column accordant to an ID. After attendance checking process is completed, the Total column will display the number of absences of previous days and the current one. Smartly can it display as we specially assigned a size-dynamic sum function to each cell of this column.

IV. Experimental result

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DANH SÁCH SINH VIÊN					
TRÍ TUỆ NHÂN TẠO TRONG ĐIỀU KHIỂN					
			1 = present		
			blank = absent		
ID	Last Name	First Name	Group	09/06/2018	Total
1511844	Lương Hữu Phú	Lộc	1		1
1512221	Phạm Ngọc Khôi	Nguyên	1	1	0
1512396	Bùi Tấn	Phát	1		1
1512534	Nguyễn Trọng	Phúc	1	1	0

Fig. 3: Form is under checking

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