Problem Statements for Robothon

1. Non-Invasive Water Flow Meter:

Background Increasing depletion of water resources generates the need to measure the water flow and find actual utilization. We need an innovative yet cost-effective solution that avoids plumbing need, conforms to compliance and gives a good user interface for end-users to see and control the usage Specifically, the Product required : a) should measure water flow without having to cut a pipeline. b) support compliance Just like any water flow meter, the product evolved should measure flow at an accuracy conforming to ISO4064 and/or Class B c) Cost: must be around Rs.5000/- - Rs.7000/- for a meter that can be used for 20mm pipeline.

2. Automatic medicine vending robot:

Design a miniature robot which carries different medicines inside it and will able to follow the different paths to different beds of patients with the help of image processing or sensors by recognising the line. Each patient should have a separate rfid card through which the medicines can be dispensed according to individual. The robot should be connected to the app in which the feed can be given for the medicines of different patients according to their rfid. The robot should have different sections for different medicines inside. For now, design it for 3 medicines.

3. Smart Silos:

There have always been an increased safety in agricultural storage. Silaos and grains elevators can be dangerous places, with conveyor belts that can catch fire and dust buildup that can be explosive. Using sensors to track hazards is of massive value. So to help them, create a way to connect sensors and help farmers make sense of the data from their silos and grain elevators. Using the platform, manufacturers can establish baseline performance norms and set alert and alarm conditions related to temperature, vibration, humidity and other conditions

4. Autonomous smart drone:

UAV's for Disaster Hardware. When manmade or natural disasters like a flood or earthquake, etc. happen, it can be extremely dangerous to send first responders in, even though there is an Alerting System Software for 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.

5. Real-time water quality monitoring:

Uttarakhand state is blessed with major water resources including large riverine system with its tributaries. In spite of the plethora of water resources, the people of the state are facing the problem of safe fresh water due to slope factor, management issues, urban conglomeration, deforestation and other environmental factors. It is essential to know the quality of water before its consumption for human and agricultural uses. For Continuous monitoring of the water resources, Design a hardware solution to measure quality parameters of water along with an app to enable monitoring of water quality at various locations. Ensure that it is easy to use and connects to mobile device.

6. Mars Rover:

The surface of Mars is very uneven, there are rough terrain, slopes, rocks. So design a servilience robot that can move in that terrain and self stabilize itself using gyros and accelerometers while moving on an uneven terrain to provide live stabilized video feed of its surrounding also integrate a gps module to remotely locate the position of the rover. The robot should be remotely operated and should provide live video feed to the operator.