Certain Investigations on Evolution of Approaches for Cloud Computing Security

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ABSTRACT: This paper reviews methods developed for anonymizing data from 2013 to 2014 . Publishing microdata such as census or patient data for extensive research and other purposes is an important problem area being focused by government agencies and other social associations. The traditional approach identified through literature survey reveals that the approach of eliminating uniquely identifying fields such as social security number from microdata, still results in disclosure of sensitive data, k-anonymization optimization algorithm ,seems to be promising and powerful in certain cases ,still carrying the restrictions that optimized k-anonymity are NP-hard, thereby leading to severe computational challenges. k-anonimity faces the problem of homogeneity attack and background knowledge attack . The notion of l-diversity proposed in the literature to address this issue also poses a number of constraints , as it proved to be inefficient to prevent attribute disclosure (skewness attack and similarity attack), l-diversity is difficult to achieve and may not provide sufficient privacy protection against sensitive attribute across equivalence class can substantially improve the privacy as against information disclosure limitation techniques such as sampling cell suppression rounding and data swapping and pertubertation. This paper aims to discuss efficient anonymization approach that requires partitioning of microdata equivalence classes and by minimizing closeness by kernel smoothing and determining ether move distances by controlling the distribution pattern of sensitive attribute in a microdata and also maintaining diversity.

KEYWORDS: Data Anonymization, Microdata, k-anonymity, Identity Disclosure, Attribute Disclosure, Diversity

I. INTRODUCTION

Need for publishing sensitive data to public has grown extravagantly during recent years. Though publishing demands its need there is a restriction that published social network data should not disclose private information of individuals. Hence protecting privacy of individuals and ensuring utility of social networe data as well becomes a challenging and interesting research topic. Considering a graphical model [35] where the vertex indicates a sensitive label algorithms could be developed to publish the non-tabular data without compromising privacy of individuals. Though the data is represented in graphical model after KDLD sequence generation [35] the data is susceptible to several attacks such as homogeneity attack, background knowledge attack, similarity attacks and many more. In this paper we have made an investigation on the attacks and possible solutions proposed in literature and efficiency of the same.

II. INSUABILITY OF CYBER RISK

Whenever there is a reported incident of failure of system or data low, which results in high financial loss created the awareness to the decision maker that cyber risks does not cover the insurance policies. Few among such incidents are Sony or LGI data losses. According to G20 group, cyber threats are considered to be the dangerous attack to the global economy. Expected annual loss due to cyber risk are estimated between 300 billion US$ to 1 billion. The authors through this paper discuss the insurance solutions to handle cyber risks.

Cyber risk can be defined as the set of various sources that affects info/technological assets of a concern. The authors focus more on operational risk here in this paper. The authors define cyber risk as "The consequences of op reseav to information and technology that affects confidentiality, availability and integrity.

The authors discuss the cyber risks that are insurable under a set of common terms Bauch Belliner has given us a simple approach in distinguishing Insurable/non-insurable risks.

According to the approach, there are a insurability criteria which is used vibrantly to analyze the insurance makers. These criteria are grouped into 3 groups namely maker, actuial, and societal conditions. The authors have listed the important problems in insuring cyber risks.

1.   Development of frequency and severity of cornes
        Number of incidents before 2000 is small which continuously increased over years. An interesting observation is that, loss decreased over last few years due to the increase in self protective steps.
2. Risk pooling:
        Cyber risks are high when compared to other risks.
3. Scarcity of data:
        The most important problem in cyber risk is data security.
4. Risk of change:
        The changes of cyber risks are always fast and vigorous.
5. Information asymetrics:
        Lack of data on the losses makes the firm to sort the different types of risks.
        The authors finally conclude that the cyber risk can be managed in two ways; one by putting price tags on the risk based on the behavior area, the other is by simply applying for insurances so that the companies become to know about the threats and protective measures.

