



Cheating Detection During Exam with YOLO V4

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Abstract

Computer-based exams have been widely implemented in various agencies in Indonesia, especially in the field of education. But in practice use Computer Based Test(CBT). Does not guarantee that examines do things honestly, if the supervisor is negligent then the opportunity to cheat appears. This can be minimized by using technology Artificial Intelligence(AI), especially in domains of computer vision (CV). Start with observation problems and then collect datasets in the form of human images facing the camera and looking sideways, then do the image annotation, pre-processing data, YOLOv4 architecture design, training data, model testing, and finally deployment of the application on the website. The model test result show accuracy with a precision score of 0.99 (99%), a recall score of 1.00(100%), and an F-1 Score of 0.99(99%).

1. Introduction

Student learning methods imitating this is the behavior that is first taught, in achieving that success, every child's ability is not the same. Besides that, economic background, healthy and cultural morals also determine maturity and then, closely related to self-concept and its management, in his life practice. The early period of human life determines the direction of life as an adult, by imitating whatever is around.

Academic cheating is an act that is not justified to get the good academic achievement. Academic fraud arises due to several factors. The driving factors for these actions include 10% influenced by self-control factors, academic self-efficacy, and academic achievement, and the other 90% is influenced by the level of punishment given for the behavior, peer influence, perception of materials and instructors as well as other factors (Aziz et al. 2020)

Object detection is a process used to determine the existence of a particular object in a digital image. The detection process can be carried out by various methods basically doing a reading of the features of all objects in the input image. Features of objects in the image will be compared with features from an object reference or template then compared and determined whether that object detected includes the object to be detected or not. (Irfan, Ardi Sumbodo, and Candradewi 2017)

YOLO is part of the Convolutional Neural Networks(CNN) method widely applied to image data. YOLO looks at the whole picture over training and time test so that it simply encodes the information contextual about their class and performance. (Khairunnas, Yuniarno, and Zaini 2021)

Computer-based examination supervision In Indonesia, the majority still make supervision to guard. Even though, cheating with large computer media occurs, communications and all materials can be prepared on the computer. The students, take advantage of this so that the supervisor does not get caught.

Based on the number of fraudulent action videos on social media during computer-based exams & after we did some research with various journals there 93.5% of 260 students admitted to committing fraud during computer-based exams. Another factor is an unbalanced controller making supervision less than optimal.

YOLO v4 which is scaled is the most accurate neural network (55,8%), and also the best ratio of speed to accuracy and speed from 15 FPS to 1774 FPS. Is currently the best neural network for object detection.

1.1 Goals

Focusing on Computer Vision domains, the writer hopes this application, be the solution to the exam supervision system in an educational institution. This application can be used as reference material, examination supervision in other fields, for example, job interview

2. Research Methods

2.1 Previous Research

Previous research includes a discussion of similar research that will be a comparison for the reference for making methods and systematics program

First research, report result Christine Masada H.T, Sabrina Dachmiati “Behavioral Influence Factors Student and Student Cheating” this research aims to: cheating behavior tendencies, which indicator dominant form of cheating behavior, factors influencing cheating behavior, background category the dominant background shapes cheating behavior and the consequences of cheating behavior in students and students.

The second research, report result from Zayyinul Mushthofa, Ani Rusilowati, Sulhadi, Putut Marwoto, Budi Naini Mindiyanto, “Analysis of Student’ Academic Cheating Behavior in School Examinations” this study aims to describe the popular types of academic dishonesty, teachers’ supervision, and the factors which motivate the student to cheat. This research used the descriptive quantitative method with 260 students as respondents from 4 schools.

Third research, report result Alek, Abdul Gafur Marzuki, Muhammad Farkhan, Dede Surahman, Dedi Daryanto, Sanidaya Febrianto “Computer Based Testing in Senior High School on National Examination” this study aims to investigate the student’s perception of computer-based testing in national examination and determine the extent to which cheating in exams would be eliminated by the adoption of CBT in National Examination

2.2 Data and Information Collection

In this process, at the first stage collection and read articles related to problem-solving and program systematics. Next, collect images to be labeled for the dataset.

2.3 Research Procedure

The waterfall method is used by writers as a reference for making programs. Because this method has a sequential and systematic approach from sequential to system testing.

2.4 Timeline Progres



1. Data acquisition, Labeling Images: image format data collection by downloading from a free website, Kaggle, and data augmented methods.
2. Training: perform model training with data that has been annotated.
3. Front-end and Re-Processing: make a website display design and retrain the model with a cleaned dataset (data cleaning).
4. Save Model & Back-End: the process of storing the training result model and creating the code behind the website
5. Evaluation, Deployment, Compile Resorts: Re-check and application testing, then uploading the application on the website.

3. Result and Discussion

Fig 1



The front of the website, if pressed about it will come out about this application, about the description of this application made.

If pressed detection it will be taken to the page cheating detection, to identify objects.

If pressed the reset button on the graphic output and the output will return to normal

If the team button is pressed then there is a biography of the program maker



Website Processing section, if you have pressed detection and opened the webcam, then the device can detect objects.



Output, after pressing finish the result will appear as above.

4. Conclusions

The Computer Vision domain is a very interesting domain for the author himself. Behind that, this domain is quite difficult and requires good specifications to run because it is quite heavy

5. References

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