Problem Statements for Hackathon

1. **Description:** Portal for Farmers to sell the produce at a better rate • Problem statement in Description
   - System that provides farmers an interface to sell their produce , and connect with the buyers all over India o Simple interface(website) that works on mobile, SMS to upload produce details and respond via phone and SMS (taking care of digital divide)
   - Interface for anyone to buy the produce/vegetable – initially visit the place and buy or have courier service integrated to deliver the vegetables
   - Farmers can get a better price for their produce, no additional cost spent in marketing and delivery of goods , however they can choose to charge more by delivering the items themselves
   - Purpose of this analysis and who will benefit o Farmers, Restaurant owners, Buyers , Courier Companies, Delivery Agencies, Vegetable Vendors
   - How does it help the nation o Better rates for the vegetables, Make the Farmers live with pride and make additional income
   - Practical and reasons why this idea could be a challenge o Brokers , Govt rules
   - Overall profitability in the deal for the buyer to purchase directly from farm , excluding transportation

   Domain Bucket : Agriculture

2. **Description:** Crop Guidance and Farmers Friend
   - Problem Title: Helping the farmers in terms of Crop suggestion, precautions based on the met department forecast of rain fall / weather, potential pest attacks, weather warnings etc.
   - Problem statement in Description: System that provides details to farmers on weather patterns that could impact the crop , possible pest attacks , weather warnings
   - Steps for producing high yield that are specific for a farmer based on the local, regional terrain, weather scenario , rather than generic guidance
   - Helping the Farmer to be well prepared if there is a pest, insect attack
   - Better Farmer Financial Inclusion for planning out loans , interest and managing his costs
   - Purpose of this analysis and who will benefit
   - Farmers, Pesticide firms , Govt agencies helping farmers , Agriculture loan banks
   - How does it help the nation
   - Better crop produce and farmers have better income
   - High Yield and prescriptive guidance
   - Practical and reasons why this idea could be a challenge

- Working with the larger teams like Govt Agencies, Brokers, Chemical Factories producing medicines, pesticides
- Single Owner driving and investing in the product
- Famers basic digital divide to access such information

Domain Bucket: Agriculture

3. **Description:** Mobile App/Website for sharing or pooling of transport for agricultural produce to market. This will help to reduce the cost of transportation through aggregation.
Domain Bucket: Agriculture

4. **Description:** Livestock holdings are extremely fluid in nature. Ownership changes through sale and migration across different geographical areas confound the efforts to arrive at accurate estimations. Identification of livestock through suitable methods and regular recording of births, deaths and sale reduces the gap between actual and estimated values. Hence, an app in this direction would be of potential use.
Problem is : All India livestock census data base to design suitable fields to capture the dynamic events in livestock population changes. App should
- Provide facility to operators to add,modify,delete livestock details using suitable identification mechnism during birth, sale, death
- provide officials access to data and stats across different geographical areas.Updated!

Domain Bucket: Computer Science

5. **Description**: A web application is required that is capable of projecting analysed data through visual tools like bar graphs, pie charts, etc. on a web dashboard. Airport facilities include Arrival baggage belts, boarding gates, Parking Stands, Trolleys, etc. The application must have a separate API to have a visual representation of the analysed data which can be integrated with any other web/desktop application. Project intents to achieve the following objectives:
- Classification of data based on nature of facility used by a passenger and available facility utilization.
- Data visualization at Airport and Pan India Level.
- A centralized Dashboard containing visual data representation of the % utilization of Airport services used by passengers.

Domain Bucket: Computer Science

6. **Description**: In the current scenario, Most of the social media platforms can be seen with the proliferation in usage of code-mixed text. Code-mixed data is an important challenge of natural language processing, as its characteristics widely vary from the traditional structures of standard languages. In such scenario, context aware sentiment analysis of the social media data becomes a great challenge. Here comes a need for standard solution which can take the feed of Social Media Data that has code-mixed language statements, Handle multiple code-mixed Indian languages and perform

context aware Sentiment Analysis further. Sentiment analysis should give results such as "Positive", "Negative "and "Neutral" for the code mixed languages such as English, Hindi, Kannada ,Bengali, Urdu etc.Please see below for sample data

Sample Data Set for the Problem Statement

- Sentence Sentiment Label 1.
  I thought game accha thha
  Positive
- Sentence Sentiment Label 2.
  Maaf Karo yar, aaj subah tak patanhi tha that I wudnt be able to come today :(
  Negative
- Sentence Sentiment Label 3.
  Trailer Mast hai bhai
  Positive

Domain Bucket: Computer Science

7. **Description:** Servers are the crux of our IT infrastructure and are often exposed to great risk. The servers are covered under the layer of firewall, but they are still vulnerable and require security measures. The major concern is the source of threat. Extensive usage of remote connectivity causes improper security and lack of monitoring measures on remote networking equipment. It is required to keep an eye on the wrong doers, the data thieves, and their work pattern.
Outcome expected: Requirement of Server based Monitoring & Analysis Tools to alert the servers with Dashboard report on 30 heterogeneous servers available at our Datacentre.

