Hackathon Problem Statements

1. **Self driving vehicle algorithm and code using ML/AI computer vision.**

   Description : One of the most remarkable applications of Machine Learning in today's world is the self-driving or autonomous car. Design a Machine Learning based self driving vehicle that will improve and enhance the functions and the performance of autonomous cars.

2. **Implementation of AI/ML in the Field of Education.**

   Description : Today our education system faces a lot of issues like lack of proper transportation to school, basic infrastructure, qualified teachers, quality of education, low awareness of importance of education, etc are just a small portion of challenges which holds back the development. Develop an AI/ML model which can tackle these problems and improvise the education system.

3. **IoT Based Smart Waste Management System for Smart City.**

   Description : In the present day scenario, many times we see that the garbage bins or Dust bins placed at public places in the cities are overflowing due to increase in the waste every day. It creates an unhygienic condition for the people and creates a bad smell around the surroundings that leads to the spread of some deadly diseases & human illness. Design a “IoT Based Waste Management for Smart Cities " which can overcome these problems.

4. **Develop an IoT enabled Android application to give real time parking space available on the campus .**

   Description: In the present scenario of covid pandemic automatic parking system is one of the important prototypes that we need . Hence design a Iot based android application of parking system to detect an available parking slot in a parking space .

5. **Crop and soil management System**

   Description: Farmers face several challenges related to crop selection, soil management, disease identification and other factors, which can impact agricultural productivity and sustainability. To address these challenges, we need an application to help farmers for full fledged farming.

6. **Effective Farming System**

   Description: The future of agriculture holds the opportunities & power to reshape our lives. Mechanized puddling, seeding, transplanting, weeding, harvesting of field and plantation crops. Mechanization of hilly agriculture, horticulture, and protected cultivation. There is a need to provide costeffective systems for enhancing the efficiency of existing agro-machineries for assessing quality, grading & sorting, processing of agri-produce.

7. **Creating an application to identify the presence of government issued personally identifiable information (PII) embedded in documents and data, inadvertently or otherwise.**

   Description: In the digital age, users often upload government-issued documents (like Aadhaar, PAN, and Driving Licenses) containing sensitive Personally Identifiable Information (PII) to access services. PII includes names, addresses, phone numbers, and financial data, and its exposure can lead to privacy breaches or fraud. An application is needed to detect and alert users about PII in uploaded documents, helping remove or redact unnecessary PII. This tool would enhance privacy, improve security, and ensure compliance with data protection laws. It could be publicly available and assist individuals and organizations in managing PII responsibly.

8. **Identification of algorithm from the given dataset using AI/ML Techniques.**

   Description: There are large number of cryptographic algorithms available for ensuring data confidentiality and integrity in secure communication. Identification of the algorithm is a research activity that leads to better understanding of the weakness in its implementation, in order to make the algorithm more robust and secure. Description: The above Problem Statement envisages that approach(s) be developed using AI/ML techniques for identification of the cryptographic algorithm by analyzing given data. The provided datasets are generated using modern cryptographic algorithms. The algorithm is expected to be identified by using a combination of AI/ML and innovative approaches. The successful approaches may also be automated by developing a software solution which takes the given dataset as input and gives probable cryptographic algorithms as output. Expected Solution: Logical approach be developed to successfully identify the algorithm for the given dataset. The approaches should either be implemented in software form or should be feasible to be developed as a software.

9. **Fake social media accounts and their detection**

   Description: The ITBP guards the 3,488 km India-China border, from Ladakh to Arunachal Pradesh, and also plays key roles in internal security and anti-extremism operations. With rising concerns over fake profiles on platforms like Facebook, Instagram, and Twitter, tools are needed to identify and flag such accounts. A centralized agency should manage information on identified fake accounts and coordinate with social platforms for their removal. These tools would ensure prompt account suspension or deletion to safeguard organizations and users. The solution emphasizes quick, global actions through collaboration with concerned social platforms.

10. **Software for Speech Language Therapy Clinical Services**

    Description: Rehabilitation institutes face challenges with a high therapy caseload, limited supervisors, and manual processes, delaying services. Speech therapy begins with patient allocation, therapy planning, and supervisor review, followed by regular sessions and progress reporting. Supervisors evaluate the progress and assign clinical ratings until the therapy concludes. Digitizing this process with software can streamline case allocation, therapy

documentation, evaluation, feedback, and clinical ratings. Such a system would enhance efficiency, improve service delivery, and support better case management.

***Note:**

The above problems are just sample statements. Participants may either choose them or may take inspiration from them and come up with something totally new