III. **2013(A)**

Increase in the usage of mobile computing has been exploiting in the recent years due to the major problems namely scarcity, disconnection of mobile networks. These drawbacks can be addressed effectively and efficiently by mobile cloud computing by executing the mobile applications through external resources in the mobile. The authors have provided a survey of mobile cloud computing and presented a taxonomy with different methodologies to tackle the issue. The authors have pointed out about the mobile computing which has been mixed with other technologies nut has its own challenges. They have also expelled that the future work can make clouds to be established in the form of collection of devices in ubiquitous system.

IV. **2013(B)**

Cloud computing is a major technology which enables versatility and dynamicity in the field of computer. It has its own drawback, a second thought which is a important fact-security and privacy of cloud resources. Authors through this paper focuses on the threat which is present inside the concept of cloud computing. They have discussed about the concept of security in two main scenarios

1) defend against the insider working for cloud provider
2) defend the insider at the organization.
Potential risks and problems have been proposed for each scenario and also efforts to reduce the risk. The authors explain that an insider attack is the one which is easy to perform and has a great impact although identifying, detecting is very difficult. The paper has provided a clear concept of it and the future work will be focused in the implementation and the analysis of the scenario along with the steps to provide security as a service within the cloud.

V. **2013(C)**

In this paper the author discusses about the secured sharing of Personal Health Records(PHR) in cloud computing. PHR has been an emerging technology in the field of medicine which is always maintained by a third party such as a cloud provider. There have also been security constraints with this methodology. In this paper the authors have proposed a framework to have a secured sharing of PHR in cloud computing. This model ensures and enables the patient to have a fine grained data access for PHR. It also addresses different constraints which reduces the difficulty

in key management. The utilization of ABE (attribute based Encryption) in order to encrypt PHR is an important factor of this method. Also enhancement form MA-ABE schema helps in improved security.

VI. 2014(B)

Applications on traffic management, road safety are entirely based on vehicular networking which has become the most significant research topic. The concept behind vehicular cloud computing is a mixture of cloud computing and vehicular networking. Through this paper the author proposes a survey on vehicular cloud computing which is a new technology which has a bigger impact on road safety and traffic management. An architecture of vehicular cloud computing has also been discussed. The authors explain that through this review, vehicular cloud computing has become a technology which is feasible for vehicular network for vehicle control and perception system.

VII. 2014(D)

The paper surveys the issues of security standards in cloud computing and authors have presented a clear literature review on security issues by addressing threats, attacks and so on with open research topics. Taxonomy for the security issue means that it is a loophole or a software of a hardware mis- configuration. Vulnerability is system weakness. In this article, the author discusses about the stare of art of the security issues since the network security is highly important but it is volatile and also the security becomes a doubt when all the new technology are mixing up. Analysis on security issues of cloud to have secured clouds will enable a clear understanding of security standards and thus proven that security that security should be given the top priority.

VIII. 2014-RELIABLE SECURITY IN CLOUD COMPUTING ENVIRONMENT

Cloud computing gives a convenient and an on demand access where we can rapidly use resources with great accuracy and efficiency. Although there is more expectations for the cloud computing among the industrialists and customers, the security remains a big drawback in terms of single data, but due to the migration towards much, inter clouds security constraints have not seen its depression. Through this paper, the authors have proposed a design to audit storage with light cx and computation cost. This scheme provides localization of data errors.

Cloud security refers to a technology and control used to preserve data and the infrastructure of cloud computing. The simple concept behind cloud computing is drawing resources on user request, performing a job and arrange them back when job is complete in cc environment, a concern about the security and protection remains static.

This paper has focused on important issues that are concerned with cloud security is integrating the data that are transferred from or to the provider suffer damage.

The methodology is preventing a system from malicious attacks considering systems security risk in cloud computing.

1. Data security
2. Network Load
3. Access
4. Data Location
5.Data segregation.

Algorithm that is used in this paper is secret sharing algorithm. The concept behind this algorithm is that sharing distribution of secret amongst a group of participants.

