

**AHLONSOU YEYINOU FELICIENNE – ADS19A00110Y**

PART A

**BCP EXAMINATION**

**DATE: FEBRUARY 2023**

**COURSE CODE: CS303**

**COURSE TITLE: COMPUTER GRAPHICS**

LECTURER NAME: EMA

**BCB** **ANSWERS:**

QUESTION 1

Computerized graphics/vision system used by front-line workers during covid

**Masked Face Recognition**: The use of masks and protective equipment to prevent virus dissemination is an important strategy in the early stages of illness progression. Masks were used as a control tool in a number of countries. Computer Vision systems can substantially simplify its implementation. Using a masked face picture dataset, a Masked Face Recognition technique based on a multi-granularity masked face recognition model obtained 95% accuracy. The data was made public for research purposes and included three types of masked face datasets:

* The Masked Face Detection Dataset (MFDD) is used to train a masked face detection model, which is then utilized to perform a masked face recognition job.
* The Real-world Masked Facial Recognition Dataset (RMFRD) is billed as the world's largest real-world masked face dataset, containing 5000 photographs of 525 persons wearing masks and 90,000 images of the same 525 subjects without masks.

**Pandemic Drones**: Pandemic drones have been employed for both prevention and control. As a result, drones employ remote sensing and digital images to identify sick individuals. Similar technologies have already been employed in disaster management for remote life sign monitoring. Vision-guided robot control for 3D object recognition is another related application.

QUESTION 1B

1. Describe the Computer Vision Project: First and foremost, a project description must be written. Furthermore, the project description brings everyone on the same page and aids in the process of later turning business needs into technical duties.
2. Name the Features: As with any software project, the program to be produced must meet specific requirements and execute a set of functions. The most common risk we've seen in the past is that a project becomes overburdened before it even begins. The more characteristics you incorporate into your computer vision project, the more complicated it becomes.
3. Determine the appropriate computer vision techniques: When gathering data or picking an algorithm, it is critical to identify the strategies that best match the situation. Selecting the appropriate procedures ahead of time can explain your data requirements and allow your team to concentrate during the execution phase. Today, there are numerous computer vision approaches available. Each technique has its own set of algorithms and performance measures. Two of the most prevalent and adaptable computer vision algorithms are classification and object detection.
4. Collect and label training and test images: If you intend to train a deep learning model for categorization or object detection, you will almost certainly need to collect data. Many deep learning models are pre-trained to recognize or classify a wide range of everyday items such as vehicles, people, bicycles, and so on. If your scenario involves one of these common items, you may be able to simply download and deploy a pre-trained model. Alternatively, you must collect and label data in order to train your model.
5. Train and evaluate the model: When you have a good set of labelled images, you may begin model training. Assuming you're using a deep learning computer vision model, the next step is to train it with transfer learning. A pre-trained model is repurposed for a new scenario in transfer learning by freezing the neural network and retraining only the final SoftMax layer. Transfer learning is a quick and efficient method for training deep-learning vision models with sparse input. Other strategies, such as fine-tuning, provide more sophisticated performance but require more data.
6. Deploy and test: Once your model has been trained, you are ready to deploy it. Technologies like Azure Percept make it easier than ever to deploy AI models at the edge.
7. Iterate on the solution: It is unusual for a model to perform flawlessly on the first try. Creating a machine learning model is an iterative trial-and-error process.

QUESTION 2B

In my environment, no graphics security system is being used but I will prefer if a video camera is used. My reason;

1. Deter Crime: security cameras can dissuade property damage while reducing crimes like trespassing and burglary.
2. Monitor Scenarios and Activities: When you are away from home, there is always the possibility that something will go wrong. Thoughts of your property may be distracting, especially for students. Surveillance, particularly internal security cameras, helps to provide peace of mind when students are away from home by allowing them to conduct checkups as frequently as necessary.
3. Gather Evidence: Installing cameras in strategic locations comes in handy when you need to watch people's behaviour and remarks, or during an event. Contemporary security cameras are not only equipped with high-quality video capabilities but audio as well. The clear visuals and faultless sound make them more efficient than ever before in recording a succession of events.
4. Maintain Records: When it comes to recording what happens in or around a business, security cameras are an ideal choice. Surveillance, which is also applicable to houses, readily watches how events unfold and how accidents or unexpected events may occur and can be used as a reference for future consideration.

QUESTION 3A

QUESTION 3B

QUESTION 4A

QR generator, android studio, android mobile phone. The hardware module is an Android phone. As a result, we do not require an additional scanning device. The mobile camera functions as a scanner, assisting in the decoding of the data contained in the QR code. We can read the QR code from any angle, and the scanner may then modify the angle for future use. With this program, we can create an application to scan the QR code on your ID card. The application displays the findings after scanning.

* Level L (Low): 7% of code words are recoverable.
* 15% of code words can be restored at Level M (Medium).
* Level Q (Quartile): 25% of code words are recoverable.
* 30% of code words can be restored at Level H (High).

QUESTION 4B

QUESTION 5A

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Maintain Records: When it comes to recording what happens in or around a business, security cameras are an ideal choice. Surveillance, which is also applicable to houses, readily watches how events unfold and how accidents or unexpected events may occur and can be used as a reference for future consideration.