Problem Statement 1: Document Search using OCR

Optical Character Recognition (OCR) using just image processing is a difficult task. Deep Learning has changed the way OCR is done. In this challenge you have to create an OCR application that will have the following features:

- Browse a given folder containing images.
- Perform OCR on all the images in the folder.
- Allow the user to search the images based on the content present in the image. Example: An image containing a newspaper article about "Global Warming" can be searched using this application.

What will be given at the day of the hackathon:

- Prerequisites and pre-trained model for OCR.

Problem Statement 2: Describe

The capability of Deep Learning to understand images gives a lot of scope to create applications that can help people with disabilities. Create an application that can describe what the camera is looking at.

The application should have the following features

- Display and describe the content of the live stream captured by the camera.
- Inferencing using Deep Learning will be performed only on an image from the live stream after every few seconds. But the live video stream should continue without lag.
- The description of the scene should be displayed along with the live stream and should get refreshed after every few seconds. (Tune the refresh time as per computational resources available)
- Store the scene (image) and its tags (Keywords in generated comment)
- Search and retrieve the scenes (images) using tags.

What will be given during the day of the hackathon:

- A Deep Learning model that is able to return the description of a given image.

Problem Statement 3: Category Detector

The application should have the following features

- Browse a given folder containing videos.
- Perform Deep Learning inference on few frames in each video and deduce the category.
- Allow the user to search the videos based on the category deduced in the videos.

Example: A video showing a game of cricket should be given the category of sports and should be displayed whenever sports category is searched.

What will be given during the day of the hackathon:

- Three categories will be disclosed on the day of hackathon
- A pre-trained model that needs to be trained on the images for those three categories. The participants will have to scrape the images for the given categories from internet to retrain the deep learning model.
- The videos on which the application should perform category detection and search.

Problem Statement 4: Head count

Create an application that will count the number of people present in a given frame by performing headcount.

The app should have the following features

- Display the live stream captured by the camera and simultaneously display the count of people.
- Inferencing using Deep Learning will be performed only on an image from the live stream after every few seconds. But the live video stream should continue without lag.
- The count should get refreshed after every few seconds. (Tune the refresh time as per computational resources available)

What will be given during the day of the hackathon:

- A pre-trained model that detects heads and draw bounding boxes around it

Extra points for people making Android app as well as webapp. If web app is chosen. If only Android app is done then also it's fine.