Domain Bucket: Computer Science

8. **Description:** With increasing populations, changing policy requirements, new sustainability and recycling goals and improved technology departments, municipalities across the globe are joining the "smart cities" movement to become more efficient in managing solid waste. The improvement of the urban waste collection service and, in general, the achievement of a more efficient management of the waste, is one of the main challenges that the cities face, especially due to the population growth. Thus, smart waste management is a key factor of smart cities.

Design a smart waste collection system that allows citizens to segregate the various types of solid waste they want to dispose and the municipal authorities to efficiently collect the same. The system should be mobile app (android/website) based.

The system should have two interfaces:

Citizen:

- Citizen should have an option to schedule a waste pickup request, at a particular date and time at his chosen location (via map or geolocation). The pickup request can be no less than 24 hours in advance.

- Citizen should mention the amount of waste for disposal, choose what categories of waste are present for disposal as well as optionally snap a picture of the waste.
- Citizen should be able to see all upcoming waste pickup requests, as well as past pickup request history.

Garbage Collector

- Garbage collection is done via trucks. Each truck can only carry one category of waste. You have to calculate the most optimal route for each truck, basis the previous days pickup requests from citizens.
- Garbage collector should be shown a list of all pickups to be made that day, along with a most efficient route for all pickups. Please note that start and stop point for each truck is from a central depot with fixed location.
- There should be GPS based navigation for the garbage collector from one point to another.
- For each pickup request, garbage collector is shown the following:
  - Citizen name & location (address & map)
  - Garbage amount
  - Garbage category
  - Garbage photo, if available

The following categories of waste are available:

- Organic waste (kitchen waste, vegetables, flowers, leaves, fruits)
- Recyclable waste (paper, glass, metals, plastics)
- Toxic waste (old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, shoe polish)
- Electronic waste (batteries, phones, TVs, laptops)

For the demonstration of the system, you may use pre-filled data. We would like to see the codebase route matching algorithm you are using. We would also like to see your database schema. You can use any language or framework to create this system.

9. **Description**: Alumni Tracking System for school or colleges. Once the students are passed out it gets difficult to be in touch with them or to get updates. Creating a tracking system can solve this problem
   Students can add features according to their innovation.
   Domain Bucket: Computer Science

10. **Description:** Prediction of Admission & Jobs in Engineering & Technology with respect to demographic locations. We can measure the future interest of students by predicting the admission. Also, we can increase the admissions in engineering with the use of this prediction.
    Domain Bucket: Computer Science

11. Description: Mobile App/Web App for Police for management of crime records. It will help police to maintain records of different type of crimes. If they search any crime, they don't have to go through each file to find them they could easily find using this App.

Students need to add more features accordingly to build this App.

Domain Bucket: Computer Science

12. Description: Picture Exchange Communication Software for Person with Intellectual Disabilities. Persons with intellectual disabilities have slow mental development therefore, it is very difficult for them to communicate with general public in society. Such people can't express themselves using language because it is very hard for them to understand and implement sentence construction. The aim of this study is to develop and assess a learning concerning the Picture Exchange Communication (PECS) software for Autism Spectrum Disorder (ASD) children's. the underlying objective of this application is to guarantee that autistic children can have a better alternative intervention through the PECS approach so that they would not rely on the therapist a great deal or go to the autism center which is often costly. It will help that person to express themselves so that all kind of anxiety in their mind will be diminish. Such people can't go anywhere alone because of their speech disability but with the help of this software they can communicate with other to fulfil their all needs. This help them to improve communication so one day will be capable of speaking on their own without any help. In our proposed system, we proposed a step by step communication system for persons having intellectual disabilities with the help of recent technologies. To improve the day to day communication, picture exchange communication system is a nice media.

Domain Bucket: Computer Science

13.Description: Create an app that can run on a Windows/Linux based desktop to aid the disabled persons to perform day to day tasks. It will help them to guide.

Domain Bucket: Computer Science

14. Description: Currently traffic police and cameras are only deployed at traffic signals. This limits them to report violations only if they happen within the vicinity leaving room for large stretches of blind spots. Another constraint is the capacity of these personnel to quickly capture as many violation's photographs as possible towards proof before the vehicle rushes away. Vehicles to automatically identify and report traffic violations on the road around them as they move around thus acting as crowd sourced law enforcement.

Solution Ask- Leverage front mounted mobile phone/dedicated cameras on car wind shield to identify, photograph and report traffic violations anywhere on the road thus reducing dependency on static cameras and human personnel.

Domain Bucket: Computer Science

15. Description: Develop a technology-based solution for Kids, Senior citizens, especially abled individual on anyone who need supervision which can alarm the concerned person in case person who need supervision is crossing a specified boundary for EXAMPLE: 10 meters outside a specified boundary. You should also think about more innovative ideas to see what more value you can bring to these individuals for EXAMPLE: devices which can apart from keep tracking an individual

can also collect heath parameters such as heart rate and alert concerned person in case of any issue. This health data can be further used for research and development of these individuals.

