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Master Thesis Defense in Information Technology Management

<u>Entitled</u>

CHEATING DETECTION IN ONLINE EXAMS BASED ON CAPTURED VIDEO USING DEEP LEARNING

<u>by</u>

Aysha Sultan Alkalbani

<u>Faculty Advisor</u>

Dr. Mohammad Masud

College of Information Technology

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<u>Abstract</u>

Today, e-learning has become a reality and a global trend imposed and accelerated by the Covid-19 pandemic. However, there are many risks and challenges related to the credibility of online exams which are of widespread concern to educational institutions around the world. Online exam system continues to gain popularity, particularly during pandemic, due to the rapid expansion of digitalization and globalization. To protect the integrity of the examination and provide objective and fair results, cheating detection and prevention in examination systems is a must. Therefore, the main objective of this thesis is to develop an effective way of detection of cheating in online exams. In this work, a system to track and prevent attempts to cheat on online exams is developed using artificial intelligence techniques. The suggested solution uses the webcam that is already connected to the examiner's computer to record videos of the test taker in real time and afterwards analyze them using different deep learning methods to find best combinations of models for face detection and classification if cheating/not cheating occurred. To evaluate the system, we use a benchmark dataset of exam videos from 24 participants who represented examinees in online exam. An object detection technique is used to detect face appeared in the image and crop the face portion, and then a deep learning-based classification model is trained from the images to classify a face as cheating or not cheating. We have proposed an effective combination of data preprocessing, object detection, and classification models to obtain high detection accuracy. We believe, the suggested invigilation methodology can be used in colleges, institutions, and schools to look for and keep an eye on suspicious student behavior. Hopefully, by putting the proposed invigilation method into place, we can stop cheating since it is wrong and find a solution to the issue.

Keywords: e-cheating detection, Intelligent System, deep learning