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Time Synchronization in Wireless Sensor Networks: A Survey

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ABSTRACT

Time synchronization is a critical piece of infrastructure for any distributed system. Wireless sensor networks have emerged as an important and promising research area in the recent years. Time synchronization is important for many sensor network applications that require very precise mapping of gathered sensor data with the time of the events, for example, in tracking and vehicular surveillance. It also plays an important role in energy conservation in MAC layer protocols. The paper studies different existing methods, protocols, significant time parameters (clock drift, clock speed, synchronization errors, and topologies) to achieve accurate synchronization in a sensor network. The studied Synchronization protocols include conventional time sync protocols (RBS, Timing-sync Protocol for Sensor Networks -TPSN, FTSP), and other application specific approaches such as all node-based approach, a diffusion-based method and group sync approaches aiming at providing network-wide time. The goal for writing this paper is to study most common existing time synchronization approaches and stress the need of a new class of secure-time synchronization protocol that is scalable, topology independent, fast convergent, energy efficient, less latent and less application dependent in a heterogeneous hostile environment. Our survey provides a valuable framework by which protocol designers can compare new and existing synchronization protocols from various metric discussed in the paper. So, we are hopeful that this paper will serve a complete one-stop investigation to study the characteristics of existing time synchronization protocols and its implementation mechanism in a Sensor network environment.

KEYWORDS

Secure-time, Synchronization, MAC Layer

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REFERENCES

- [1] S. Ganeriwal, M. Srivastava, "[Timing-sync Protocol for Sensor Networks \(TPSN\) on Berkeley Motes](#)," NESL, 2003
- [2] Jeremy Elson, Lewis Girod, and Deborah Estrin. Fine-grained network time synchronization using reference broadcasts. In ACM OSDI 2002, Boston, MA, December 2002.
- [3] Kay Romer. Time synchronization in ad hoc networks. In ACM MobiHoc, Long Beach, CA, Oct. 2001.
- [4] S. Ganeriwal, R. Kumar, M. Srivastava. "[Timing Sync Protocol for Sensor Networks](#)," ACM SenSys '03, 2003.
- [5] Chipcon CC1000 Radio Datasheet, http://www.chipcon.com/files/CC1000_Data_Sheet_2_1.pdf
- [6] T Robert Akl Yanos Saravanos, The 18th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'07) Hybrid Energy – aware Synchronization algorithm in Wireless sensor networks, 2007.
- [7]. J.V. Greunen, and J. Rabaey, "Lightweight Time Synchronization for Sensor Networks", Proceedings of the 2nd ACM International Conference on Wireless Sensor Networks and Applications (WSNA), San Diego, CA, September 2003.
- [8] Maroti, M., Kusy, B., Simon, G., and Ledeczi, A., The Flooding Time Synchronization Protocol, Proc. of the 2nd ACN Conf. on Embedded Networked Sensor Systems (SenSys), Baltimore, Maryland, 2004, pp. 39–49

Content Based Video Retrieval Systems

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ABSTRACT

With the development of multimedia data types and available bandwidth there is huge demand of video retrieval systems, as users shift from text based retrieval systems to content based retrieval systems. Selection of extracted features play an important role in content based video retrieval regardless of video attributes being under consideration. These features are intended for selecting, indexing and ranking according to their potential interest to the user. Good features selection also allows the time and space costs of the retrieval process to be reduced. This survey reviews the interesting features that can be extracted from video data for indexing and retrieval along with similarity measurement methods. We also identify present research issues in area of content based video retrieval systems.

KEYWORDS

CBVR, Feature Extraction, Video Indexing, Video Retrieval

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REFERENCES

- [1] Umer Rashid, Iftikhar Azim Niaz, Muhammad Afzal Bhatti, (2009) "[M3L: Architecture for Multimedia Information Retrieval](#)", Proc. Of 2009 Sixth International Conference on Information Technology: New Generations, pp. 1067-1072.
- [2] Ramesh Jain, (2008) "[EventWeb: Events and Experiences in Human Centered Computing](#)", (Cover Feature) in IEEE Computer, February 2008.
- [3] M. S. Kankanhalli and Y. Rui, (2008) "[Application Potential of Multimedia Information Retrieval](#)", Proc. IEE, April 2008.
- [4] R Datta, D Joshi, J Li, and J. Wang, (2008) "[Image Retrieval: Ideas, Influences, and Trends of theNew Age](#)", ACM Computing Surveys, VOI 40, No. 2, April 2008.
- [5] P. Sinha and Ramesh Jain,(2008) "[Concept Annotation and Search Space Decrement of Digital Photos using Optical Context Information](#)", In Proceedings of SPIE, Multimedia content Access: Algorithms and System.
- [6] B. Gong and R. Jain,(2008) "[Hierarchical photo stream segmentation using context](#)", In Proceedings of SPIE, Multimedia content Access: Algorithms and System.
- [7] G. Utz Westermann and Ramesh Jain,(2007)" [Towards a Common Event Model for Multimedia Applications](#)", in IEEE Multimedia.
- [8] A. Scherp and R. Jain,(2007) "[Towards an ecosystem for semantics](#)", In Proceedings of Workshop on Many faces of Multimedia Semantics, at ACM Multimedia 2007, pp. 3-12.
- [9] Hampapur, A. Borger, S. Brown, L. Carlson, C. Connell, J. Lu, M. Senior, A. Reddy, V. Shu, C. Tian, Y. (2007), " S3: The IBM Smart Surveillance System: From Transactional Systems to Observational Systems," in Proc. Acoustics, Speech and Signal Processing.
- [10] B. V. Patel, B. B. Meshram (2007), "[Retrieving and Summarizing Images from PDF Documents](#)",International Conference on Soft computing and Intelligent Systems(ICSCSI-07), Jabalpur, India.
- [11] B Liu, A. Gupta, and R. Jain (2007), "[MEDSMAN: a live multimedia stream querying system](#)",Int. Journal of Multimedia Tools and Applications.
- [12] A. Del Bimbo and P. Pala (2006), Content-Based Retrieval of 3D Models, ACM Transactions on Multimedia Computing, Communications and Applications, Vol. 2, No. 1, pp. 20-43.
- [13] M. Lew, N. Sebe, C Djerba, and R. Jain (2006), "[Content-based Multimedia InformationRetrieval: State of the Art and Challenges](#)", ACM TOMCAPP vol.2, No. 1, pp. 1-19.
- [14] Milind Naphade , John R. Smith , Jelena Tescic , Shih-Fu Chang , Winston Hsu , Lyndon Kennedy , Alexander Hauptmann , Jon Curtis (2006), "[Large-Scale Concept Ontology for Multimedia](#)," IEEE Multimedia, April 2006.
- [15] Keiji Yanai, Kobus Barnard (2006), "[Finding Visual Concepts by Web Image Mining](#)", in proc. Of WWW 2006, Edinburgh, Scotland.