You need to create a software-based solution.

Domain Bucket: Computer Science

16. **Description:** Compare differ human voice samples and gives the percentage of matching for the given human voice samples.

Based on the different input human voice samples, find out the percentage of the voice matching in human voice. So different criminal cases investigation sometimes it is required to verify and compare the different human voices and to find out some conclusion based on this evidence.

Expected Outcomes: Application will give the similarity percentage of the human voice samples using the matching criteria.

Domain Bucket: ML/AI

17. **Description**: To recognize object or face in any CCTV footage Challenge

Based on available Suspicious CCTV footage, identify, and recognize the object or person face from the available CCTV footage.

Application will recognize the person's face or any other object from the given CCTV footage when any suspicious activity happened.

You can use OpenCV module

Domain Bucket: ML/AI

18. **Description:** Ask to Agri Expert- (App with backend)

Challenge Description with context : Farmers are always confused to ask any query related to farming. Farmers can ask query in their own language/images/voice/video. There should be dynamically updateable different topic. Farmer can submit their query in any of form like text/images/voice/video. Authenticated Users should update topic only. Application user should be verified first time by OTP. There should be manual or partially automated consult expert forwarding system for requested query. Every topic has multiple experts and there should be provisioned to forwarding query by their district. If any query attended by expert than that should not repeated. Expert can also answer the query using hand held device. There should be frequently asked question which is updated by authenticated users. There should be option for language (English/Hindi/Gujarati). Admin login to manage name and areas of experts. Farmer App and Expert App

Topics Example:

Crop->cotton->Pest Query-> {ASK}

Crop->wheat->Plant Disease query-> {ASK}

Input by Authenticated User: Topic Name (3 Level Min), Other needed information

Input by Verified User: text, images, voice, video (as Query)

Domain Bucket: Agriculture

19. **Description:** Application for providing proper fertilizers, manures and other nutrition timely as the crop needs on the basis of climate, soil type etc
   - Traditional methods of providing fertilizers in the fields are not
   - Much effective and need to be backed up by technology so that only required amounts and

- Proper types of nutrition are provided to the crops for better yield and minimize the expense on the fertilizers. Your goal is to design a system that can predict the right amount of fertilizer and type of fertilizer needed by the crop at a certain time.

Domain Bucket: Agriculture

20. **Description:** To create a community platform for rural people and a pool of professionals, to share their respective problems and solutions. Low literacy level and being unaware of the latest technology, creates various problems for the peoples in rural areas. To come up with the problem your goal is to create a community platform where citizens can share their issue and persons with the solution can provide their solutions.
Domain Bucket: Computer Science

21. **Description:** To create a System for planning the cropping pattern, plantation and maintenance of the crops for the better yield.
Traditional cropping patterns are not effective in today's rapidly changing, unpredicted climate and polluted soils. Also each locality is different from one another and has different properties. Your goal is to design a system to predict the most suitable crop for that region, Plantation pattern and maintenance of that crop for better yield using information like soil quality, weather, resources, and other factors that affect crop production.

Domain Bucket: Agriculture

22. **Description:** To solve irrigation issue using less water through sprinklers and controlled from central location.
A growing international population and rising living standards are increasing the demand for agricultural products. At the same time, globalization, markets liberalization, growing pressure on natural resources, and environmental concerns are heightening the need for improved agricultural productivity. In the case of irrigated agriculture, meeting this requirement involves a paradigm shift. Maximizing net profits will demand a more economic approach than simply maximizing crop yields. This is significantly complex and challenging, requiring that water be applied in a wiser, more precise, and accurate fashion because the margin for error narrows.
Domain Bucket: Agriculture

23. **Description:** Build an application which can help maintain a GI tags given by craft image / design and organize & maintain certificates. Also verify the certificates.
Domain Bucket: Design and Craft

24. **Description:** Build an application which can help to experience virtual look of a product. Usually we face problem in applications that we cannot try the product on ourself virtually. So we need to create an application such that it can solve this problem.

Example: People can try different glass frames on their faces or clothes before they place an order
Domain Bucket: Design and Craft

25.**Description:** Build a Quality Control System where people can register product dimensions, model or image then your system can scan proposed product and match it with the registered model to verify product dimensions and quality so that it can be removed automatically from supply chain if it does not verify the quality or dimension of product.
Example clothing industry can use this automated system to check size and shape of their products as designed such that they will be able to reduce product loss.
Domain Bucket: Design and Craft

26.**Description:** Build a application/app where a consumer can design its craft/design as per its choice using different drag and drop components and then place order. System can identify different components used in design, can place order to related producers for different components, producers can assemble the components and can deliver the product accordingly.
Domain Bucket: Design and Craft