
Automated Security Light Motion Sensor with SMS Notification



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ABSTRACT: The purpose of this study was to assist the faculty of the Institute of Information and Computer Studies in securing their records and personal devices that were left at the office. This study made use of developmental-descriptive research. In software development, the Rapid Application Development (RAD) model was used. The system was developed using the n-tier architectural design. Because the developed system will be deployed in the IICS Building, the concerned faculty can be added as secondary users of the system so that they, along with the guard-on-duty, receive notification whenever there is motion detected during the night. A short message service (SMS) support is essential as a communication tool in notifying the room custodian and security guard-on-duty.

As part of the study, a total of 54 people were polled. The data were gathered using survey questionnaires that primarily solicited feedback from respondents using a survey instrument created by the researcher. To describe the levels of usability and performance efficiency, the mean statistic was used. According to the findings, the developed system was described as "Very good" in terms of suitability and accuracy, and its level of performance and efficiency in terms of time behavior and resource utilization was also described as "Very Good." The usability of the developed system's features was operational and accessible with effectiveness and efficiency, and the performance was appropriate to the user's needs.

KEYWORDS: SMS, system, automated security light motion, room custodian

1. INTRODUCTION

Surveillance, which ranges from households to large industries and even schools, plays an important part in ensuring our safety. Burglary and theft have always been a source of distress (Fitcher, 2017). Personal safety refers to the monitoring of people's moving information, such as actions and behavior, in order to protect, regulate, and influence personal data at school, particularly in the administration building or even in the administrators' office. Surveillance refers to the use of electronic devices such as CCTV cameras to observe from a distance.

In connection with this, the researcher wishes to create an Automated Security Light Motion Sensor with SMS notification in order to provide the Institute of Information and Computer Studies faculty with a room for the security of their files, records, and personal facilities. Furthermore, a Short Message Service Support (SMS) will be used, which will play an important role as a communication tool, sending SMS notifications to the security guard and the administrator whenever motion and intruders are detected during the night.

2. METHODOLOGY

This study is descriptive and developmental method of Research. It describes the used in development and evaluating the developed system.

Descriptive research is a study designed to depict the participants in an accurate way, describing people who takes part in the study. In this study this was applied by conducting a brief interview with the respondents and gave them ISO/IEC 25010 and McCall's questionnaire software characteristics which tested and evaluated the system and.

A. Software Development Life Cycle (SDLC)

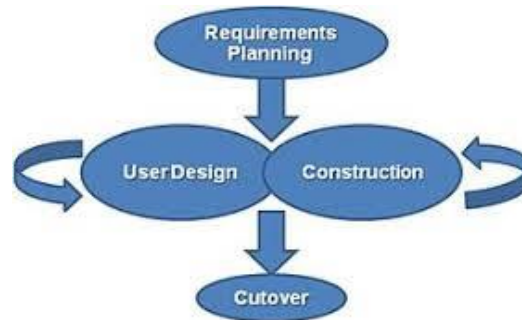
The researcher used the Rapid Application Development (RAD) model allowing usable systems to be produced in a short time frame.

The RAD paradigm begins with a thorough understanding and definition of the client's business needs and progresses through four phases: requirements planning, user design, rapid development, and cutover. Early in the project and throughout

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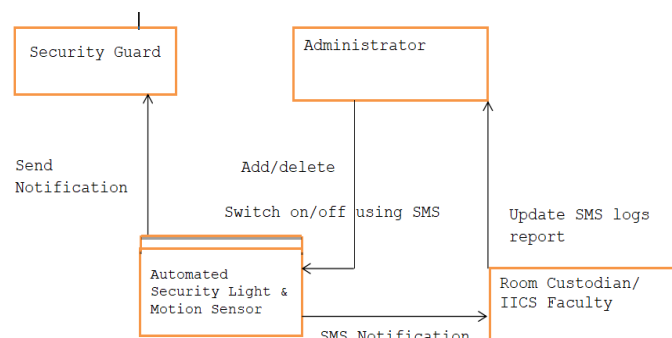
the development process, testing should be included. Throughout these phases, the researcher reviews and updates the project plan on a regular basis, closely monitoring any modification requests. During the completion of each cycle, the project's risks must be assessed, and the current state of the project must be reviewed.