Real Time Hand Gesture Recognition System for Dynamic Applications

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ABSTRACT

Virtual environments have always been considered as a means for more visceral and efficient human computer interaction by a diversified range of applications. The spectrum of applications includes analysis of complex scientific data, medical training, military simulation, phobia therapy and virtual prototyping. Evolution of ubiquitous computing, current user interaction approaches with keyboard, mouse and pen are not sufficient for the still widening spectrum of Human computer interaction. Gloves and sensor based trackers are unwieldy, constraining and uncomfortable to use. Due to the limitation of these devices the useable command set based diligences is also limited. Direct use of hands as an input device is an innovative method for providing natural Human Computer Interaction which has its inheritance from textbased interfaces through 2D graphical-based interfaces, multimedia-supported interfaces, to full-fledged multi-participant Virtual Environment (VE) systems. Conceiving a future era of human-computer interaction with the implementations of 3D application where the user may be able to move and rotate objects simply by moving and rotating his hand – all without help of any input device. The research effort centralizes on the efforts of implementing an application that employs computer vision algorithms and gesture recognition techniques which in turn results in developing a low cost interface device for interacting with objects in virtual environment using hand gestures. The prototype architecture of the application comprises of a central computational module that applies the camshift technique for tracking of hands and its gestures. Haar like technique has been utilized as a classifier that is creditworthy for locating hand position and classifying gesture. The patterning of gestures has been done for recognition by mapping the number of defects that is formed in the hand with the assigned gestures. The virtual objects are produced using Open GL library. This hand gesture recognition technique aims to substitute the use of mouse for interaction with the virtual objects. This will be useful to promote controlling applications like virtual games, browsing images etc in virtual environment using hand gestures.

KEYWORDS Hand gesture, virtual objects, virtual environment, tracking, recognition.

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REFERENCES

- [1] Conic, N., Cerseato, P., De & Natale, F. G. B., (2007), "[Natural Human- Machine Interface using an Interactive Virtual Blackboard](#)", In Proceeding of ICIIP 2007, pp.181-184.
- [2] Ismail, N. A., & O'Brien, A., (2008), "[Enabling Multimodal Interaction in Web-Based Personal Digital Photo Browsing](#)", Proceedings of the International Conference on Computer and Communication Engineering , Kuala Lumpur, Malaysia, May 13-15, pp. 907-910.
- [3] Pang, Y. Y., Ismail, N. A., & Gilbert, P. L. S., (2010), "[A Real Time Vision-Based Hand Gesture Interaction](#)", Fourth Asia International Conference on Mathematical Analytical Modelling and Computer Simulation, pp. 237-242.
- [4] Kortum, P., (2008) "[HCI Beyond the GUI: Design for Haptic, Speech, Olfactory, and Other Nontraditional Interfaces](#)" Morgan Kaufmann Publishers, pp. 75-106.
- [5] Viola & Jones, (2001), "[Rapid object detection using boosted cascade of simple features](#)", In Proceedings of Computer Vision and Pattern Recognition, pp. I-511 – I-518.
- [6] Chen, Q., Coredea, M. D., Petriu, E. M., Varkony, A. R., Koczy, I., & Whalen, T.E., (2009), "[Human Computer Interaction for Smart Applications Using Hand Gesture and Facial Expressions](#),"International Journal of Advanced Media and Communication, vol. 3c.1/2, pp. 95-109.
- [7] Jain, G. (2009), "[Vision-Based Hand Gesture Pose Estimation for Mobile Devices](#)", University of Toronto.
- [8] Pavlovic, V., Sharma, R., & Huang, T.S. (1997), "[Visual interpretation of hand gestures for humancomputer interaction: A review.](#)" IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), 7(19):pp. 677–695.
- [9] Marcel, S., Bernier, O., Viallet, J. E., & Collobert, D (2000), "[Hand Gesture Recognition using InputOutput Hidden Markov Models.](#)" In Proc. of the FG'2000 Conference on Automatic Face and Gesture Recognition.
- [10] Rautaray, S.S., & Agrawal, A. (2010), "[A Novel Human Computer Interface Based On Hand Gesture Recognition Using Computer Vision Techniques](#)", In Proceedings of ACM IITM'10, pp.292-296.
- [11] Aran, O., Ari, I., Benoit, F., Campr, A., Carrillo, A. H., Fanard, Akarun, L., Caplier, a., Rombaut, M., & Sankuru, B., (2006) "Sign Language Tutoring Tool", eINTERFACE 2006, The Summer Workshop on Multimodal Interfaces, Croatia.
- [12] Liu, N., & Lovell, B. (2001) "[Mmx-accelerated realtime hand tracking system](#)" In Proceedings of IVCNZ.
- [13] F. Chen, C. Fu, & C. Huang, 2003 , "[Hand gesture recognition using a real-time tracking method and hidden Markov models](#)" Image and Vision Computing, pp. 745-758.
- [14] Lee, C. S., Ghyme, S. W., Park, C. J., Wohn, K., (1998) "[The Control of avatar motion using hand gesture](#)", In Proceeding of Virtual Reality Software and technology (VRST), pp. 59-65.
- [15] Ahn, S. C., Lee, T. S., Kim, I. J., Kwon, Y. M., & Kim, H. G. (2004), "[Computer Vision-Based Interactive Presentation System.](#)" Proceedings of Asian Conference for Computer Vision. International Journal of UbiComp (IJU), Vol.

