

BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

ANDROID BASED EMPLOYEE MONITORING SYSTEM

BY

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**A PROJECT REPORT SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF BACHELOR OF COMPUTER ENGINEERING OF
BUSITEMA UNIVERSITY**

DECLARATION

I **KARASIRA COSMAS BU/UP/2014/306** declare that this project report is original and has not been published or submitted before to any university or higher institution of learning.

Signature: .....

Date..... 05/06/2018

Bachelor of Computer Engineering

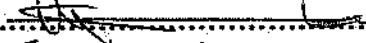
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APPROVAL

This is to certify that the project under title '*Android based employee monitoring system*' has been done under my supervision and is now ready for examination.

Signature

Date: 05/06/2018

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DEDICATION

I dedicate this project report to my beloved mother **Mrs. Joseline Karasira**, my brother **Richard** and my sisters **Doreen** and **Monic**.

ACKNOWLEDGEMENT

I acknowledge my supervisor Dr. Semwogerere Twaibu, who has been a vital requirement in helping me to accomplish this project. Also to all the department lecturers who have always given me time for consultation regardless of whether they are my supervisors or not, Finally to my fellow students who offered me help in all forms, May God bless you.

LIST OF ABBREVIATIONS

OS - Operating system

AOSP - Android open source project

APK - Android application package

URL - Uniform resource locator

HTTP - Hypertext transfer protocol

ID - identification

GPS - Global Positioning System

MIT - Massachusetts Institute of Technology

App - Application

Wi-Fi - Wireless fidelity

RFID - Radio frequency identification

GPRS - General packet radio service

3G - 3 generation

SMS - Short message service

2D/3D - 2 direction/ 3 direction

NAVSTAR - Navigation satellite timing and ranging system

AGPS - Assisted Global positioning system

GSM - Global system for mobile communication

API - Application program interface

GUI - Graphical user interface

PC - Personal computer

CPU - Central processing unit

JRE - Java runtime environment

SDK - software development kit

JDK - Java development kit

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ABSTRACT

This system is a combination of web as well as android application, where the user will be using the android application and admin as well as employer will work with web application. This application is meant for field work Employers. Most companies deploy employees to work in fields far away from the main offices. An employee who is out of office premises is hard to monitor and monitoring becomes extremely expensive, a company is at a risk of losing confidential information and unproductivity of unethical employees.

This system was developed to meet the main objective of an employer/manager being able to easily assess his employees' call logs, message details, GPS location and browser histories instantly on the web page.

This project utilizes the basic concepts of wireless communication technology between the employees' app and the employer's website.

During my study, the main pushing factors for this system was the problem of employees missing work and claiming to have worked, on top of spending most of the entire working time on their phones doing unrelated activities. This system will also reduce the chances of an employee misusing company resources and sharing the company's confidential information.

It was implemented using JAVA programming language, and the result was stored in SQLite database. An object-Oriented Analysis and design (OOAD) approach was adopted which consist of a well-planned iterative steps. Data was collected using document analysis and field Methods and the application of relevant analytical methods like bar-charts were used to interpret the facts collected. The developed system is able to increase productivity, reduce on costs and ease instant access to employee attendance record.

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CHAPTER 1

1.0 INTRODUCTION

This chapter comprises of background, problem statement, justification and objective of the study.

1.1 BACKGROUND

Use of Smartphone is a very effective tool for increasing computational power and security along with search and rescue. In some companies office cell phones are provided to employee[1] and employees do lots of activities which are unknown to manager and it may affect in the growth of company. "Android employee monitoring System with GPS and image capture" [2] is an android application that logs the data on the server automatically. This application is helpful for the managers to track their employee's phone activities and their geographical locations at any time. The proposed employee monitoring system adopts[3] 3G communication network function between Android mobile terminals, and collects user's information using Global positioning system. (GPS). This system is divided into two parts which are the tracking part and monitoring part. For tracking part, consists of GPS and android mobile phone (employee's) for navigation purpose[4]. The GPS will provide information about the location of the employee. After receiving the location data from web server, the data is monitored by manager's computer. The location of the user can be viewed on [5], it can be based on latitude and longitude.

In Existing Systems, Location of employee is to follow the employee and observe their activities. It gives accurate position of employee[6] but however it's hectic and time consuming.

