

## **Problem Statement 1**

### **Media Analytics**

**Detailed Statement:** Build a framework/utility that takes a company name as an input. The utility should search all the media articles about the input company and present any reputational threatening data on a concise dashboard.

Following are the functionalities that need to be achieved in order to build a complete solution -

#### **1. Downloader -**

Download news articles using company name from search engines (Google, Yahoo, Duckduckgo) - Selenium, News API

#### **2. NER module -**

Named Entity Recognition (Organization + Risk Entity) - Out of the box Spacy NLP models / Taxonomy searches

#### **3. Relationship module -**

Analyse the articles and carve out sentences(context) where reputation risk elements and company names are present.

Can use dependency parsing or predicate classifiers to establish relationships between risk elements and company names

#### **4. Dashboard -**

Display these relationships in an appropriate Dashboard => PowerBI / Tableau

## **Problem Statement 2**

**Detailed Statement:** Design the portal where we can find and identify the diseases and can show the description of the disease and based on that it can show the appropriate pesticide solution.

1. Participant will have to create Android Application.
2. User can click the plant disease photo from phone.
3. Image comparison must do by using some external third-party libraries (also can use google lens).
4. Based on result, Participant must identify the disease and have to show list of pesticides which can help for that disease.

Note: Participant can use google lens, below are the API link for more detail

<https://cloud.google.com/vision/product-search/docs/create-product-set-search-products>

## Problem Statement 3

### Vehicle Location Tracking

**Detailed Statement:** Design system to track live location of vehicles which can be used in public transport. It should give live location, time to reach destination, also suggest different routes for source and destination.

1. Participants must create android app.
2. Must identify current location of the vehicle using GPS.
3. Using some parameterized calculation application, the application must suggest the estimated time to reach the end user location.
4. Candidate can use google map API to show the exact location and calculation to reach the location. (API link mentioned below)

[https://developers.google.com/maps/documentation/maps-static/?\\_gl=1\\*\\_16osq1z\\*\\_ga\\*NDE3MjI2MzZlE2NzA0ODM0Nzg.\\*\\_ga\\_NRWSTWS78N\\*MTY3MDU3MDg3Ny4zLjAuMTY3MDU3MDg3Ny4wLjAuMA..](https://developers.google.com/maps/documentation/maps-static/?_gl=1*_16osq1z*_ga*NDE3MjI2MzZlE2NzA0ODM0Nzg.*_ga_NRWSTWS78N*MTY3MDU3MDg3Ny4zLjAuMTY3MDU3MDg3Ny4wLjAuMA..)

## Problem Statement 4

### Deepfake Detection

**Detailed Statement:** Deepfakes constitute fake content -generally in the form of video clips and other media formats such as images or audio- created using deep learning algorithms. With the rapid development of artificial intelligence (AI) technologies, the deepfake content is becoming more sophisticated, with the developed detection techniques proving to be less effective. So far, most of the detection techniques in the literature are based on AI algorithms and can be considered as passive. Deepfake techniques, which present realistic AI-generated videos of people doing and saying fictional things, have the potential to have a significant impact on how people determine the legitimacy of information presented online. These content generation and modification technologies may affect the quality of public discourse and the safeguarding of human rights—especially given that deepfakes may be used maliciously as a source of misinformation, manipulation, harassment, and persuasion. Identifying manipulated media is a technically demanding and rapidly evolving challenge that requires collaborations across the entire tech industry and beyond.

Try to come up with an algorithm and its implementation, in any coding language of your choice, that detects whether a given video/audio/image is faked/morphed or not.

You can either consider all the digital media (video/audio/image/pdf/txt etc.) for this solution or just the deepfake videos.

## Problem Statement 5

### Social Credit System

**Detailed Statement:** The concept of Social Credit System primarily focuses on behaviour and pattern analysis of individuals, corporations and Governments. This is a vast surface area to cover technologically, thus, let us consider Social Credit System in the context of individuals only.

The Social Credit System would score individuals from 2500(MAX) to 500(MIN) points.

The Social Credit System should analyse individuals' behaviour (good or bad), their Financial Credit Score, their criminal records or lack of it, their punctuality, their family make-up.

Using CCTV camera (video feed) for behaviour analysis, over a period, add to or subtract from an individual's Social Credit Score.

Consider access to individual's Financial Credit Score, criminal records, tax submissions, etc. (Government data for the user) is granted to you; do periodic pattern analysis, then, finally, add to or subtract from an individual's Social Credit Score accordingly.

Also, design the DB Structure to support this system keeping in mind that the system will not be homogenous and will be comprised of several technologies and services.