An Intelligent Driver Assistance System [I-DAS) for Vehicle Safety Modelling using Ontology Approach

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ABSTRACT

This paper proposes an ontology modelling approach for assisting vehicle drivers through safety warning messages during time critical situation. Intelligent Driver Assistance System (I-DAS) is a major component of InVANET[12], which focuses on generating the alert messages based on the context aware parameters such as driving situations, vehicle dynamics, driver activity and environment. I-DAS manages the parameter representation, consistent update /maintenance in XML format while the interpretation of a critical situation is done using ontology modeling. Related safety technologies such as Adaptive Cruise Control, Collision Avoidance System, Lane Departure Warning System, Driver Drowsiness detection system, Parking Assistance System, which generate warnings and alerts to driver continuously, for assistance according to context which is integrated in Vehicle and Vehicle 2 Driver (V2D) communications by DVI(Driver Vehicle Interface) had been applied. The simulation test bed developed using Java framework[21] to generate safety alerts in various driving situations shows the usefulness of this approach. The response time graph for the simulation of context IDAS is depicted and analysed. The effective performance of the driving scenarios in various modes like day and night for single, 2-way and 4-way road scenario for the best, worst and average cases of simulation had been studied. The system works in VANET scenario, which needs to be adaptive for environment changes and to vary according to the context. The presented approach shows the simulation that can be implemented to all vehicles in real time scenario with promising results.

KEYWORDS

Context Awareness, Ontology Modeling, Driver Vehicle Interface(DVI), Driver Assistance System (DAS)

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Volume link:<http://www.airccse.org/journal/iju/vol1.html>

REFERENCES

- [1] Akira Iihoshi, "[Driver Assistance System \(Lane Keep Assist System\)](#)", Presentation to WP-29 ITS Round Table Geneva, 2004.
- [2] Bouquet, Petal, "[Theories and uses of context in knowledge representation and reasoning](#)", Journal of Pragmatics, vol no-335, pg 455-484, 2003.
- [3] Bradley, "[A multidisciplinary model of context to support context-aware computing](#)", HumanComputer Interaction vol 20, pg 403-446, 2005.
- [4] Daniele Bagni, Roberto Marzotto, Paul Zoratti, "[Building Automotive Driver Assistance Algorithms with Xilinx FPGA platforms](#)", Xcell Journal Fourth quarter 2008.
- [5] E.Bekiaris, S.Nikolaou, A.Mousadakou, "[System for effective Assessment of driver vigilance and Warning according to traffic risk Estimation](#)", National Center for Research and Technology, Hellas(CERTH) AWAKE Consortium August 2004.
- [6] Hella KGaA, Hueck & Co, "[Electronics – Driver Assistance Systems](#)", Technical Information, 2005.
- [7] Hella KGaA, Hueck & Co, "[Light – ADILIS Night Vision System](#)", Technical Information, 2007.
- [8] Huei Peng, "[Evaluation of Driver Assistance Systems- A Human Centered Approach](#)", supported by the U.S. Army TARDEC, NSF and the TRW Automotive,2006.
- [9] Jie Sun, Zhao-hui Wu, Gang Pan, "[Context-aware smart car: from model to prototype](#)", Journal of Zhejiang University Science A,10(7):1049-1059, 2009.
- [10] K.Henricksen, J.Indulska. "[Software Engineering Framework for Context-Aware Pervasive Computing](#)", 2nd IEEE Conference on Pervasive Computing and Communications (PerCom), 2004.
- [11] Peter Seiler, Bongsob Song, J.Karl Hedrick, "[Development of a Collision Avoidance System](#)", Society of Automotive Engineers 1998.
- [12] Saravanan K, Arunkumar Thangavelu, Rameshbabu, "[A Middleware Architectural framework for Vehicular Safety over VANET \(InVANET\)](#)", NETCOM 2009, First International Conference on Networks & Communications, pp.277-282, 2009.
- [13] Simone Fuchs, Stefan Rass, Bernhard Lamprecht, Kyandoghere Kyamakya, "[A Model for OntologyBased Scene Description for Context-Aware Driver Assistance Systems](#)", ACM SIGCHI, ICST Canada,2008.
- [14] Simone Fuchs, Stefan Rass, Kyandoghere Kyamak-ya, "[Integration of Ontological Scene Representation and Logic-Based Reasoning for Context-Aware Driver Assistance Systems](#)", Proceedings of the First International DisCoTec Workshop on Context-aware Adaptation Mechanisms for Pervasiveand Ubiquitous Services (CAMPUS 2008),2008.
- [15] T.A.Lasky, K.S. YEN, B.Ravani, "[The advanced snowplow Driver Assistance system](#)" supported by Caltrans New technology and new Program through (AHMCT) program at UC-Devis under IA65X875-TO-96-9,2009.

Practical Attacks on a RFID Authentication Protocol Conforming to EPC C-1 G-2 Standard

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ABSTRACT

Yeh et al. recently have proposed a mutual authentication protocol based on EPC Class-1 Gen.-2 standard [1]. They have claimed that their protocol is secure against adversarial attacks and also provides forward secrecy. In this paper we will show that the proposed protocol does not have proper security features. A powerful and practical attack is presented on this protocol whereby the whole security of the protocol is broken. Furthermore, Yeh et al. protocol does not assure the untraceability and backward untraceability aspects. Namely, all past and next transactions of a compromised tag will be traceable by an adversary.