IX. CONCLUSION AND FUTURE WORK

Various methods developed for anonymizing data from 2013 to 2014 is discussed. Publishing microdata such as census or patient data for extensive research and other purposes is an important problem area being focused by government agencies and other social associations. The traditional approach identified through literature survey reveals that the approach of eliminating uniquely identifying fields such as social security number from microdata, still results in disclosure of sensitive data, k-anonymization optimization algorithm ,seems to be promising and powerful in certain

cases ,still carrying the restrictions that optimized k-anonymity are NP-hard, thereby leading to severe computational challenges. k-anonimity faces the problem of homogeneity attack and background knowledge attack . The notion of l-diversity proposed in the literature to address this issue also poses a number of constraints , as it proved to be inefficient to prevent attribute disclosure (skewness attack and similarity attack), l-diversity is difficult to achieve and may not provide sufficient privacy protection against sensitive attribute across equivalence class can substantially improve the privacy as against information disclosure limitation techniques such as sampling cell suppression rounding and data swapping and pertubertation. Evolution of Data Anonymization Techniques and Data Disclosure Prevention Techniques are discussed in detail. The application of Data Anonymization Techniques for several spectrum of data such as trajectory data are depicted. This survey would promote a lot of research directions in the area of database anonymization.

REFERENCES

1. Pieter Van Gorp and Marco Comuzzi "Lifelong Personal Health Data and Application Software via Virtual Machines in the Cloud" IEEE Journal of Biomedical and Healthcare Informatics, Vol. 18, No. 1, Jan 2014
2. Sape J. Mullender, Andrew S.Tanenbaum, "Protection and Resource Control in Distributed Operating Systems", 1984.
3. Paul J.Levine, "Computer security system for a time shared computer accessed over telephone lines US 4531023 A, 1985
4. John G.Campbell,Carl F.Schoeneberger,"Remote hub television and security systems", US 4574305 A, 1986.
5. A Pfitzmann, "Networks without user observability", Computers & Security 6/2 (1987) 158-166, 1987
6. TF Lunt, " Automated audit trail analysis and intrusion detection: A survey" In Proceedings of 11th National Conference on Security, 1988
7. Lichtenstein Eric Stefan 1984 a, Computer control medical care system US4464172.
8. ARalph R.Frerichs, Dr. PH.Robert A. Miller 1985, Introduction of a Microcomputer for Health Research in a Developing Country.
9. Steven P.Brown 1986, Combinational Medical Data, Identification and health Insurance card.
10. Peter P. Gombrich, Richard J. Beard, Richard A. Griffee, Thomas R. Wilson, Ronald E. Zook, Max S. Hendrickson 1989,A Patient care system,US4835372 A.
11. Paavo T. Kousa, " VOICE NETWORK SECURITY SYSTEM" US 4797672 A, 1989
12. D Graft, " Methodology for network security design", IEEE Transactions on Computers, 1990
13. Heberlein, "Network Security MONITOR, 1991
14. John R. Corbin, " Apparatus and method for licensing software on a network of computers US 5138712 A", 1992
15. S Gordon, "Computer Network Abuse", 1993.
16. Neil Bodick, Andre L. Marquis1990, Interactive system and method for creating and editing a knowledge base for use as a computerized aid to the cognitive process of diagnosis,US4945476 A.
17. Angela M. Garcia, Dr.,Boca Raton 1991 a, System and Method for scheduling and Reporting Patient related services including prioritizing services,US5974389 A.
18. Clark Melanie Ann, John Finley, Huska; Michael Edward, Kabel; Geoffrey Harold, Graham, Marc Merrill 1991 b,System and Method for scheduling and Reporting Patient Related services.
19. Robert W. Kukla1992,Patient care communication system, US5101476 A
20. Mark C. Sorensen 1993, Computer aided medical diagnostic method and apparatus, US5255187 A.
21. Edward J. Whalen, San Ramon, Olive Ave Piedmont 1994,Computerized file maintenance System for managing medical records including narrative patent documents reports.
22. Desmond D. Cummings 1994b,All care health management system, US5301105 A.
23. Woodrow B. Kesler Rex K Kesslerin 1994 c,Medical data draft for tracking and evaluating medical treatment.
24. Joseph P. Tallman, Elizabeth M. Snowden, Barry W. Wolcott 1995, Medical network management system and process, US5471382 A.
25. Peter S. Stutman, J. Mark Miller 1996,Medical alert distribution system with selective filtering of medical information
26. Edwin C. Iliff1997,computerized medical diagnostic system including re-enter function and sensitivity factors, US5594638 A.
27. Timothy Joseph Graettinger, Paul Alton DuBose 1998, Computer-based neural network system and method for medical diagnosis and interpretation. US5839438 A.
28. Melanie Ann Clark, John Finley Gold, Michael Edward Huska, Geoffrey Harold Kabel, Marc Merrill Graham1999,Medical record management system and process with improved workflow features, US5974389 A.
29. Richard S. Surwit, Lyle M. Allen, III, Sandra E. Cummings 2000 a, Systems, methods and computer program products for monitoring, diagnosing and treating medical conditions of remotely located patients, US6024699 A.
30. Jeffrey J. Clawson 2000 b, Method and system for giving remote emergency medical counsel to choking patients, US6010451 A.
31. Marc Edward Chicorel 2001, Computer keyboard-generated medical progress notes via a coded diagnosis-based language, US6192345 B1.
32. Charlyn Jordan2002, Health analysis and forecast of abnormal conditions.
33. Jeffrey J. Clawson2003, Method and system for an improved entry process of an emergency medical dispatch system
34. PekkaRuotsalainen 2004, A cross-platform model for secure Electronic Health Record communication.
35. Roger J. Quy2005, Method and apparatus for health and disease management combining patient data monitoring with wireless internet connectivity, US6936007 B2.
36. Avner Amir, Avner Man2006 a, System and method for administration of on-line healthcare, WO2006006176 A2.
37. Paul C.Tang, Joan S. Ash, David W. Bates, J. Marc overhage and Daniel Z.Sands 2006 b, Personal Health Records: Definitions, Benefits, and Strategies for Overcoming Barriers to Adoption.

