PERSONAL HOME SURVEILLANCE SYSTEM

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2009

PERSONAL HOME SURVEILLANCE SYSTEM

A thesis submitted to college Arts & Sciences

in partial fulfilment of the requirement for the degree

Master of Science (Information Technology)

University of Utara Malaysia

By

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ABSTRACT

A personal home surveillance system(PHSS) is a low cost web based security system that makes it possible for the users to monitor the events that is happening in their homes while they are away. This study has identified a means of developing a home surveillance system at that is not expensive, but at the same time has the necessary features that are needed to perform optimally. Necessary criteria were used to select the most important features of the surveillance system, and a system development method was adopted to develop the prototype of the system. The usability of the prototype was tested and evaluated using the USE usability test and the results were discussed.

ACKNOWLEDGEMENTS

"In The Name of Allah the Most Gracious and Most Merciful"

First and foremost, all praise to ALLAH (SWT), the Almighty, and the most gracious and most merciful, without whose divine guidance and blessing, I would not have been able to even begin, let alone complete, such a complex and confounding undertaking.

I would like to express my deepest appreciation to a number of people by giving up their valuable time and energy, and their precious thoughts and comments. I owe my heartfelt thanks to my supervisor Prof. Madya Abdul Nasir bin Zulkifli for his advice, knowledge and word of encouragement during this study. I feel much honoured to extend my thanks to my evaluator Mohd. Nizam bin Saad during defense for critical ideas and suggestions. I'll always be thankful to all, Terima kasih!

Special thanks to all my lecturers Dr. Nor Laily binti Hashim, Dr. Hazlina Bt Moh, Dr. Wan Rozaini Bt Sheik Osman, Dr. Norita Md Norwawi, Dr. Osman Bin Ghazali, Zhamri bin Che Ani and other UUM staff.

I must acknowledge the immeasurable contributions of my friends and colleagues who have shown great love and care during my study especially Taha, Ali, Moftah, Ackrm and Riaa, big Thank you!

I would also like to say a big thank you to my beloved family. I am indeed grateful to my parents who have always been there for me in life. May Allah reward your efforts! To my brothers and sister, you guys are great, I love you all.

DEDICATION

A very special dedication if this piece of myself to the two people who meant the most to me (my great father and my lovely mom).To my mom, who was so amazed at the way of my life turned out. To my father, who was my biggest cheerleader. Who, over the years, modeled compassion and caring of others. Who was always there with the advice when I needed it and sometimes I even took it? Who worked hard, to make sure me and support me, even when he may not agreed with the directions I took. I was richly blessed with the two of you in my life. Special thanks to my brothers and my sister, whom supporting and caring me all the time and never hide any efforts to encourage and consolidate my study.

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LIST OF ABBREVIATION

Personal Home Surveillance System	PHSS
Java Server Pages	JSP
Video surveillance system and closed circuit television	CCTV
Home security system on an intelligent network	HSSIN.
Local Area Network	LAN
Community Antenna Television	CATV
Frequently lost objects	FLO
Internet Service Providers	ISP
Hypertext Transfer Protocol	HTTP
Hyper Text Mark up Language	HTML
Wireless sensor networks	WSN
Open service gateway initiative	OSG
Home security system on an intelligent network	HSSIN.
Transmission Control Protocol Internet Protocol	TCP/IP.
File Transfer Protocol	FTP
Unified Modelling Language	UML
Alternative flow	A
Exceptional Flow	E

CHAPTER ONE

INTRODUCTION

The home video surveillance system is a system that makes it possible for house owners and the security agents to combat crime. Homemade video surveillance is a system that is made to display different sections of the house. In a place where an intruder visits a home leaving threats and doing various vicious activities, the home made video surveillance assist in making a facial recognition of the person for the law enforcement to apprehend. Therefore the security system is made for the convenience and safety of the occupants of a building (Zhao &Ye, 2007). In the early 80's till late 90's, security systems were restricted to the business office environment, government houses, banks, financial institutes, jewellery stores, museums, art galleries and the houses of the rich and affluence. This is because these are the places that are regarded as places that needs high security, also the high cost of the equipments used and the need for highly skilled security professionals for installing the security system makes it more difficult to extend to other areas.