KEYWORDS

RFID, EPC C-1 G-2 standard, Security, Attacks, Untraceability

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REFERENCES

- [1] Yeh, T.-C., Wang, Y.-J., Kuo, T.-C., Wang, S.-S., "[Securing RFID systems conforming to EPC Class-1 Generation-2 standard](#)", Expert Systems with Applications 37 (2010) 7678–7683
- [2] Transport for London, Oyster card, <http://www.oystercard.co.uk>.
- [3] "[Michelin Embeds RFID Tags in Tires](#)", RFID Journal, <http://www.rfidjournal.com/article/articleview/269/1/1/>. Accessed 17 Jan 2003
- [4] Hoepman, J.-H., Hubbers, E., Jacobs, B., Oostdijk, M., Scherer, R.W., "[Crossing borders: Security and privacy issues of the European e-passport](#)", NAME (IWSEC 2006). LNCS, Springer-Heidelberg, vol. 4266 (2006) 152–167
- [5] E.-C. Australia, "[Access control, sensor control, and trans-ponders](#)", at: http://www.rfid.com.au/rfid_uhf.htm, 2008.
- [6] D. C. Wyld, "[24-Karat protection: RFID and retail jewelry marketing](#)", International Journal of UbiComp (IJU), Vol 1, Num 1, January 2010.
- [7] K. K. Khedo, D. Sathan, R. Elaheebocus, R. K. Subramanian, and S.D.V. Rughooputh, "[Overlapping zone partitioning localization technique for RFID](#)", International Journal of UbiComp (IJU), Vol 1, Num 2, April 2010.
- [8] EPCglobal Inc., <http://www.epcglobalinc.org/>.
- [9] EPCglobal Inc., EPCTM Radio-Frequency Identity Protocols Class-1 Generation-2 UHF RFID Protocols for Communications at 860 MHz – 960 MHz version 1.1.0, Available at [6].
- [10] Lim, C.H., and Kwon, T., "[Strong and robust RFID authentication enabling perfect ownership transfer](#)", In Proceedings of ICICS '06, LNCS 4307 (2006) 1–20
- [11] Van Deursen, T., Radomirovic, S., "[Attacks on RFID protocols](#)", Cryptology ePrint Archive, Report 2008/310, 2008. .
- [12] R. Phan, "[Cryptanalysis of a new ultralightweight RFID authentication protocol-SASI](#)", IEEE Transactions on Dependable and Secure Computing 6(4): Oct.-Dec. (2009) 316–320
- [13] Peris-Lopez, P., Hernandez-Castro, J.C., Estevez-Tapiador, J.M., and Ribagorda, A., "[Vulnerability analysis of RFID protocols for tag ownership transfer](#)", Computer Networks 54 (2010) 1502–1508
- [14] Chien, H., Chen, C., "[Mutual Authentication Protocol for RFID Conforming to EPC Class-1 Generation-2 Standards](#)", Computer Standards & Interfaces, 29 (2007) 254–259
- [15] Han, D., Kwon, D.: Vulnerability of an RFID authentication protocol conforming to EPC Class 1 Generation-2 Standards. Computer Standards & Interfaces 31 (2009) 648–652.
- [16] Fu, J., Wu, C., Chen, X., Fan, R., and Ping, L., "[Scalable pseudo random RFID private mutual authentication](#)", 2nd IEEE International Conference on Computer Engineering and Technology (ICCET). V. 7, pp. 497-500, China, 2010.

Data Storage on a RFID Tag for a Distributed System

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ABSTRACT

RFID tags can store more than just a tag ID. Data on an RFID tag can be updated through local processing. This is in contrast to the EPC global standard of data-on-network. The research study explores how much data can be stored on an RFID tag. The scope of this study is to find a suitable data format for data stored in the tags. Two data formats viz CSV and XML along with compression techniques were discussed. The experiment conducted using the prototype examined how relevant data can be stored in the RFID tags and used in local processing without the need for a central database or network connectivity. The findings of the experiment results demonstrate sufficient proof of concept to suggest CSV data format. Issues encountered in the experiment are discussed, particularly related to writing data into the tag. The conclusion explores the direction for future research on improving writing data on tag, using the data-on-tag approach.

KEYWORDS

RFID tag, data-on-tag, user memory, data format.

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volume link: <http://www.airccse.org/journal/iju/vol2.html>

REFERENCES

- [1] Weiser, M. (1993). "[Hot topics – Ubiquitous computing](#)". Computer 26, 71-72
- [2] Matsuoka, K., Katou, N., Dejima, S., & Takami, K. (2010). Information selection and delivery algorithm for delivering advertisements suitable for the pedestrians present at a particular site, International Journal of UbiComp (IJU), 1(4), 13-21.
- [3] Haas, L. M., & Miller, R. J. (1997). "[Transforming heterogeneous data with database middleware: Beyond integration](#)". Bulletin of the IEEE Computer Society Technical Committee on Data engineering, 1-6.
- [4] Hardgrave, B. C., Armstrong, D. J., & Riemenschneider, C. K. (2007). "[RFID assimilation hierarchy](#)". Proceedings of the 40th Hawaii International conference on System Sciences, Hawaii, 1-10.
- [5] Diekmann, T., Melski, A., & Schumann, M. (2007). "[Data-on-network vs. Data-on-tag: Managing data in complex RFID environments](#)". Proceedings of the 40th Annual Hawaii International Conference on System Sciences, Hawaii, 224-233.
- [6] Harmon, C. K. (2006). "[The necessity for a uniform organisation of user memory in RFID](#)". International Journal Radio Frequency Identification Technology and Applications, 1(1), 41-51.
- [7] Jiang, W., & Xiang, D. (2008). "[A compression framework for personal image used in mobile RFID system](#)". 9th International Conference for Young Scientists, Zhang JiaJie, China, 769-774.
- [8] Ward, M., Kraneneburg, R., & Backhouse, G. (2006). "[RFID: Frequency, standards, adoption and innovation](#)". JISC Technology and standards Watch, 1-36. Retrieved from <http://www.rfidconsultation.eu/docs/ficheiros/TSW0602.pdf>
- [9] Bacheldor, B. (2009). "[Tego Launches 32-Kilobyte EPC RFID Tag](#)". Retrieved 3-3-2010, from <http://www.rfidjournal.com/article/view/4578>
- [10] Want, R. (2004). "[The magic of RFID](#)". Queue, 2(7), 40-48.
- [11] Wal-Mart spells out RFID vision, RFID Journal 2003. Retrieved 8-09-2010, from <http://www.rfidjournal.com/article/purchase/463>
- [12] Wu, N. C., Nystrom, M. A., Lin, T. R., & Yu, H. C. (2006). "[Challenges to global RFID adoption](#)". Technovation, 26(12), 1317-1323.

