IIT GUWAHATI, DEPARTMENT OF COMPUTER SCIENCE.

Software Requirements Specification

Prepared for: Software Engineering Project "**ATTENTO**" Version 1.0

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1. Introduction

1.1 Purpose

The purpose of this document is to provide the software requirement specifications for the "**Attento"** software. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints , interface and interactions with other external applications.

1.2 Document Conventions

Term	Description
Admin	System administrator who is given specific permission for managing and controlling the system
User	Someone who interacts with the mobile phone application
DB	Database
ER	Entity Relationship
Proximity	A position sensor embedded in android phones.
Accelerometer	A mobile hardware which detects motion.

1.3 Intended Audience and Reading Suggestions

This project is a college level project and is implementing under the guidance of college professor. This project is useful for the instructors and students.

1.4 Project Scope

The "**Attento"** is an Android sensor based mobile application which takes orientation of the device , distance between the user and the device and

movement/shaking frequency of the device as input to notify the instructor whether the students are attentive or not. The admin uses a web portal in order to administer the system and keep the information accurate.

Thus, the sole purpose is to make an IT-enabled large classroom system “smart” which can automatically detect the attentiveness of the students and alert the teacher accordingly.

The ideal condition of engagement is as follows :

- distance between user and device = 25 cm
- movement/shaking frequency of the smartphone <= 2 per minute
- orientation of the device : (x-axis= 45 , y-axis=0, z-axis=0)

1.5 References

- krazytech.com/projects
- www.ibm.com/developerworks
- www2.latech.edu
- developer.android.com

2. Overall Description

2.1 Product Perspective

The mobile app will need to communicate with the sensor framework of Android to sense the students' activity. The following table displays the sensor types that would be used.

Sensor	Type	Description	Use
TYPE_ACCELEROMETER	Hardware	Measures the acceleration force that is applied to a device on all three physical axes (x, y, and z), excluding the force of gravity.	Motion Detection(Shake)
TYPE_PROXIMITY	Hardware	Measures the proximity of an object in cm relative to the view screen of a device.	Determining phone position (example during call)
TYPE_ORIENTATION	Software	Measures degrees of rotation that a device makes around all three physical axes (x, y, z).	Determining device orientation.

Since this is a data-centric product a database will be used. The mobile app will only use database to get data while the web portal will also add and modify data.

2.2 Product Functions

- With this app, the instructor will be alerted whenever a student stops paying attention in class and the total number of such students.
- The students will also know their attention status in class with the input features displayed.

2.3 User Classes And Characteristics

There are three types of users that interact with the system : instructors, students and administrators. Each user has its own profile. The users are expected to be Android literate to be able to use the app.

Only the admin has the permission to use the web portal and hence manage the database.

2.4 Assumptions and Dependencies

One assumption about the product is that it will always be used on Android mobile phones that have enough performance. If the phone doesn't have enough hardware and software resources available for the app i.e if the required sensors are not present or does not work as intended then the application serves no purpose.

4. Functional Requirements

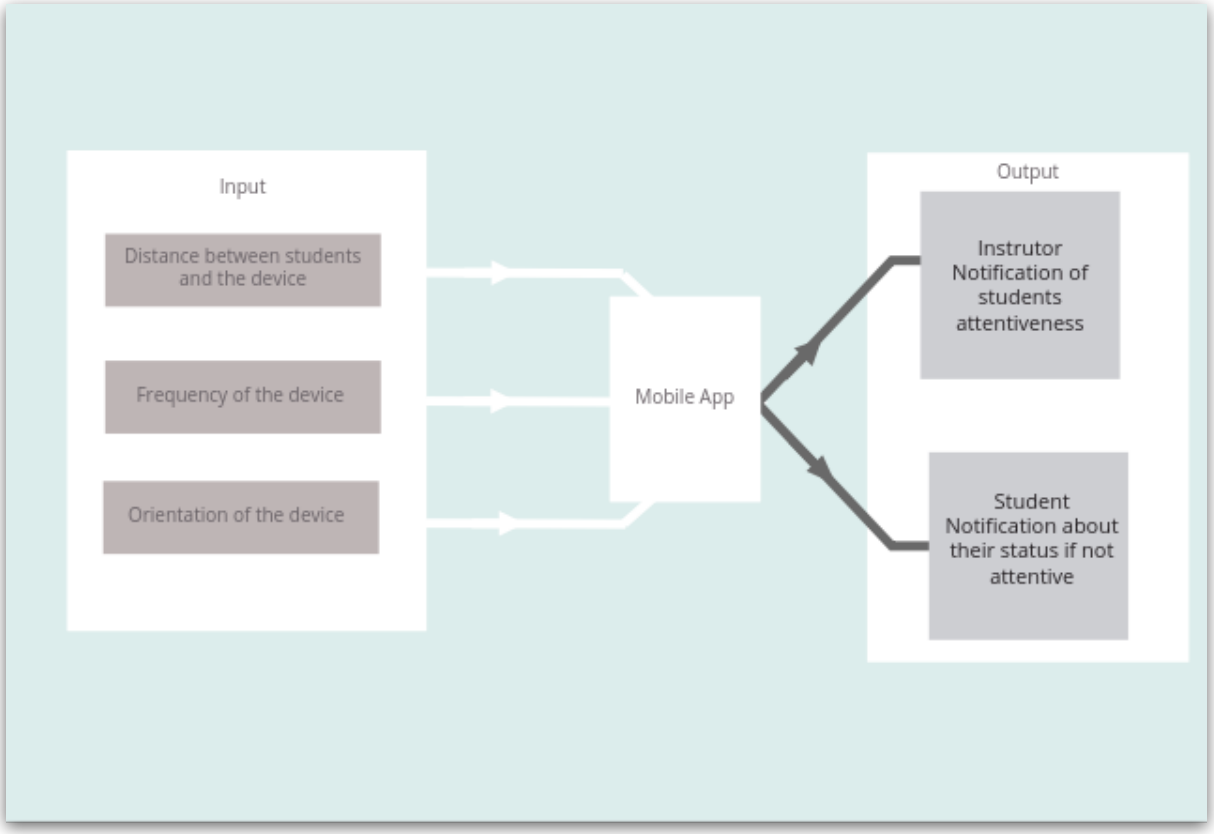

figure - 1

4. Non-Functional Requirements

4.1 Performance Requirements

- The product shall be based on web and has to be run from a web server.
- The product shall take initial load time depending on internet connection strength.
- The performance shall depend upon the accuracy of the sensors.

4.2 Security Requirements

- The app shall never display a user's password. It shall always be echoed with special characters representing typed characters.
- The system's back-end servers shall only be accessible to authenticated administrators.
- The system's back-end databases shall be encrypted.