Hackathon Problem Statements

1. **Statement :** Software Tool to aid Search and Rescue of an aircraft.

 Description: If the contact with an aircraft is lost it leads to death of everyone in it but in such rare cases if we can find the expected location of crash accurately there can be chances of rescuing people.

Develop a software which can help in the case of missing aircraft .It should be able to calculate and plot the accurate area to search for the aircraft by using the last known position of the aircraft. So that it can reduce the search time.

2. **Statement** : Smarter Surveillance System.

Description: Explain the general problem statement in simple terms.

1. i) At present, a lot of man hours are spent on physical patrolling of border areas and compounds.
2. ii) Fencing wires are not reliable and easy to breach, in large areas it is difficult to be available at all locations, and if someone is breaching in absence of guard, guard will know only when they reach the breach site. Also it takes a lot of time to cover the compound walls if the area is large.

 iii) For smarter India, we need Smarter

Surveillance system, which can be developed through Modular design which is easy to assemble at onsite. The users of this system are two-fold: i) Any Security agency who is securing a larger area can install an unmanned area and can track through a single control room.

 Develop a Technology that can address this issue partially or completely.

3. **Statement** : Drones for Fast and safe delivery

Description: Delivering parcels by e-commerce companies from the delivery center to customers using drones to reduce delivery time and safety aspects of delivery.

4. **Statement** : Delivery of Essential Medicines by Drones in Hilly areas.

Description: Throughout the developed and developing world, access to life-saving and critical health products is hampered by what is known as the last-mile problem - the inability to deliver needed medicine/blood from a city to rural or remote locations because of inadequate transportation, communication or supply chain infrastructure.

To solve this connectivity problem, a national drone delivery system needs to be created to carry urgent medicines to patients in need in Hilly and inaccessible areas.

Team needs to build a drone that can deliver essential medical products/blood of up to 2.0 kilograms per flight while maintaining the cold chain if needed - in an average fulfillment time of 30 minutes. Also, it should be usable in emergencies, and disaster prone areas.

5. **Statement** : Low cost high level tracking system for packages .

Description : Nowadays it's all about online shopping and people get really worried about their packages status .So design a tracking system which provides a realtime information about your package and possible time about delivery.

6. **Statement** : Wearable location tracker during disaster.

Description: These trackers will be GPS wearables like watches, pins, and even custom shirts that can mitigate tracking problems even if the fisherman loses his boat during extreme weather.

7. **Statement** : UAVs for Disaster Identification and alerting System.

Description: UAVs for Disaster Hardware When disasters happen, whether a natural disaster like a flood or earthquake, Identification etc. It can be extremely dangerous to send first responders in, even though their Alerting System Software are people who badly need help. Drones are useful, and are helping in the recovery after the disaster, but most require individual pilots, who fly the unmanned aircraft by remote control.

That limits how quickly rescuers can view an entire affected area, and can delay actual aid from reaching victims. Autonomous smart drones with integrated image processing APIs that have a longer flight time and can relay real time analysis of images to remote locations will help in early detection and adequate mobilization of resources.

8. **Statement** : Assisting farmers with the help of data from the meteorological department.

Description: Updating and warning the farmers about the weather in the coming days can help them to stay alert .

So create a solution that can help farmers by keeping them warned about weather conditions which can affect them by accessing data from the meteorological department.Try to keep the product user friendly.

9. **Statement** : Ways for getting India to be vaccinated early (Hardware & Software)

Description: From the day we found the first COVID 19 case in our country the number of cases are drastically increasing and it is too hard to control spread due to the dense population in our country. So if we can vaccinate everyone as fast as possible then it can be a great solution.

It's an opportunity for all the developers out there to build solutions that help to tackle some of the challenges related to distribution of   (COVID 19) vaccine.So that India can be vaccinated early.

10. **Statement** : 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.

11. **Statement** : 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.

12. **Statement** : 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.

13. **Statement** : 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 .

14. ***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.***