- [13] Melski, A., Thoroë, L., Caus, T., & Schumann, M. (2007). "[Beyond EPC – Insights from multiple RFID case studies on the storage of additional data on tag](#)". International Conference on wireless Algorithms, Systems and Applications, Chicago, 281- 286.
International Journal of UbiComp (IJU), Vol.2, No.2, April 2011 38
- [14] Chan, A. T. S., Cao, J., Chan, H., & Young, G. (2001). "[A web-enabled framework for smart card application in health services](#)". Communications of the ACM, 44(9), 77-82.
- [15] Romer, K., Schoch, T., & Mattern, F. (2004). "[Smart identification frameworks for ubiquitous computing applications](#)". Wireless Networks, 10, 689-700.
- [16] Sugawara, K., Yamaoka, K., & Sakai, Y. (1997). "[A study on image searching method in super distributed database](#)". IEEE Global Telecommunications Conference, Phoenix, AZ, USA, 2, 736-740.
- [17] Bohn, J. (2008). "[Prototypical implementation of location-aware services based on a middleware architecture for super-distributed RFID tag infrastructures](#)", Personal and ubiquitous computing, 12 (2), 155- 166.
- [18] Mamei, M., Quagliari, R., & Franco Zambonelli, F. (2006). "[Making tuple spaces physical with RFID tags](#)". Proceedings of the 2006 ACM symposium on Applied computing, Dijon, France, 434 -439.
- [19] Landt, J. (2005). "The history of RFID". Potentials IEEE, 24(4), 8 – 11.
- [20] Lin, D., Elmongui, H. G., Bertino, E., & Ooi, B. C. (2007). "[Data management in RFID applications](#)". DEXA, 434-444.
- [21] Tracient. (2007). Tracient user manual. from <http://www.tracient.com>
- [22] Tribowski, C., Spin, K., Guenther, O., and Sielemann, O., (2009) "[Storing data on RFID tags: A standards-based approach](#)". ECIS 2009 Proceedings. <http://aisel.aisnet.org/ecis2009/146>
- [23] Willis, S., & Helal, S. (2005). "[RFID information grid for blind navigation and wayfinding](#)". Paper presented at the Proceedings of the ninth annual IEEE International Symposium on Wearable Computers, Osaka, Japan. from <http://www.icta.ufl.edu/projects/publications/willis-RFIDISWC%20v2.pdf>
- [24] Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). "[Design science in information systems research](#)". MIS Quarterly, 28(1), 75-105.
- [25] Floerkemeier, C., & Lampe, M. (2005). "[RFID middleware design – addressing application requirements and RFID constraints](#)". Joint sOc-EUSAI conference, Grenoble, 1-6.

HMR Log Analyzer: Analyze Web Application Logs Over Hadoop MapReduce

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ABSTRACT

In today's Internet world, log file analysis is becoming a necessary task for analyzing the customer's behavior in order to improve advertising and sales as well as for datasets like environment, medical, banking system it is important to analyze the log data to get required knowledge from it. Web mining is the process of discovering the knowledge from the web data. Log files are getting generated very fast at the rate of 1-10 Mb/s per machine, a single data center can generate tens of terabytes of log data in a day. These datasets are huge. In order to analyze such large datasets we need parallel processing system and reliable data storage mechanism. Virtual database system is an effective solution for integrating the data but it becomes inefficient for large datasets. The Hadoop framework provides reliable data storage by Hadoop Distributed File System and MapReduce programming model which is a parallel processing system for large datasets. Hadoop distributed file system breaks up input data and sends fractions of the original data to several machines in hadoop cluster to hold blocks of data. This mechanism helps to process log data in parallel using all the machines in the hadoop cluster and computes result efficiently. The dominant approach provided by hadoop to "Store first query later", loads the data to the Hadoop Distributed File System and then executes queries written in Pig Latin. This approach reduces the response time as well as the load on to the end system. This paper proposes a log analysis system using Hadoop MapReduce which will provide accurate results in minimum response time.

KEYWORDS Hadoop, MapReduce, Log Files, Parallel Processing, Hadoop Distributed File System.

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volume link:<http://www.aircse.org/journal/iju/vol4.html>

REFERENCES

- [1] S.Sathya Prof. M.Victor Jose, (2011) “[Application of Hadoop MapReduce Technique to Virtual Database System Design](#)”, International Conference on Emerging Trends in Electrical and Computer Technology (ICETECT), pp. 892-896.
- [2] Yulai Yuan, Yongwei Wu_, Xiao Feng, Jing Li, Guangwen Yang, Weimin Zheng, (2010) “[VDBMR: MapReduce- based distributed data integration using virtual database](#)”, Future Generation Computer Systems, vol. 26, pp. 1418-1425.
- [3] Jeffrey Dean and Sanjay Ghemawat., (2004) “[MapReduce: Simplified Data Processing on Large Clusters](#)”, Google Research Publication.
- [4] Konstantin Shvachko, Hairong Kuang, Sanjay Radia, Robert Chansler, (2010) “[The Hadoop Distributed File System](#)”, Mass Storage Systems and Technologies(MSST), Sunnyvale, California USA, vol. 10, pp. 1-10.
- [5] C.Olston, B.Reed, U.Srivastava, R.Kumar, and A.Tomkins, (2008) “[Pig latin: a not-so-foreign language for data processing](#)”, ACM SIGMOD International conference on Management of data, pp. 1099– 1110.
- [6] Tom White, (2009) “[Hadoop: The Definitive Guide. O’Reilly](#)”, Sebastopol, California.
- [7] M.Zaharia, A.Konwinski, A.Joseph, Y.zatz, and I.Stoica, (2008) “[Improving MapReduce performance in heterogeneous environments](#)” OSDI’08: 8th USENIX Symposium on Operating Systems Design and Implementation.
- [8] Mr. Yogesh Pingle, Vaibhav Kohli, Shruti Kamat, Nimesh Poladia, (2012)“[Big Data Processing using Apache Hadoop in Cloud System](#)”, National Conference on Emerging Trends in Engineering & Technology.
- [9] Cooley R., Srivastava J., Mobasher B., (1997) “[Web mining: informationa and pattern discovery on world wide web](#)”, IEEE International conference on tools with artificial intelligence, pp. 558-567.
- [10] Liu Zhijing, Wang Bin, (2003) “[Web mining research](#)”, International conference on computational intelligence and multimedia applications, pp. 84-89.
- [11] Yang, Q. and Zhang, H., (2003) “[Web-Log Mining for predictive Caching](#)”, IEEE Trans. Knowledge and Data Eng., 15(4), pp. 1050-1053.

