

# A NOVEL MECHANISM FOR TRACKING STUDENT ATTENDANCE TOWARDS THE DEVELOPMENT OF SMART CLASSROOMS

Abdul Cader Mohamed Nafrees<sup>1</sup>, Sahabdeen Aysha Asra<sup>2</sup>, CMM. Mansoor<sup>3</sup>,  
Ponnampalam Pirapuraj<sup>4</sup>

<sup>1</sup>*Faculty of Islamic Studies and Arabic Language*

<sup>2,3</sup>*Department of Information Technology, Faculty of Arts and Culture*

<sup>4</sup>*Department of Information and Communication Technology, Faculty of Technology*

<sup>1,2,3,4</sup>*South Eastern University of Sri Lanka*

nafrees@seu.ac.lk

## ***Abstract***

To track the participation of students is mandatory in numerous educational sectors. The manual administration of the participation sheets is difficult for swarmed study halls. Face detection and identification frameworks, as one of the sub-parts of computer vision, were initially intended for public reconnaissance. In this study, a novel mechanism is proposed with a face detection system using Convolutional neural networks (CNN), and Support vector machines (SVM) techniques for tracking attendance of students. Even though, several automated models of attendance are used in schools and universities, the proposed approach uses the effectual machine learning and deep learning techniques for increase the effectiveness of the approaches. In the proposed model, multiple cameras are used to take the photo in 360 degrees (reduce the possibility of missing some faces of students) and then the face detection process will be applied by applying few machine learning approaches to detect the faces of students. Lightning, context, and pose variation will be extracted using Local Binary Patterns Histograms (LBCH) algorithm, and then, the face recognition process will have conducted by CNN and SVM algorithms. Finally, the attendance report will be generated by matching process via matching the captured images with stored image after the duplicate removing process by applying AdaBoost classification algorithm. We believe that, our proposed approach based on face detection by applying several machine learning algorithms and deep learning algorithm can be used to tracking student attendance and prevent fake attendance effectively.

***Keywords:*** CNN, Deep learning, Face recognition, Smart attendance, SVM