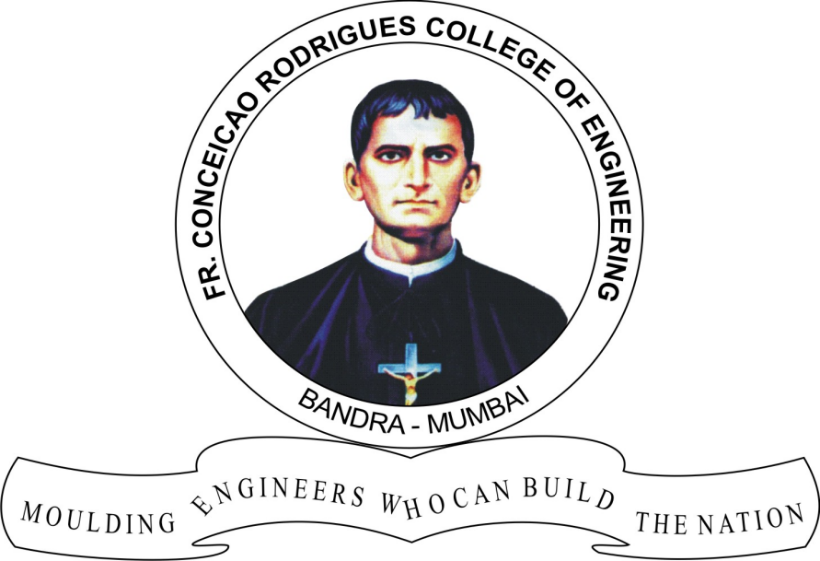
**Fr. Conceicao Rodrigues College of Engineering Bandra**

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**Software Requirements Specification**

**for**

**INDOOR NAVIGATION SYSTEM**

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Table of Contents

Abstract 3

1. Introduction 4

1.1 Purpose 3

1.2 Scope 3

1.3 Definition,Acrronyms,Abbreviations 4

1.4 References 4

1.5 Developer's Responsibilties 5

2. General Description 6

2.1 Product Function Overview 6

2.2 User Characteristics 7

2.3 General Characteristics 8

2.4 General Assumptions & Dependencies 8

3. Specific Requirements 10

3.1 Inputs & Outputs 10

3.2 Functional Requirements 10

3.3 External Interface Requirements 11

3.4 Performance Constraints 11

3.5 Design Constraints 12

3.5.1 Software Constraints 12

3.5.2 Hardware Constraints 12

3.5.3 Acceptance Criteria 12

# Abstract

This project is dedicated towards the designing and developing of an indoor positioning tracking application system with the most optimum characteristics. This is because the Global Positioning System (GPS) is not suitable to be used indoors due to signal lost within contact of building walls. Note that the main goal of this project is maintaining both the budget and power consumption the lowest value possible while completing the project within a stipulated time. Due to the complexity of indoor environments, we believe the indoor navigation strategy should not be limited to the shortest path. Taking shopping centers for example, a navigation path should be not only the shortest path, but also an attractive route to the shopper. We aim to build a smart indoor navigation system, which not only learns the user's behavior through previous sensing data, but also enjoys working with heterogeneous devices. We want to create a tool that makes indoor routing system easier and more efficient.

# 2 Introduction

## Navigation is the process of accurately establishing the user’s position and then displaying directions to guide them through feasible paths to their desired destination. The Global Positioning System (GPS) is the most common and the most utilized satellite navigation system. Almost every aircraft and ship in the world employs some form of GPS technology. In the past few years, smartphones have evolved to contain a GPS unit, and this has given rise to location-based mobile applications such as geofencing and automotive navigation for the common user. However, GPS has its limitations. In particular we are concerned with the lack of GPS signal reception in indoor environments. GPS satellites fail to deliver a signal to a device if there is a direct obstruction on its path. Therefore, we have to consider alternate methods of achieving indoor navigation on a smartphone.

## 2.1 Purpose

## Our motivation for this project stems from the fact that people are increasingly relying upon their smartphones to solve some of their common daily problems. One such problem that smartphones have not yet completely solved is indoor navigation. At the time of writing, there is not a single low cost scalable mobile phone solution available in the market that successfully navigated a user from one position to another indoors. An indoor navigation app would certainly benefit users who are unfamiliar with a place. Similarly, an indoor navigation system could also benefit local users who have previously visited the location but are still unaware of the whereabouts of some of the desired items.

## 2.2 Scope

The objective of this project is to build a robust and flexible smartphone

based indoor navigation system that meets the following criteria:

1.Auto detection of people when user walks into physical space using

Geo-fence.

2.Prompting the user to start indoor navigation.

3.Developing a smart system which will navigate user between source and destination using Floor Map of the physical place.

4.Also showing user the basic important facilities in a room, such as charging slots, washrooms, windows etc.

**2.3 Definitions, Acronyms, Abbreviations**

* Global Positioning System (GPS)
* Geo-fence: A geo-fence is a virtual perimeter for a real-world geographic area which can be dynamically generated—as in a radius around a point location, or a geo-fence can be a predefined set of boundaries.

**2.4 References**

* <https://www.microsoft.com/en-us/research/blog/path-guide-new-approach-indoor-navigation/>
* <https://www.ampercent.com/indoor-navigation-app-android-why-how/27285/>
* <https://www.doc.ic.ac.uk/teaching/distinguished-projects/2013/a.chandgadkar.pdf>

## 2.5 Developer’s Responsibilities

The developer is responsible for

(a) developing the system

(b) installing the software on the client’s hardware

(c) conducting any user training that might be needed for using the system

(d) maintaining the system for a period of one year after installation.

# 3 General Description

## 3.1 Product Functions Overview

## 3.2 User Characteristics

The main users of this system will be people who are unfamiliar with the environment but are literate enough to be able to use a smartphone.

**3.3 General Constraints**

The system should run on any Android Smartphone of version 6.0.1 and above with an active internet connection.

**3.4 General Assumptions and Dependencies**

We assume that the person using this application has a smartphone with an active internet connection and is literate.

# 4 Specific Requirements

## 4.1 Inputs and Outputs

## 4.2 Functional Requirements

## 4.3 External Interface Requirements

**User Interface:** Only one user command is required. The file names can be specified in the command line itself or the system should prompt for the input file names.

## 4.4 Performance Constraints

For input file 2 containing 20 courses and up to 5 preferences for each course, the reports should be printed in less than 1 minute.

## 4.5 Design Constraints

**Software Constraints**

**Hardware Constraints**

**Acceptance Criteria**

Before accepting the system, the developer must demonstrate that the system works on the course data for the last 4 semesters. The developer will have to show through test cases that all conditions are satisfied.