[12] P. Nithya, Dr. P. Sumathi, (2012) “[A Survey on Web Usage Mining: Theory and Applications](#)”, International Journal Computer Technology and Applications, Vol. 3, pp. 1625-1629.

[13] Andrew Pavlo, Erik Paulson, Alexander Rasin, Daniel J. Abadi, David J. DeWitt, Samuel Madden, Michael Stonebraker, (2009) “A Comparison of Approaches to Large-Scale Data Analysis”, ACM SIGMOD’09.

[14] Gates et al., (2009) “[Building a High-Level Dataflow System on top of Map-Reduce: The Pig Experience](#)”, VLDB 2009, Section 4.

[15] LI Jing-min, HE Guo-hui, (2010) “[Research of Distributed Database System Based on Hadoop](#)”, IEEE International conference on Information Science and Engineering (ICISE), pp. 1417-1420.

[16] T. Hoff, (2008) “[How Rackspace Now Uses MapReduce and Hadoop To Query Terabytes of Data](#)”.

[17] Apache-Hadoop, <http://Hadoop.apache.org>

CDTOM: A Context-driven Task-oriented Middleware for Pervasive Homecare Environment

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ABSTRACT

With the growing number of the elderly, we see a greater demand for home care, and the vision of pervasive computing is also floating into the domain of the household that aims to build a smart home which can assist inhabitants (users) to live more conveniently and harmoniously. Such health-care pervasive applications in smart home should focus on the inhabitant's goal or task in diverse situations, rather than the various complex devices and services. The core challenge for homecare design is to perceive the environment and assess occurring situations, thus allowing systems to behave intelligently according to the user's intent. Due to the dynamic and heterogeneous nature of pervasive computing environment, it is difficult for an average user to obtain right information and service and in right place at right time. This paper proposes a context-driven task-oriented middleware (CDTOM) to meet the challenge. The most important component is its task model that provides an adequate high-level description of user-oriented tasks and their related contexts. Leveraging the model multiple entities can easily exchange, share and reuse their knowledge. Based on the hierarchy of task ontology, a novel task recognition approach using CBR (case-based reasoning) is presented and the performance of task recognition is evaluated by task number, context size and time costing. Moreover, a dynamic mechanism for mapping the recognized task and services is also discussed. Finally, we present the design and implementation of our task supporting system (TSS) to aid an inhabitant's tasks in light of his lifestyle and environment conditions in pervasive homecare environment, and the results of the prototype system show that our middleware approach achieves good efficiency of context management and good accuracy of user's activity inference, and can improve efficiently quality of user's life.

KEYWORDS

Pervasive computing, Homecare, Task, Context-driven, ECA Rule

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volume link: <http://www.airccse.org/journal/iju/vol2.html>

REFERENCES

- [1] K.A. Osman, R.L. Ashford, A. Oldacres, (2007) "[Homecare Hub – A Pervasive Computing Approach to Integrating Data for Remote Delivery of Personal and Social Care](#)", in proceedings of the 2nd International Conference on Pervasive Computing and Applications (ICPCA07), Birmingham, UK.
- [2] Steg H., Strese H. et al. (2006) "[Ambient Assisted Living -European Overview Report](#)", EU Specific Support Action, 169-initiative.
- [3] G. D. Abowd, I. Bobick, I. Essa, E. Mynatt, and W. Rogers, (2002) "The aware home: developing technologies for successful aging," in Proceedings of the 18th National Conference on Artificial Intelligence (AAAI '02), Edmonton, Canada.
- [4] Mori T, Noguchi H, Takada A, and Sato T, (2004) "[Sensing Room: Distributed Sensor Environment for Measurement of Human Daily Behavior](#)", In Proceeding of First International Workshop on Networked Sensing Systems (INSS2004), pp. 40-43.
- [5] Brumitt B, Meyers B, Krumm J, Kern A, Shafer S. EasyLiving, (2000) "[Technologies for intelligent environments](#)", Handheld and Ubiquitous Computing, Bristol, UK, pp. 30-36.
- [6] Cook D.J, Youngblood M, Heierman E, et. al., (2003) "[MavHome: An agent-based smart home](#)", in Proceedings of PerCom, pp.521-524.
- [7] I. Korhonen, P. Paavilainen, and A. Sarel'a, (2003) "[Application of ubiquitous computing technologies for support of independent living of the elderly in real life settings.](#)" in Proceedings of the 2nd International Workshop on Ubiquitous Computing for Pervasive Healthcare Applications (UbiHealth '03), Seattle, Wash, USA.
- [8] T. Yamazaki, (2007) "[The ubiquitous home.](#)" International Journal of Smart Home, vol. 1, no. 1, pp. 17-22.
- [9] G. Roussos and A. Marsh, (2006) "[A blueprint for pervasive self-care infrastructures.](#)" in Proceedings of the 4th Annual IEEE International Conference on Pervasive Computing and Communications Workshop (PerCom '06), pp. 479-484, Pisa, Italy.
- [10] X. Wang, J. Dong, C. Chin, S. Hettiarachchi, and D. Zhang, "[Semantic space: An infrastructure for smart spaces.](#)" IEEE Pervasive Computing, vol. 3, no. 3, pp. 32-39, July-Sep. 2004.
- [11] T. Gu, H. Pung, and D. Zhang, (2005) "[A service-oriented middleware for building context-aware services.](#)" Journal of Network and Computer Applications, vol. 28, no. 1, pp. 1-18.
- [12] G. Judd and P. Steenkiste, (2003) "[Providing contextual information to pervasive computing applications.](#)" in Proc. 1st International Conference on Pervasive Computing and Communications (PerCom 03), pp.133-142.