38. Christopher Alban, KhiangSeow2007, Clinical documentation system for use by multiple caregivers.
39. Brian A. Rosenfeld, Michael Breslow2008, System and method for accounting and billing patients in a hospital environment.
40. Jacquelyn Suzanne Hunt, Joseph Siemienczuk 2009, Process and system for enhancing medical patient care.
41. Richard J. Schuman2010, Health care computer system, US7831447 B2.
42. Kanagaraj, G.Sumathi, A.C.2011,Proposal of an open-source Cloud computing system for exchanging medical images of a Hospital Information System
43. AvulaTejaswi, NelaManoj Kumar, GudapatiRadhika, SreenivasVelagapudi 2012 a, Efficient Use of Cloud Computing in Medical Science.
44. J. Vidhyalakshmi, J. Prassanna 2012 b, Providing a trustable healthcare cloud using an enhanced accountability framework.
45. Carmelo Pino and Roberto Di Salvo 2013, A Survey of Cloud Computing Architecture and Applications in Health.
46. K.S. Aswathy, G. Venifa Mini 2014 a, Secure Alternate Viable Technique of Securely Sharing the Personal Health Records in Cloud.
47. Abhishek Kumar Gupta, Kulvinder Singh Mann 2014 sharing of Medical Information on Cloud Platform.
48. D. C. Kaelber, A. K. Jha, D. Johnston, B. Middleton, and D. W. Bates, "Viewpoint paper: research agenda for personal health records (PHRs),"J. Amer. Med. Inform. Assoc., vol. 15, no. 6, pp. 729–736, 2008.
49. J. Ahima, "Defining the personal health record," vol. 76, no. 6, pp. 24–25, Jun. 2005.
50. W. Currie and M. Guah. "Conflicting institutional logics: a national programme for it in the organizational field of healthcare:, Journal of Information Technology, 22:235–247,2007.
51. M. Gysels, A. Richardson, and J. I. Higginson "Does the patient-held record improve continuity and related outcomes in cancer care: a systematic review", Health Expectations,10(1):75–91, Mar. 2007.
52. International Organization for Standardization. ISO TR20514:2005 Health Informatics - Electronic Health Record Definition, Scope and Context Standard. International Organization for Standardization (ISO). Geneva, Switzerland,2005.
53. B.Powmeya , Nikita Mary Ablett ,V.Mohanapriya,S.Balamurugan,"An Object Oriented approach to Model the secure Health care Database systems,"In proceedings of International conference on computer , communication & signal processing(IC^{3}SP)in association with IETE students forum and the society of digital information and wireless communication,SDIWC,2011,pp.2-3
54. Balamurugan Shanmugam, Visalakshi Palaniswami, "Modified Partitioning Algorithm for Privacy Preservation in Microdata Publishing with Full Functional Dependencies", Australian Journal of Basic and Applied Sciences, 7(8): pp.316-323, July 2013
55. Balamurugan Shanmugam, Visalakshi Palaniswami, R.Santhya, R.S.Venkatesh "Strategies for Privacy Preserving Publishing of Functionally Dependent Sensitive Data: A State-of-the-Art-Survey", Australian Journal of Basic and Applied Sciences, 8(15) September 2014.
56. S.Balamurugan, P.Visalakshi, V.M.Prabhakaran, S.Chranyaa, S.Sankaranarayanan, "Strategies for Solving the NP-Hard Workflow Scheduling Problems in Cloud Computing Environments", Australian Journal of Basic and Applied Sciences, 8(15) October 2014.
57. Charanyaa, S., et. al., , A Survey on Attack Prevention and Handling Strategies in Graph Based Data Anonymization. International Journal of Advanced Research in Computer and Communication Engineering, 2(10): 5722-5728, 2013.
