**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Supplementary**

**Specification**

**for**

**The Automatic**

**Attendance Checking System**

**Version 1.0**

**Prepared by Huynh Vinh Nam**

**Le Huy Duc**

**Cao Phuong Linh**

**OOAD Group 2**

**25-Nov-2018**

**Table of Contents**

**Revision History**

**1. Introduction**

**1.1. Purpose**

This is a report on the subject Object-oriented Analysis and Design of group two, class ICT-BI7 about Use Case Specification of the project AACS.

The report is written based on the reporting format “IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications”. Content-based report is accepted and be satisfied with group meeting minute on 27-Nov-2018 at room 318, 2A of VAST, Hanoi.

The purpose of this document is to define requirements of AACS. This Supplementary Specification lists the requirements that are not readily captured in the Use Case of the use-case model. The Supplementary Specifications and the use-case model together capture a complete set of requirements on the system.

**1.2. Intended Audience and Reading Suggestions**

*The different types of reader that the document is intended for are:*

**● Designers:** whose design must meet the requirements specified in this document.

**● Developers:** Dev is the person who implement the system from the design and documents into a runnable version. Dev have to read the whole document to implement the right system.

**● Tester:** who must ensure that the requirements are validatable and whose tests must validate the requirements. Tester should read the detail to write unit test particularly.

**● Documentation writers:** who will write the future document (report, minutes).

Documentation writers should read to understand whole document.

**● User:** who is any private individual that take part in QR Code Generator, Attendance Check, Management process.

*This specification defines the non-functional requirements of the system; such as reliability, usability, performance, and supportability as well as functional requirements that are common across a number of Use Cases. (The functional requirements are defined in the Use Case Specifications.).*

**● Introduction:** which introduces the specification for the AACS to its readers.

**● System Overview:** which provides a brief, high level description of the AACS including its definition, business goals, business objectives, context, and capabilities.

**● Functional Requirements:** which specifies the functional system requirements in terms of a use case model consisting of each external’s use cases and use case paths.

**● Data Requirements:** which specifies the system data requirements in terms of required data components.

**● Quality Requirements:** which specifies the required system quality factors.

**● Constraints:** which documents required architecture, design, and implementation constraints on the AACS.

**1.3. Product Scope**

The software’s main users are students and lecturers. Software will create an environment where user (student) can check for the attendance and user (lecturer) can view and/or manage the attendance list in the course(s).

**1.4. References**

[1] Form of presentation IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

**2. Functionality**

Used for automatic attendance checking using phone app with QR code or camera recognition.

**3. Usability**

Use phone app lightning QR to scan QR code for a link, connect to that link to check attendance.

OR use school camera: the student stand in front of the camera, the system will scan and decide which student he is, and update the record.

**4. Reliability**

The attendance checking with QR code: each phone has a unique phone hardware ID. So, each student can only register with 1 phone. Students can’t check attendance for each other.

Attendance checking with camera image recognition: the accuracy of current methods can be up to 99.4% correct. Any remaining anomaly can be checked by hand if needed.

**5. Performance**

QR code method: the lightning QR code scan takes only a few second to scan the QR code, and connecting to the network and check the attendance only takes less than 5 seconds because very little network traffic is needed.

Image recognition method: using GTX 1050Ti 4GB, the machine learning model can detect and classify a face in 5 seconds.

**6. Supportability**

None.

**7. Security**

This subsection documents the security requirements that specify the extent to which the Automatic Attendance Checking System shall protect itself and its sensitive data and communications from accidental, malicious, or unauthorized access, use, modification, destruction, or disclosure.

**7.1 Privacy Requirements**

The following privacy requirements specify the extent to which the AACS shall support anonymity and keep its confidential data and communications private from unauthorized individuals and programs.

1. Password Information.

- Password

- Password Confirmation

**8. Design Constraints**

The section documents the major architecture, design, and implementation constraints on the

system.

**8.1 Business Rules**

The subsection documents all required data design constraints.

**8.2 Data and Content Constraints**

The subsection documents all required data constraints.

**8.3 Databases**

The subsection documents all required design constraints regarding the use of databases.

**●** SYSDC-DB-1) Linked to the university database

**8.4 Hardware Constraints**

The subsection documents all required constraints associated with minimum or actual hardware.

**●** SYSDC-HC-1) Require a laptop with NVIDIA GTX 1050Ti 4GB graphic card.

**●** SYSDC-HC-2) Each student must have a smartphone which capable of taking photo with its own camera.

**8.5 High-Level Languages**

The subsection documents all required design constraints associated with the use of high-level programming languages.

**●** SYSDC-HLL-1) Application shall be written in Java.