- [13] Castro P and Muntz R, (2000) "[Managing Context Data for Smart Spaces](#)," IEEE Personal Communications, vol. 7, pp. 44-46.
- [14] Sousa J P, Poladian V, Garlan D, et. al. (2006) "[Task-based Adaptation for Ubiquitous Computing](#)". IEEE Transactions on Systems, Man, and Cybernetics, Part C, 36(3), pp. 328-340.
- [15] Angel J., Jun-Sung K., et. al. (2009) "[A Semantically-Based Task Model and Selection Mechanism in Ubiquitous Computing Environments](#)". Proceedings of KES 2009, Part II, LNAI 5712, pp. 829–837.
- [16] Paul Prekop and Mark Burnett, (2003) "[Activities, Context and Ubiquitous Computing, Computer Communications](#)", vol. 26, no. 11, pp. 1168-1176.
- [17] Wang Zhenyu and David Garlan, (2000) "[Task-driven computing](#)", Technical Report CMU-CS-00-154, Carnegie Mellon University, May 2000.
- [18] Masuoka R, et al, (2003) "[Task Computing – the Semantic Web meets Pervasive Computing](#)", 2nd International Semantic Web Conference, ISWC 2003.
- [19] Hongbo Ni, Xingshe Zhou, Zhiwen Yu, and Kejian Miao, (2007) "[OWL-Based Context-Dependent Task Modeling and Deducing](#)", The First International Workshop on Smart Homes for TeleHealth (SmarTel'07), pp. 846-851, Niagara Falls, Canada.
International Journal of UbiComp (IJU), Vol.2, No.1, January 2011
53
- [20] T Ma, YD Kim, Q Ma, M Tang, W Zhou, (2005) "[Context-Aware Implementation based on CBR for Smart Home](#)" Wireless And Mobile Computing, Networking And Communications, 2005. (WiMob'2005), IEEE International Conference on Volume: 4, pp. 112- 115.
- [21] N. Bassiliades, I. Vlahavas, (1997) "[DEVICE: compiling production rules into event-driven rules using complex events](#)", Information and Software Technology 39 (5), pp.331–342.
- [22] U. Dayal, B. Blaustein, A.P. Buchmann, S. Chakravarthy, et.al. (1998) "[The HiPAC project: combining active databases and timing constraints](#)", ACM SIGMOD Record 17 (1), pp.51–70.
- [23] Dockhorn Costa, P., Pires, F., Sinderen, M., (2005) "[Architectural Patterns for Context-Aware Services Platforms](#)" in Proceedings of the Second International Workshop on Ubiquitous Computing (IWUC 2005), Miami, pp 3-19.
- [24] Jung, J.Y., et al., (2007) "[An ECA-based framework for decentralized coordination of ubiquitous web services](#)", Information and Software Technology, 49 (11-12), pp.1141–1161.
- [25] D. Kulkarni and A. Tripathi. (2008) "[Context-aware role-based access control in pervasive computing systems](#)", In Proceedings of the 14th Symposium on Access Control Models and Technologies(SACMAT)

Security Enhancement With Optimal QoS Using EAP-AKA In Hybrid Coupled 3G-WLAN Convergence Network

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ABSTRACT

The third generation partnership project (3GPP) has addressed the feasibility of interworking and specified the interworking architecture and security architecture for third generation (3G)-wireless local area network (WLAN), it is developing, system architecture evolution (SAE)/ long term evolution (LTE) architecture, for the next generation mobile communication system. To provide a secure 3G-WLAN interworking in the SAE/LTE architecture, Extensible authentication protocol-authentication and key agreement (EAP-AKA) is used. However, EAP-AKA have several vulnerabilities. Therefore, this paper not only analyses the threats and attacks in 3G-WLAN interworking but also proposes a new authentication and key agreement protocol based on EAP-AKA. The proposed protocol combines elliptic curve Diffie-Hellman (ECDH) with symmetric key cryptosystem to overcome the vulnerabilities. The proposed protocol is used in hybrid coupled 3G-WLAN convergence network to analyse its efficiency in terms of QoS metrics, the results obtained using OPNET 14.5 shows that the proposed protocol outperforms existing interworking protocols both in security and QoS.

KEYWORDS

3G-WLAN, Convergence Network, EAP-AKA, Security, QoS

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Volume link:<http://www.airccse.org/journal/iju/vol1.html>