58. Charanyaa, S., et. al., Certain Investigations on Approaches forProtecting Graph Privacy in Data Anonymization. International Journal of Advanced Research in Computer and Communication Engineering, 1(8): 5722-5728, 2013.
59. Charanyaa, S., et. al., Proposing a Novel Synergized K-Degree L-Diversity T-Closeness Model for Graph Based Data Anonymization. International Journal of Innovative Research in Computer and Communication Engineering, 2(3): 3554-3561, 2014.
60. Charanyaa, S., et. al., , Strategies for Knowledge Based Attack Detection in Graphical Data Anonymization. International Journal of Advanced Research in Computer and Communication Engineering, 3(2): 5722-5728, 2014.
61. Charanyaa, S., et. al., Term Frequency Based Sequence Generation Algorithm for Graph Based Data Anonymization International Journal of Innovative Research in Computer and Communication Engineering, 2(2): 3033-3040, 2014.
62. V.M.Prabhakaran, Prof.S.Balamurugan, S.Charanyaa," Certain Investigations on Strategies for Protecting Medical Data in Cloud", International Journal of Innovative Research in Computer and Communication Engineering Vol 2, Issue 10, October 2014
63. V.M.Prabhakaran, Prof.S.Balamurugan, S.Charanyaa," Investigations on Remote Virtual Machine to Secure Lifetime PHR in Cloud ", International Journal of Innovative Research in Computer and Communication Engineering Vol 2, Issue 10, October 2014
64. V.M.Prabhakaran, Prof.S.Balamurugan, S.Charanyaa," Privacy Preserving Personal Health Care Data in Cloud" , International Advanced Research Journal in Science, Engineering and Technology Vol 1, Issue 2, October 2014
65. P.Andrew, J.Anish Kumar, R.Santhya, Prof.S.Balamurugan, S.Charanyaa, "Investigations on Evolution of Strategies to Preserve Privacy of Moving Data Objects" International Journal of Innovative Research in Computer and Communication Engineering, 2(2): 3033-3040, 2014.
66. P.Andrew, J.Anish Kumar, R.Santhya, Prof.S.Balamurugan, S.Charanyaa, " Certain Investigations on Securing Moving Data Objects" International Journal of Innovative Research in Computer and Communication Engineering, 2(2): 3033-3040, 2014.
67. P.Andrew, J.Anish Kumar, R.Santhya, Prof.S.Balamurugan, S.Charanyaa, " Survey on Approaches Developed for Preserving Privacy of Data Objects" International Advanced Research Journal in Science, Engineering and Technology Vol 1, Issue 2, October 2014
68. S.Jeevitha, R.Santhya, Prof.S.Balamurugan, S.Charanyaa, " Privacy Preserving Personal Health Care Data in Cloud" International Advanced Research Journal in Science, Engineering and Technology Vol 1, Issue 2, October 2014.
69. K.Deepika, P.Andrew, R.Santhya, S.Balamurugan, S.Charanyaa, "Investigations on Methods Evolved for Protecting Sensitive Data", International Advanced Research Journal in Science, Engineering and Technology Vol 1, Issue 4, Decermber 2014.
70. K.Deepika, P.Andrew, R.Santhya, S.Balamurugan, S.Charanyaa, "A Survey on Approaches Developed for Data Anonymization", International Advanced Research Journal in Science, Engineering and Technology Vol 1, Issue 4, Decermber 2014.
71. S.Balamurugan, S.Charanyaa, "Principles of Social Network Data Security" LAP Verlag, Germany, ISBN: 978-3-659-61207-7, 2014
72. S.Balamurugan, S.Charanyaa, "Principles of Scheduling in Cloud Computing" Scholars' Press, Germany,, ISBN: 978-3-639-66950-3, 2014
73. S.Balamurugan, S.Charanyaa, "Principles of Database Security" Scholars' Press, Germany, ISBN: 978-3-639-76030-9, 2014

