



SYNOPSIS
ON
Smart Hostel Management and Security

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INTRODUCTION

Smart Hostel Management and Security is an IoT based project which comprises of many modules which will be required to make a smart hostel, managing it effectively and to have latest security features.

It will be a new idea of its kind which is believe to bring a lot of new features to the existing model of our hostel system which is becoming old-fashioned day by day.

The project undoubtedly, will deliver lot of new ideas which ranges from making a simple infrastructure to a fully automated system. The project will ensure to have all the latest trends, technologies and equipment which will definitely make this idea to be implemented on real ground.

The need of the hour is to realize the importance of an emerging technology i.e. IoT and its vast-varying applications. The project after completion will ensure a new sighted change and will help today's generation with all the ease of having a smart hostel, managing it on prior basis, security and maintenance.

The benefits of this project will definitely be a helping hand to all the hostel inmates, wardens and staff members which on priority are the first and last beneficiary of it.

The conclusion of the project is to make it a less human interference one and to rely more on our current technologies. This will ensure to have large scale impact on the current use of the hostel system.

EXISTING SYSTEM

The current hostel system does not take care of some of the very important aspects which is needed to be taken care of. In this series, the first issue with current ongoing system is improper utilisation of electricity, students often in hurry to attend classes, left the power switch on which leads to wastage of the electricity. Fans, CFLs, Cooler etc. remain on even if there is nobody in the room. This leads to improper power consumption.

In addition to this sometimes students also leave the gate of their room open. This may lead to theft activities of the belongings of the inmates. After this one had to go to the warden to look for the CCTV footage to find the culprit, the effect of which is seen among the students as they are always worried instead of focusing on their studies in the class as well as warden has to keep wandering in the hostel for biometric attendance which is a complete wastage of their precious time.

Sometimes due to depression, anxiety and feeling of not being good leads the student into other negative doing such as having alcohol, smoking and other such health acids which will ruin their health and will also have large scale effects on their career. They may need counselling and proper guidance for the same. In some cases, highly affected students who are more sensitive to psychological traumas, find a complete negative way of the problem which in turn effects their families, friends as well as the dignity of the university.

There is shortage of motivation and knowledge among the students currently residing in the hostels. There is no initiative taken by any builder or constructor to enhance the technology or upgrade their method of building the infrastructure which will definitely be a boon for the society and will foster up the spirit of new ideas among the hostel students.

USE OF THE PROJECT

There will be a dynamic use of the project w.r.t the above problems in the existing model of the system. The project will cover all the modules in step by step manner and will combine each and every module used to make it as a whole project.

There will be a module covering the electricity wastage and its effect. This section will cover how to stop the electricity wastage which is done in various cases like sometime students forgot to turn off the switches, fans, MCBs, etc.

The next module of the project will take care of the problem related to theft activities. In this context we will make a camera module which helps us to detect any suspicious activity going inside the room and it will also inform the hostel warden about the same.

The most important module of the project will cover the problem associated with drinking, smoking and other such intoxicant which are related to the decline in the health of the hostel inmates. The module will solve the issue by applying various types of sensors which will be very helpful in detecting the usage of any intoxicants such as alcohol, drugs etc. There will be another sensor which will help us to detect the smoking activities going inside a particular hostel. This will ensure that no such activities further happen in future and will inform the higher authorities about the same.

An initiative is also taken to make the student's life more secure. When it comes to give protection to their life, we have a undercover module for it too.

The above mentioned solution are relatable to the question/problems raised. The solution on applying in the real ground situation may vary but its motive will be the same.

IDEA

The idea flashes into the mind when we have faced the same issue with us. The above problems are based on our real life experiences and by viewing the miserable situation of the hostel inmates. Improper utilisation of the resources has also been one of the leading factors to strike this idea in our mind.

We have witnessed a lot of students degrading their life and making their health threatened to all the health acids available in the society. We have ponder over it for months and months and then came up with this idea which needs to be implemented with immediate effect.

FUNCTIONAL SPECIFICATION



There are multiple functional blocks which will be covered while making of this project, details of which are listed below:

There will be a series of sensors and actuators which will be used in designing this project. Each and every sensor has its specific role and function which is needed to implement this project.

If any of the sensors will not detect any human presence in the room then it will ask you to operate electrical appliances without being present in the room.

If the sensor detects the presence of any intoxicants consumption in the room then it will automatically trig the alarm in the warden's office.

There will be a sensor used to detect smoke and fire which will automatically raise an alarm system and will inform warden regarding the same.

Software Specification:

- **Technology Implemented** : IOT
- **Language Used** : Embedded C,Python
- **Database** : MySQL, Cloud
- **User Interface Design** : Full Stack, MIT AI2
- **Web Browser** : Chrome, Explorer, Firefox etc.

Hardware Requirements:

- **Processor** : Core i7
- **Operating System** : Windows, Linux
- **RAM** : 8 GB
- **Hardware Devices** : Node MCU,D6T Sensor, Servo Motor,MQ2 Sensor, MQ135 Sensor, Relay, LED, Resistors, Pyro Electric, Sound Sensor, Camera Module, Raspberry Pi
- **Hard disk** : 1 TB, Graphic Card
- **Display** : Laptop Screen

FUTURE SCOPE

Now we have implemented the project on a small basis but we can expand it on a large basis in which we can use multiple sensor to automate whole hostel. Such that if we have left tap open then it will automatically close it. We are using pyro electric on a small basis but it can be extended and can be used all over the hostel and mess which will convert pressure into electricity. This will lead us to generate power and help us to save money.

All the functionality can be extended in office, dispensary, gym, playgrounds, common room, class rooms etc.

We will also see the maintenance in the addition of the above project and will add module with the same after new problems will come.

Seeing the development of the project in the future, we will try to add image processing as new emerging technology in our project and it will definitely add a boost-up to this idea.

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