

IFET COLLEGE OF ENGINEERING (An Autonomous Institution)

DEPARTMENT OF ECE

EXTERNAL SYMPOSIA'19-HACKATHON PLOBLEM STATEMENT

TEKLATHON'19

➤ **Intruder Tracking using Wireless Sensor Networks**

Nowadays, almost all the countries are facing threats from terrorists and intruders from their border areas, challenging the internal security of the country in those areas. So many civilian and military applications require locating an intruder in a secured area. Target tracking, data processing and analysis play a major role in this type of applications. The proposed system is to develop a centralized computer application that needs to identify moving objects in a specific area using sensors.

Expected outcome:

Implementation and testing of tracking system using wireless sensor network.

➤ **Automatic Irrigation System**

Due to improper irrigation there might be some possible wastage. It may be water wastages, wastages of crops and so on. In order to solve this issue, an automatic irrigation system can be introduced. By using this system it will possibly reduce such wastages. So that better utilization of resources can be made possible. We need to develop an automatic irrigation system with basic switching mechanism of motor using sensors by sensing moisture present in the soil, so the irrigation can be done.

Expected outcome:

- Saving in water
- better utilization of resources
- Reduction in runoff of water & nutrients
- Reduction in evaporation losses.

➤ **IoT based Industrial automation**

The Industry manufactures DC drives for controlling heavy machineries in large-scale industries like steel industry, automobile industries, furnaces, etc. So, it is difficult for the maintenance team from control room, to diagnose the problem in the Drive on the site. At many places like furnace, heaters and places where extreme temperatures are measure, IoT makes the work of the technician easy by controlling the machineries at safe distance.

- Remote maintenance
- Remote fault finding
- Remote operation
- Machine learning and deep learning (patterns of machinery usage)

Expected outcome:

- Monitoring and control of machineries.
- Avoiding human interactions with machineries directly.

➤ **Transmission of Signal and Data using Li-Fi Technology**

Li Fi is a fast and cheap wireless-communication system. The increasing demand for higher bandwidths, faster and more secure data transmission as well as environmental and undoubtedly human friendly technology heralds the start of a major shift in wireless technology, a shift from RF to optical wireless technologies. The possibilities are numerous and research can provide us with many solutions. This technology can be used to make every LED bulb into a Li-Fi hotspot to transmit data wire.

Expected outcome:

Long distance travelling with higher rate Up to 100GB.

➤ **Mobile based IVR System (Interactive Voice Response System)**

It is mostly android application, application pickup the call and play voice-prompt for accessing information like railway or bank. And user press appropriate DTMF to access details or give voice-messages.

Expected outcome:

Working demo of IVR, like 1) detect DTMF, 2) play voice 3) take-call 4) disconnect call 5) record voice.

➤ **Rise of Non-Communicable Diseases**

Non communicable diseases include heart disease, stroke, most cancers, asthma, diabetes, chronic kidney disease and more. They are the leading cause of death in the world representing over 60% of all deaths.

Expected outcome:

- Awareness solutions
- Health awareness apps
- Fitness apps and tools
- NCD risk tracking

➤ **Smart Vehicles**

Creating intelligent devices to improve commutation facilities, quality of travel experience and overall travel safety features hardware.

➤ **Healthcare & Biomedical Devices**

Designing devices that would help in managing healthcare better.

➤ **Develop low cost high efficiency wireless data communication system using light fidelity for under water communication(This wireless communication can be efficiently used in between ship to ship in sea).**

The main task in our application is to develop high reliable led light transmitter circuit. The proper design and components selection for this circuit are the major consider factor As well the placement and housing case for the led light and photo receiver are also the crucial factor for our application.

Expected outcome:

We expect the reliable development of led light transmitter as well photo receiver any underwater condition and can communicate the data without any interruption.

➤ **Smart City challenge**

Cities across the globe, especially emerging markets, are witnessing significant urbanization. In the next 15 years, India will see about 200 million people migrating to cities, which is almost equal to the current combined population of the UK, France and Germany. To make the city a better place to live, Smart City looks forward to solve challenges across five broad themes:

- 1) Water Management
- 2) Solid Waste management
- 3) Safety & Security
- 4) Public Health
- 5) Digital Connectivity