A low cost personal home surveillance system is an application that assists users by displaying the events that is happening in their homes while they are away. The systems have the ability sending alerts to the users irrespective of the distance. The entry of the new millennium brought about a lot of ingenious innovations and thus many open source applications has been developed and made for public use. These have made the cost of

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REFERENCES

Baharom , A.H. and Habibullah, M, S. (2009). Crime and Income Inequality: The Case of Malaysia. *Journal of Politics and Law Vol2.No 1 March, 2009*

Bellazzi, R., Montani S,Riva A, and Stefanelli M. (2001). Web-based telemedicine systems for home-care: technical issues and experiences. *A journal of Computer Methods and Programs in Biomedicine Vol.64 pp. 175–187.*

Coulouris, G.F and Dollimore T. (2005). *Distributed Systems Concepts and Design 3rd Edition Kindberg, Addison-Wesley.*

Cucchiara, R.(2005).Multimedia Surveillance Systems. In proceeding at the VSSN conference, November 11, 2005, Singapore.

Chassiakos, A.P. and Sakellaropoulos, S.P. (2008). A web-based system for managing construction information. A journal of Advances in Engineering Software Vol .9 pp 865–876. Retrieved from WWW.ELSEVIER.COM/LOCATE/ADVENGSOFT.

Detmold,H.,Dick,A.,Falkner,K, Munro, D. S., Hengel, Anton van den and Morrison, R. (2006). Scalable Surveillance Software Architecture .Proceedings of the IEEE International Conference on Video and Signal Based Surveillance. Retrieved from ACM library on 22/09/2009.

Hagiwara,K., Chigira',Y.,Yoshiura,N. &Fujii'.,Y (2004). Proposal for a world wide home security system using PC-cameras : the e-Vigilante Network Project. In proceeding at the SICE Annual Conference in Sapporo, August 44,2004, Hokkaido Institute of 'Fecnology, Japan

Johnson, J. (2006). The Advantages of Digital Video Surveillance. Retrieved from http://ezinearticles.com/?The-Advantages-Of-Digital-Video-Surveillance&id=157371

Kidd,Cory D., Orr,R., Abowd,G.D.,Atkeson,C.G., Essa,I.A., MacIntyre,B Mynatt,E., Starner,T.E and Newstetter, W.(1999). The Aware Home: A Living Laboratory for Ubiquitous Computing Research. A paper in CoBuild’99, LNCS 1670, pp. 191-198, 1999 Springer-Verlag Berlin Heidelberg 1999.

Koay.S.Y,Ramli,A.R.,Lew,Y.P.,Prakash,V and Ali R.(2002). A Motion Region Estimation For Web Camera Application. A paper presented at the student conference on research and development, Shah Alam Malaysia.

Koutsiaa,A., Semertzidisa,T.,Dimitropoulosa,K.,Grammalidisa,N and Georgouleasb,K.(2008) Automated Visual Traffic Monitoring And Surveillance Through A Network Of Distributed Units. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences. Vol. XXXVII. Part B3b. Beijing 2008

Lam, K-Y and Chiu, C. K. H.(2004). Adaptive Visual Object Surveillance with Continuously Moving Panning Camera. In proceeding at the VSSN conference, New York, USA.

Liang,N.S.,Fu, L.C and Wu,C.L "An integrated, flexible, and Internet-based control architecture for home automation system in the Internet era. Proceedings ICRA '02. IEEE International Conference on Robotics and Automation, Vol. 2, pp. 1101 -1106, 2002

Liebau,N.C., Heckmann, O., Hubbertz,I. and Steinmetz,R (2005). A Peer-to-Peer Webcam Network .A paper presented at GI-Proceedings.61-19.Germany.

Lund, A.M. (2001) Measuring Usability with the USE Questionnaire. STC Usability SIG Newsletter. Retrieved from WWW.HCIBIB.ORG on 22/09/2009.