The Rapid Application Development Model

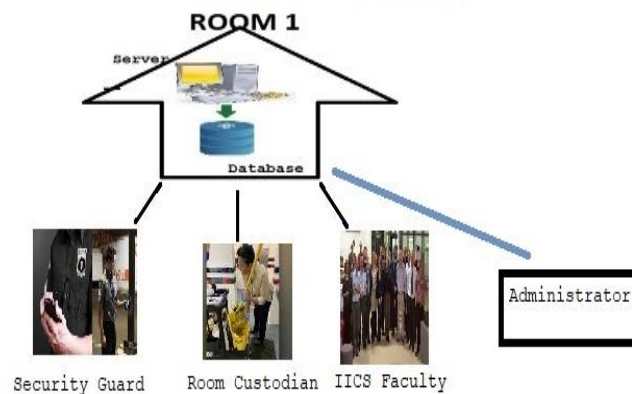


B. System Prototype User Design (UD) Phase

- Process Model



- Physical Network Topology



C. Testing and Evaluation and System Documents.

The development of the system prototype will not be complete without testing the execution efficiency and quality of the system to meet the end user requirements. In this task, the researchers will perform testing using a miniature doll house with light and motion sensor attached to arduino device. As the miniature opens the door or the device detects any motion the proposed system simultaneously sends notification to the phone numbers stored in the database.

2.1 Participants of the study

The first group was composed of five (5) IT experts. The second set of evaluators was composed of students and security guard. With a total of forty nine (49) students from Information Technology Department and one (1) Security Guard from NIPSC Main Campus. The researchers used the mean formula in identifying the sample size of the study in the IT Department and to the Security Guard in NIPSC Main campus.

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2.2 Research Instrument

The first group of experts was given questionnaire based from McCall's software evaluation criteria to evaluate the system. The second group of people was also given questionnaire based on the ISO/IEC 25010 standard that described a software quality model.

2.3 Validity and Reliability

Five (5) experts coming from the Institute of Information in Computer Studies which helped the researcher identify if it meets the users requirement and satisfaction, the user interface design, as well as to test the systems reliability, efficiency, and functionality. This group of experts was given questionnaire based from McCall's software evaluation criteria to evaluate the system.

3. RESULTS AND DISCUSSION

The table reflects the mean score on determining the level of usability of the developed system among the identified users group.

Table 1. Level of Usability of the Developed System in terms of Accurateness and Suitability.

Implementation Indicators	Mean	Verbal Interpretation
Suitability	4.712	Very Good
Accurateness	4.748	Very Good

The results showed that the Automated Security Light Motion Sensor with SMS Notification, for the usability characteristics in terms of suitability had a mean value of 4.71 which was verbally interpreted as "Very Good". The accurateness had a mean value computed as 4.74 which was interpreted as "Very Good".

Table 2. Level of Performance Efficiency of the Developed System in terms of Time Behavior and Resource Utilization to Meet Requirements.

Implementation Indicators	Mean	Verbal Interpretation
Time Behavior	4.72	Very Good
Resource Utilization	4.74	Very Good

The table presented the mean for the performance efficiency of the Automated Security Light Motion Sensor with SMS notification in terms of time behavior and resource utilization. The results showed that the Automated Security Light Motion Sensor with SMS Notification in terms of time behavior had a mean value of 4.72 which was interpreted as "Excellent" while for resource utilization it yielded a mean value of 4.74 which was being interpreted as "Excellent".

IV. CONCLUSION

The following conclusions were reached based on the study's findings:

1. The usability suitability, the Automated Security Light Motion Sensor with SMS notification was verbally interpreted as very good. In terms of accuracy and completeness, the interpretation was rated as very good. These findings indicated that when the Automated Security Light Motion Sensor with SMS notification was implemented, it possessed a high level of usability, allowing users to easily use the developed system due to its simple yet high performing functions. Because the system's interfaces were presented using a graphical user interface (GUI), it could be operated by someone with little computer knowledge. The Automated Security Light Motion Sensor with SMS notification has a high level of usability, according to both system Administration and users.
2. The performance efficiency of the Automated Security Light Motion Sensor with SMS notification was found to be very good in terms of time behavior, and it was also recognized as very good in terms of reliability. According to the findings, when evaluating the performance of the Automated Security Light Motion Sensor with SMS notification, respondents thought the response time and reliability, as well as the SMS notification, were impressive. It also provided precise results and allowed them to facilitate the completion of specific tasks they wanted the system to perform. In terms of the proposed system's reliability, however, respondents agreed that it was always functional, operational, and reliable.

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