APPENDIX

S.no	YEAR	AUTHORS	TITLE
1	1984	Sape .MULLENDER and Andrew S TANENBAUM	PROTECTION AND RESOURCE CONTROL IN DISTRIBUTED OPERATING SYSTEMS
2	1985	Paul j.Levine	COMPUTER SECURITY SYSTEM FOR TIME SHARED COMPUTER ACCESSED OVER TELEPHONE LINES
3	1986	Norman Hardy	COMPUTER SYSTEM SECURITY
4	1987	Andreas Pfitzmann, Michael Waidner	NETWORKS WITHOUT USER OBSERVABILITY
5	1988	Chris J. Mitchell	KEY STORAGE IN SECURED NETWORK
6	1989	Fred C. Piper	VOICE NETWORK SECURITY SYSTEM
7	1990	Donald Graji Mohnish Pabrai Uday Pahrai	METHODOLOGY FOR NETWORK SECURITY DESIGN
8	1991	L. Todd Heberlein	NETWORK SECURITY MONITOR
9	1992	John R. Corbin	APPARATUS AND METHOD FOR LICENSING SOFTWARE ON A NETWORK OF COMPUTERS
10	1993	Michael P.	COMPUTER NETWORK ABUSE
11	1994	Bruce E. McNair	SYSTEM AND METHOD FOR GRANTING ACCESS TO A RESOURCE
12	1995	Scott D. Hammersley, Arthur D. Smet, Peter M. Wottreng	METHOD AND APPARATUS FOR INTRAPROCESS LOCKING OF A SHARED RESOURCE IN A COMPUTER SYSTEM
13	1995	Daniel B. Clifton	RESOURCE ACCESS SECURITY SYSTEM FOR CONTROLLING ACCESS TO RESOURCES OF DATA PROCESSING SYSTEM
14	1996	Wei-Ming Hu	METHOD AND APPARATUS FOR AUTHENTICATING A CLIENT TO A SERVER COMPUTER SYSTEMS WHICH SUPPORT DIFFERENT SECURITY MECHANISMS
15	1997	Mark S. Miller, E. Dean Tribble, Norman Hardy, Christopher T. Hibbert	DIVERSE GOODS ARBITRATION SYSTEM AND METHOD FOR ALLOCATING RESOURCES IN A DISTRIBUTED COMPUTER SYSTEM
16	1998	Ian Foster, Carl Kesselman,Gene Tsudik, Steven Tuecke	A SECURITY ARCHITECTURE FOR COMPUTATIONAL GRIDS
17	1999	Daniel S. Glasser, Ann Elizabeth McCurdy, Robert M. Price	METHOD AND SYSTEM FOR CONTROLLING USER ACCESS TO A RESOURCE IN A NETWORK COMPUTING ENVIRONMENT