REFERENCES

- [1] Third Generation Partnership Project (3GPP), 3GPP TS 33.401 v8.1.1 “[3G System Architecture Evolution \(SAE\): Security architecture \(Release 8\)](#)”, October 2008.
- [2] Third Generation Partnership Project (3GPP), 3GPP TS 33.821 v1.0.0 “[Rationale and track of security decisions in Long Term Evolved \(LTE\) RAN/3GPP System Architecture Evolution \(SAE\) \(Release 8\)](#)”, December 2007.
- [3] Hyeran Mun, Kyusuk Han and Kwangjo Kim, “[3G-WLAN Interworking: Security Analysis and New Authentication and Key Agreement based on EAP-AKA](#)”, Proceedings of Wireless Telecommunication Symposium, Prague, pp 1-8, April 2009.
- [4] Third Generation Partnership Project (3GPP), 3GPP TS 33.102 v8.0.0, “[3G Security: Security Architecture \(Release 8\)](#)”, June 2008.
- [5] Geir M. Koien and Thomas Haslerstad, “[Security Aspects of 3G-WLAN interworking](#)”, IEEE Communications Magazine, vol no.41, pp 82-88, November 2003.
- [6] H. Haverinen and J. Salowey, “[Extensible Authentication Protocol Method for GSM Subscriber Identity Modules \(EAP-SIM\)](#)”, IETE, October 2003.
- [7] K. Ahmavaara, H. Haverinen, and R. Pichna, “[Integration of wireless LAN and 3G wireless interworking architecture between 3GPP and WLAN systems](#),” Communications Magazine, IEEE, vol. 41, pp.74-81, 2003.
- [8] Yuh-Min Tseng, “[USIM-based EAP-TLS authentication protocol for wireless local area networks](#)”, Computer Standards & Interfaces, November 2007.
- [9] B. Aboba, S.Simon, “[PPP EAP TLS Authentication Protocol](#)”, RFC 2716, IETE, October 2003. [10] P. Funk, S.Blake-Wilson, “EAP Tunneled TLS Authentication Protocol,” draft-ietf-pppext-eapttls-05, IETF, July 2004.
- [11] Third Generation Partnership Project (3GPP), 3GPP TS 23.234 v8.1.0, “[3G security: Wireless Local Area Network \(WLAN\) Interworking Security \(Release 8\)](#)”, March 2008.
- [12] L. Han, “[A Threat Analysis of the Extensible Authentication Protocol](#)”, Honors Project Report, April 2006.
- [13] J. Arkko (Ericsson) and H. Haverinen (Nokia), “[Extensible Authentication Protocol Method for UMTS Authentication and Key Agreement \(EAP-AKA\)](#)”, IETF RFC 4187, January 2006.

- [14] R. Pazhyannur A. Salkintzis, C. Fors, "[WLAN-GPRS integration for next-generation mobile data networks](#)," IEEE Wireless Communications, vol. 9, pp. 112–124, 2002.
- [15] PlanetMath-Elliptic Curve Diffie-Hellman key exchange, available <http://planetmath.org/encyclopedia/DiffieHellmanKeyExchange.html>
- [16] J.-S. Leu, R.-H. Lai, H.-I. Lin and W.-K. Shih, "[Practical Considerations on End-to-End Cellular/PWLAN Architecture in support of Bilateral Roaming](#)", Proceedings of IEEE Wireless Communication and Networking Conference, Vol. 3, pp. 1702-1707, 2005
- [17] C. Liu and C. Zhou, "[An Improved Interworking Architecture for UMTS-WLAN Tight Coupling](#)", Proceedings of IEEE Wireless Communication and Networking Conference, Vol.3,pp. 1690-1695, 2005
- [18] Q. Song; A. Jamalipour, "Network Selection in an Integrated Wireless LAN and UMTS Environment Using Mathematical Modeling and Computing Techniques," IEEE Wireless Communications, Vol. 12, Issue 3, pp. 42-48, 2005.
- [19] C.Kalyana Chakravarthy and P.V.G.D. Prasad Reddy, "[Modified queue-based exponential rule scheduler for improved qos in ofdma system](#)", International journal of UbiComp (IJU),Vol.1, No.2, pp 34-43, April 2010

A proposed Novel Approach for Sentiment Analysis and Opinion Mining

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ABSTRACT

As the people are being dependent on the internet the requirement of user view analysis is increasing exponentially. Customer posts their experience and opinion about the product policy and services. But, because of the massive volume of reviews, customers can't read all reviews. In order to solve this problem, a lot of research is being carried out in Opinion Mining. In order to solve this problem, a lot of research is being carried out in Opinion Mining. Through the Opinion Mining, we can know about contents of whole product reviews, Blogs are websites that allow one or more individuals to write about things they want to share with other The valuable data contained in posts from a large number of users across geographic, demographic and cultural boundaries provide a rich data source not only for commercial exploitation but also for psychological & sociopolitical research. This paper tries to demonstrate the plausibility of the idea through our clustering and classifying opinion mining experiment on analysis of blog posts on recent product policy and services reviews. We are proposing a Nobel approach for analyzing the Review for the customer opinion.

KEYWORDS

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Volume link:<http://www.airccse.org/journal/iju/vol5.html>

REFERENCES

- [1] Khairullah Khan, Baharum B. Baharudin, Aurangzeb Khan, Fazal-e-Malik, Mining Opinion from text Documents: A Survey, 3rd IEEE International Conference on Digital Ecosystems and Technologies, 2009
- [2] David Alfred Ostrowski, Sentiment Mining within Social Media for Topic Identification, IEEE Fourth International Conference on Semantic Computing 2010
- [3] ANA SUFIAN, RANJITH ANANTHARAMAN, Social Media Data Mining and Inference system based on Sentiment Analysis 2011
- [4] KENNETH BLOOM, Sentiment Analysis Based On Appraisal Theory And Functional Local Grammar 2011.
- [5] ANA SUFIAN, RANJITH ANANTHARAMAN, Social Media Data Mining and Inference system based on Sentiment Analysis 2011
- [6] Hsinchun Chen and David Zimbra, AI and Opinion Mining, IEEE Intelligent Systems 2010
- [7] Bo Pang and Lillian Lee Opinion Mining and Sentiment Analysis, Foundations and Trends in Information Retrieval 2008
- [8] Norlela Samsudin, Mazidah Puteh, Abdul Razak Hamdan, Mohd Zakree Ahmad Nazri, Is Artificial Immune System Suitable for Opinion Mining? 4th Conference on Data Mining and Optimization (DMO), Langkawi, Malaysia 02-04 September 2012
- [9] Erik Cambria, Björn Schuller, unqing Liu, Catherine Havasi, Published by the IEEE Computer Society 2013
- [10] Thanh Thung, evaluation of natural language Processing technique for Sentiment Analysis, 2012