ATTENDENCE SYSTEM USING DEEP LEARNING FACE IDENTIFICATION ALGORITHMS

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CASE FOR PROBLEM STATEMENT

Student attendance is an essential aspect of the learning process on the university. Universities implement their attendance system to record student's presence for tracking and administration purpose. The most common attendance record in Indonesia still using a manual approach. Below are two common ways for presence record can be found on today universities:

1. Lecturers call students one by one and record the response into attendance paper.
2. Students sign on attendance paper without dedicated supervision.

1. PROBLEM STATEMENT

The traditional attendence system has many problems. For example, it takes a long time to call the names of students one by one. Student can easily falsify their friends' signatures. Attendance record paper can be easily lost if not properly stored and managed by the university administration. Additional work is needed to enter attendance data into the database.

To overcome the above problems, a solution is needed to

automate the attendance process. To solve this problem, we propose an automatic attendence system using deep learning face identification algorithms

2. LITERATURE SURVEY

Our base paper: Automatic Attendance System for University Student Using Face Recognition Based on Deep Learning, International Journal of Machine Learning and Computing, Vol. 9, No. 5, October 2019

Other references that we are using:
A Hybrid Approach for Facial Expression Recognition
Conference Paper
Jan 2018
Roshni Velluva Puthanidam
Teng-Sheng Moh

A survey of face detection algorithms
Conference Paper
Jan 2017
Ankit Srivastava
Suraj Mane
Aaditya Shah
Bhushan Thakare

RESEARCH GAP IDENTIFICATION

- Our base paper uses a photograph taken by a raspberry pi camera of dimension 320 x 240 px. This is an additional equipment neccessary to implement the attendence system.

- We aim to eliminate the additional equipment used in the previous experiment by using CCTV camera footage to register attendence.

- Every college, school and company has CCTV cameras, hence implementation of this project will require no further hardware equipment and non-invasive software integration to an organization current setup.

3. OBJECTIVES AND SCOPE

- Build a light-weight, ultra-fast deep learning model with sufficient accuracy that can be embedded into hardware devices like CCTV cameras.

- An increase of 0.05 in Pearson's correlation coefficient and decrease of 0.05 in RMSE values compared to the previous model

- Publication of a paper in a reputed conference/journal

CHALLENGES WITH OUR WORK

- CCTV footage is not static and the footage is usually low resolution. This causes problems in feature extraction

- Identifying faces requires many classes compared simple detection of faces.

- The model has to be light-weight enough to be embedded in an hardware device with basic computation capabilities, like a simple CCTV camera

4. TECHNOLOGY STACK

- Python 3.6
- Pytorch 1.2
- CUDA10.0
- CUDNN7.6

THANK YOU.

ANY QUESTIONS?