Maeda, F, Asada, A., Kuramoto, K., Kurashige, Y., Nanri, M., Kawashima, Y., Imai, R. and Hantani K. (2007). Development of diver detection and sensor integration for wharf surveillance software. A paper presented at Underwater Technology And Workshop On Scientific Use Of Submarine Cables And Related Technologies, 2007symposium**.** Retrieved from IEEE library pg 133-141.

Moeslund,T and Granum E. (2001). A survey of computer vision based human motion capture.Computer vision and Image understanding. Vol. 81.No 3,pp.231-268,March 2001.

Nunes, J. C. and Delgado, J. C. M. (2000). An Internet application for home automation. A paper Electrotechnical Conference, 2000. MELECON 10th Mediterranean, Vol: 1, pp. 298 - 301, 2000.

Nunmaker, J.F JR.,Purdin, T.D.M. (2001). Systems development in Information systems Research. Journal of Infornmation Systems winter 2000-2001 Vol 7. No3pp. 89-106.

Septor, K.(2004) Creating A Video Device Application. Student Poster Abstract. A paper at the Consortium for Computing Sciences in Colleges. Advisor: Dr. Dale Skrien. Colby College

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Sidhu, A.S. (2005). The rise of crime in Malaysia: An academic and Statistical analysia. Journal of the Kuala Lumpur Royal Malaysian Police College. No 4,2005. Retrieved from WWW.MPK.RMP.GOV.MY/JURNAL/2005/RISEOFCRIME.PDF on 22Aug 2009.

Takabayashi, K.,Fujita,N., Nomura,Y., Amada, Y., Osaki,T., Sugahara, K. and Konishi, R.(2002). Construction of the home security system using the Internet technology. PROCEEDINGS OF THE 41ST SICE ANNUAL CONFERENCE, retrieved from IEEE library Vol: 1, pg 461- 465 vol.1

Tsai,S.M., Yang,P.C., Wu, S.S. and Sun, S.S.(1998) A Service Of Home Security System On Intelligent Network .A journal of IEEE Transactions on Consumer Electronics, Vol. 44, No. 4, NOVEMBER 1998

Tseng Yu-Chee, You-Chiun Wang, Kai-Yang Cheng, Yao-Yu Hsieh.(2005). "iMouse: An Integrated Mobile Surveillance and Wireless Sensor System. In Proceedings at MSWiM'05, October 10–13, 2005, Montreal, Quebec, Canada.

Tseng Yu-Chee, You-Chiun Wang, Kai-Yang Cheng, Yao-Yu Hsieh.(2007). "iMouse: An Integrated Mobile Surveillance and Wireless Sensor System," IEEE Computer magazine, vol. 40, no. 6, pp. 60-66, June 2007, doi:10.1109/MC.2007.211

Verkest, D., Kunkel,J., Schirrmeister,F. (2000). System Level Design Using C++. Proceedings of design, Automation and Test in Europe conference, Paris France,pp. 74-81.March 2000.

Verkest, D., Desmet D.,Avasare,P.,Coene, P.,Decneut, S.,Hendrickx, F.,Marescaux,T.,Mignolet,J-Y and Pasko, R. (2001). Design of a Secure,Intelligent and Reconfigurable WebCam Using a C Based System Design Flow. Proceeding at the Signals, Systems and Computers Conference.

Volner, R. (2001).Home security system and CATV. A paper at the IEEE 35th International Carnahan Conference on Security Technology Volume , Issue , Oct 2001 Page(s):293 - 30

Wu,B.F., Peng, H.Y. and Chen.C.J. (2006) A Practical Home Security System via Mobile Phones. Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics, Istanbul, Turkey, May 27-29, 2006 (pp299-304)

Yoshiura,N,Fujii, Y. and Naoya Ohta.(2005).Using the Security Camera System Based on Individually Maintained Computers for Homeland Security: The e-JIKEI Network Project. A paper at IMTC 2005 – Instrumentation and Measurement Technology Conference, Ottawa, Canada, 17-19 May 2005.

Zhao, Y. and Ye, Z.(2007). A Low Cost GSM/GPRS Based Wireless Home Security System. A paper in IEEE Transactions on Consumer Electronics, Vol. 54, No. 2, MAY 2008.