AAVARTAN'22-23

VIGYAAN
DEPARTMENT OF MASTER IN COMPUTER APPLICATION

PROBLEM STATEMENTS

MCA01. A decentralized and freedom-oriented open digital library using blockchain technology

Destruction of physical libraries and documentations to time or to the people in power is something that has been observed throughout history. With the advent of blockchain technology, the proposal of a decentralized digital library, not controlled or hosted by any one central authority is a very interesting solution to the problem. By maintaining a ledger of books on the blockchain, all incoming books can be tracked on the library. Freedom of expression can be given to every individual by this means.

MCA02. Automatic assessment of privacy policy/terms & conditions of different softwares/websites

A lay-person looking to use a software or website does not have enough time to read the entire privacy policy of applications. Thus an NLP based application that is capable of extracting all the useful data from such letters would be extremely useful in such scenarios. A short report generation and highlighting of important points on the basis of their criticality is required.

MCA03. Create a Bot to verify student authentication while entering in an online classes

Online classes and lectures have become very commonplace ever since the pandemic. However, online lectures come with their own fair share of troubles. There are often several miscreants who enter the online lecture rooms using some shared meet code or by some other means and cause distress to the teachers and students. It is always not possible to have a private network with each user having their personal email ID join the meeting. Thus, a bot can be created which would act as 3rd person in the meet and would be responsible for the

entry authentication of each student.

MCA04. <u>Terrain reconstruction and map generation using UAV footage</u>

It is often a necessity for logistic purposes to generate a map of the terrain. For example, for military purposes real-time terrain construction is critical to their operation. However, it is not always possible to access these areas on foot. Reference for Google Earth Engine's implementation is given below : https://www.mdpi.com/2220-9964/9/6/400
With the help of camera footage from an Unmanned Aerial Vehicle such as a drone, it is possible to obtain the required images. Thus, create an application which is capable of generating terrain maps providing all the information required for logistic purposes.

MCA05. <u>A packet sniffer/Network traffic analyzer to generate reports regarding the network utilizing deep learning techniques</u>

Computer networks are critically prone to malicious adversaries which are always looking for ways to enter the network and cause some harm to the network. In such situations a packet sniffer or other similar software are extremely useful. The goal of this project would be to create a packet sniffer which is capable of analyzing the traffic on a network and generate a statistical report. Detection of any malicious node on the network is critically important and if possible suggestions and automatic counter measures can be implemented. The analyzer can also make use of deep learning techniques for performing certain analyses. For eg. Predicting whether some traffic is encrypted using a VPN or not. Sample dataset : https://www.ll.mit.edu/r-d/datasets/vpnnonvpn-network-application-traffic-dataset-vnat

MCA06. <u>Robotic Dustbin for COVID</u>

In a general strategy for COVID-19, that is correct also, that people should not touch the gear used by any other person such as masks and PPE kits. Sometimes due to human error or some other conditions (like- flying away due to a windy atmosphere, etc.), these used gears get misplaced from dustbins and are very dangerous for the spread of deadly COVID-19.
The aim of this project is to create a smart robotic dustbin, which is able to detect these gears and put them into these bins for a safer and cleaner environment.

MCA07. <u>Smart weed remover from farms</u>

Manual weed removal from between crops is a challenging and time-consuming process. Farmers need to invest a lot of time and effort in this process. Using AI/ML techniques, robots can be built which are capable of autonomously differentiating between crops and weeds and removing them safely without causing any damage to the crops.
<u>Note</u>: If required participants can implement the model on a simulation, however then the details of the simulation would need to be elaborated upon.