Employee Monitoring can be used to monitor the safety and productivity of the employees but it also may help businesses financially. From the dishonest unethical employee who steals time and money from the business to the redefining of unprofitable processes in monitoring employee actions, employee monitoring allows for the growth of financial profits from a small investment. The monitoring of employees can help in the protection of employees and it can help as protection in litigation by employees for job related issues such as failing to perform, illegal activities and harassment claims. According to the American Management Association almost

REFERENCE

1. Akhila, K., et al., *A Novel Approach of Mobile Based Student Attendance Tracking System Using Android Application*. International Journal of Engineering Research & Technology (IJERT) Vol, 2013. **2**: p. 2278-0181.
2. Sultana, S., A. Enayet, and I.J. Mouri, *A Smart, Location Based Time and Attendance Tracking System Using Android Application*. International Journal of Computer Science, Engineering and Information Technology (IJCEIT), 2015. **5**(1): p. 1-5.
3. Barrera, D., et al. *A methodology for empirical analysis of permission-based security models and its application to android*. in *Proceedings of the 17th ACM conference on Computer and communications security*. 2010. ACM.
4. Enck, W., et al., *TaintDroid: an information-flow tracking system for realtime privacy monitoring on smartphones*. ACM Transactions on Computer Systems (TOCS), 2014. **32**(2): p. 5.
5. Miller, C.C., *A beast in the field: The Google Maps mashup as GIS/2*. Cartographica: The International Journal for Geographic Information and Geovisualization, 2006. **41**(3): p. 187-199.
6. Haney, R.D., *Location sharing and tracking using mobile phones or other wireless devices*. 2013, Google Patents.
7. Sprague, R., *Orwell was an Optimist: the Evolution of Privacy in the United States and its De-evolution for American Employees*. J. Marshall L. Rev., 2008. **42**: p. 83.
8. Attwell, G., *Personal Learning Environments-the future of eLearning?* Elearning papers, 2007. **2**(1): p. 1-8.

9. Skeels, M.M. and J. Grudin. *When social networks cross boundaries: a case study of workplace use of facebook and linkedin*. in *Proceedings of the ACM 2009 international conference on Supporting group work*. 2009. ACM.
10. Legris, P., J. Ingham, and P. Collerette, *Why do people use information technology? A critical review of the technology acceptance model*. *Information & management*, 2003. **40**(3): p. 191-204.
11. Karunarathna, A., *Payroll Management System*. 2015.
12. Sheha, M.A., et al., *Method and system for collecting, synchronizing, and reporting telecommunication call events*. 2016, Google Patents.
13. Chen, I.J. and K. Popovich, *Understanding customer relationship management (CRM) People, process and technology*. *Business process management journal*, 2003. **9**(5): p. 672-688.
14. Huh, J.-H., *Design and android application for monitoring system using PLC for ICT-Integrated Fish Farm*, in *Advanced Multimedia and Ubiquitous Engineering*. 2016, Springer. p. 617-625.
15. Hackston, D. and M.J. Milne, *Some determinants of social and environmental disclosures in New Zealand companies*. *Accounting, Auditing & Accountability Journal*, 1996. **9**(1): p. 77-108.
16. Rogers, R., et al., *Android application development: Programming with the Google SDK*. 2009: O'Reilly Media, Inc.
17. Gandhewar, N. and R. Sheikhi, *Google Android: An emerging software platform for mobile devices*. *International Journal on Computer Science and Engineering*, 2010. **1**(1): p. 12-17.
18. Chang, F.-R., et al., *Global positioning system (GPS) Compass*. 1998, Google Patents.
19. Misra, P. and P. Enge, *Global positioning system: Signals, measurements and performance second edition*. Massachusetts: Ganga-Jamuna Press, 2006.

20. Yao, S.B., K.S. Das, and T.J. Teorey, *A dynamic database reorganization algorithm*. ACM Transactions on Database Systems (TODS), 1976. 1(2): p. 159-174.
21. Howse, D., *Greenwich Time and the Discovery of the Longitude*. Oxford; New York: Oxford University Press, 1980., 1980.
22. Karasek Jr, R.A., *Job demands, job decision latitude, and mental strain: Implications for job redesign*. Administrative science quarterly, 1979: p. 285-308.
23. Zuker, M., *Mfold web server for nucleic acid folding and hybridization prediction*. Nucleic acids research, 2003. 31(13): p. 3406-3415.