18	2000	Rajkumar Buyya, David Abramson, and Jonathan Giddy	AN ARCHITECTURE FOR A RESOURCE MANAGEMENT AND SCHEDULING SYSTEM IN A GLOBAL COMPUTATIONAL GRID
19	2001	Lalana Kagal, Tim Finin and Anupam Joshi	MOVING FROM SECURITY TO DISTRIBUTED TRUST IN UBIQUITOUS COMPUTING ENVIRONMENT
20	2002	Farag Azzedin and Muthucumaru Maheswaran	TOWARDS A TRUST-AWARE RESOURCE MANAGENT IN GRID COMPUTING SYSTEM
21	2003	Von Welch1 Frank Siebenlist2 Ian Foste	SECURITY FOR GRID SERVICES
22	2004	Ivan Krsul, Arijit Ganguly, Jian Zhang	VMPLANTS:PROVIDING AND MANAGING VM EXECUTION ENVIRONMENTS FOR GRID COMPUTING
23	2005	Daniel Olmedilla1, Omer F. Rana2, Brian	SECURITY AND TRUST ISSES IN SEMANTIC GRIDS
24	2006	David S. Linthicum	MOVING TO CLOUD COMPUTING STEP BY STEP
25	2007	Uzi Dvir	SECURITY SERVER IN THE CLOUD
26	2008	Mladen A. Vouk	CLOUD COMPUTING-ISSUES,RESEARCH AND IMPLEMENTATIONS
27	2009	Meiko Jensen,	ON TECHNICAL ISSUES OF CLOUD COMPUTING
28	2010	S. Subashini n, V.Kavitha	SECURITY ISSUES FOR CLOUD COMPUTING
29	2011	Luis M. Vaquero	SECURITY ISSUES IN CLOUD COMPUTING
30	2012 I	Deyan Chen1, Hong Zhao	DATA SECURITY AND PRIVACY PRESERVATION IN CLOUD COMPUTING
31	2012 A	Mohammed A. AlZain ,	CLOUD COMPUTING SECURITY SINGLE-MULTI CLOUDS
32	2013 C	Ming Li,	SCALABLE AND SECURE SHARING OF PERSONAL HEALTH RECORDS
33	2013 B	Miltiadis Kandias,	INSIDER THREAT IN CLOUD COMPUTING
34	2013 A	Niroshinie Fernando	MOBILE CLOUD COMPUTING-SURVEY
35	2014 D	Diogo A. B. Fernandes	SURVEY ISSUES IN CLOUD COMPUTING
36	2014 B	Md Whaiduzzaman	SURVEY ON VEHICULAR CLOUD COMPUTING
37	2014 A	A.Madhuri1, T.V.Nagaraju	RELIABLE SECURITY IN CLOUD COMPUTING ENVIRONMENT
38	2015 A	IbrahimAbaker	RISE OF BIG DATA ON CLOUD COMPUTING-REVIEW AND OPEN ISSUES
39	2015	TargioHashem	RISE OF CLOUD COMPUTING ARCHITECTURE IN BIG DATA
40	2015D	Gavin O Donnell,	CLOUD COMPUTING
41	2016	Sundas Iftikhar, Anum Tariq,	OPTIMAL TASK ALLOCATION ALGORITHM FOR COST MINIMIZATION AND LOAD BALANCING OF GSD TERMS

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BIOGRAPHY

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