**NATIONAL INSTITUTE OF TRANSPORT**

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**DEPARTMENT OF COMPUTING AND COMMUNICATION TECHNOLOGY**

**BACHELOR DEGREE OF INFORMATION TECHNOLOGY**

**SMART AUTOMATED ATTENDANCE**

**PROJECT PROPOSAL**

**REGISTRATION NUMBER : NIT/BIT/2020/1229**

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# CHAPTER ONE

## 1.0 INTRODUCTION

## Over years the student attendance system that is available is Manual attendance system. Manual attendance system uses sheets of paper that students fill out and lecturers oversee for accuracy of the student. However, attendance information in Manual attendance system is subjected to human error when various students fill the sheets of paper and also it is time consuming system.

## 1.1 OBJECTIVES

### 1.1.0 MAIN OBJECTIVES

The objective of this project is to Design and Develop an automated student location based time and attendance tracking system by using Bluetooth low energy technology.

### 1.1.1 SPECIFIC OBJECTIVES

1. To design and develop mobile application and web based system
2. To design and develop sub system for that will be capturing student’s current location in a specific time.
3. To design and develop system that can generate final report for student’s attendance in specific period of time

## 1.2 SIGNIFICANCE

1. The system is full automated,
2. Easy in Installation of Mobile app for student,
3. An automated system reduces the risk of errors that are common in a manual system.
4. Allows the workforce to be more productive instead of wasting time on tedious administrative tasks.

## 1.3 PROJECT SCOPE

The system will be designed and developed to operate on smartphones and web browsers.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 DEFINITION OF KEY TERMS

### 2.0.0 BLUETOOTH

### Bluetooth started as a short-distance cable-replacement technology to replace wires in devices such as a mouse, a keyboard, or a PC.

### There are two types of Bluetooth devices: one is referred to as Bluetooth Classic (BR/EDR), used in wireless speakers, car infotainment systems, and headsets, and the other is Bluetooth Low Energy (BLE).

### 2.0.1 **BLUETOOTH LOW ENERGY (BLE)**

### Bluetooth low energy (BLE) is a wireless computer network technology designed and marketed as Bluetooth Smart.

### 2.0.2 **BEACONS**

### In general terms, a beacon is a small, battery-powered, wireless device that uses Bluetooth low energy technology (Bluetooth Smart) to advertise its presence and services. The beacon technology doesn’t require an internet connection and acts as a broadcaster within a short range radius. The transmission distance is typically around 10-30 meters for interior.

# 2.1 RELATED WORKS AND EXISTING WORKS

### 2.1.1 **FINGERPRINT TECHNOLOGY**

* 1. Fingerprint attendance is one type student attendance that uses fingerprint as the media. A fingerprint is one of unique human identities for each individual.
  2. The steps for performing fingerprint attendance are also accessible. In the beginning, students only need to register a few fingerprint. Once registered, students stick their registered fingers when they enter or leave the venue.
     1. **WEAKNESS OF FINGERPRINT TECHNOLOGY**

**Issues with recognition of damaged fingerprint technology:** There is lack of flexibility to identify person in case of cut or wound or when fingerprints are smudged with dirt or grease.

* + - * 1. **Deployment can be Expensive:** Fingerprint attendance systems are entirely dependent on hardware and peripherals. It is often expensive to scale these systems as you will need to install hardware at every location.
        2. **Not ideal for remote and field works:** Dependence on standalone machines is one of significant disadvantage of finger print identification. Company cannot deploy standalone kiosks at fields or remote locations.
        3. **System Failure:** Scanners are subjected to the same technical failures and limitations as all other electronic identification systems such as power outages,errors,and environmental factors.

### **2.1.2 BAR-CODE READER TECHNOLOGY**

* 1. The system that takes down student’s attendance using bar-code. Every student is provided with a card containing unique bar-code. And Every bar-code represent unique id of students.
  2. The system uses Bar-code method for authenticating the student with a unique bar-code that represents their unique id.

**Weakness of Bar-code reader**

* + 1. **Cost:** For bar-code technology a bar-code reader must be purchased which is a quite Expensive compared to beacons.
    2. **Range:**  In order for a bar-code reader to be able to function it should note be kept above 15 feet from the bar-code label. If place more than that the bar-code reader will have problem scanning. For some applications this shorter range can cause difficulties.
    3. **Physical Damages:** Bar-code readers are easily vulnerable to physical damages. Similar to other equipments, it is too subjected to wears and tears.
    4. **Label Damages:** Typically bar-code are printed labels which is always exposed to outer world. This makes it easily prone to environment damages. Even if one part of the label is damages, it can pose problems while scanning
    5. **Information:** Bar-code readers are able to scan only limited number of information. Those Information are only about the product and manufacturers.
    6. **Security:** Not all Bar-code reader are genuine. If a user happens to scan a malicious bar-code, the system could potentially be taken over by hackers.

### **2.1.3 FACE RECOGNITION**

* 1. A face recognition based attendance system is the technology to identify or verify an individual using their facial features. This system can be used to recognize people in images, videos, or in the real-time event.
  2. **Weakness of Face Recognition**
     1. **Image Quality:** The quality of reference image plays an important role in the identification process. If the resolution of the image is not high enough, it can cause camera to tricked into believing that the person being scanned is not the same as in the photo.
     2. **Storage:** Depending on the quality of the input data a system would need an appropriate amount of storage.
     3. **Angles:** Many non-premium facial recognition systems cannot account for faces that are captured at angles other than straight into the capturing camera.
     4. **Biased performance:** There is possibility that facial recognition system might be able to identify women or people of color
     5. Facial recognition can be Expensive