International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2018 IJSRCSEIT | Volume 3 | Issue 3 | ISSN : 2456-3307

An Overview towards the Research on Cloud based Mobile Computing

Ajmera Rajesh
Academic Consultant, KU College Of Engineering And Technology, Kakatiya University, Warangal, Telangana India

ABSTRACT

Mobile Cloud Computing (MCC) which consolidates mobile computing and cloud computing, has turned out to be one of the business trendy expressions and a noteworthy exchange string in the IT world since 2009. As MCC is still at the beginning time of improvement, it is important to get a handle on a careful comprehension of the innovation so as to call attention to the bearing of future research. With the last point, this paper shows an audit on the foundation and guideline of MCC, attributes, late research work, and future research patterns. It at that point examinations the highlights and framework of mobile cloud computing. Whatever is left of the paper investigations the difficulties of mobile cloud computing, rundown of some research ventures identified with this zone, and brings up promising future research directions.

Keywords: Research Directions, Cloud Computing, Mobile Computing, Mobile Cloud Computing.

I. INTRODUCTION

In the course of recent years, propels in the field of system construct computing and applications in light of interest have prompted a dangerous development of use models, for example, cloud computing, programming as an administration, group arrange, web store, et cetera. As a noteworthy application show in the time of the Internet, Cloud Computing has turned into a huge research theme of the logical and modern groups since 2007. Generally, cloud computing is depicted as a scope of ser-indecencies which are given by an Internet-based group framework. Such bunch frameworks comprise of a gathering of ease servers or Personal Computers (PCs), sorting out the different assets of the PCs as per a specific administration procedure, and offering sheltered, solid, quick, advantageous and straightforward administrations, for example, information stockpiling, getting to and computing to customers. As indicated by the best ten vital innovation patterns for 2012 [1] gave by Gartner (a well known worldwide explanatory and counseling organization), cloud computing has been on the highest priority on the rundown, which implies cloud computing will increasingly affect the endeavor and most associations in 2012.

In the mean time, cell phones are considered as the representative for the different mobile gadgets as they have been associated with the Internet with the quickly developing of remote system innovation. Universality and portability are two noteworthy highlights in the cutting edge organize which gives a scope of customized arrange benefits through various system terminals and methods of getting to. The center innovation of cloud computing is bringing together computing, administrations, and particular applications as an utility to be sold like water, gas or power to clients. In this manner, the blend of a ubiquities mobile net-work and cloud computing produces another computing mode, in particular Mobile Cloud Computing.

As a legacy and advancement of cloud computing, assets in mobile cloud computing systems are virtualized and alloted in a gathering of various dispersed PCs as opposed to in customary nearby PCs or servers, and are given to mobile gadgets, for example, cell phones, versatile terminal, et cetera. (see Fig. 1). In the mean time, different applications in light of mobile cloud computing have been created and served to clients, for example, Googles Gmail, Maps and Navigation frameworks for Mobile. As indicated by the research from Juniper, the cloud computing based mobile programming and application are relied upon to rise 88% every year from 2009 to 2014, and such development may make US 9.5 billion dollars in 2014.

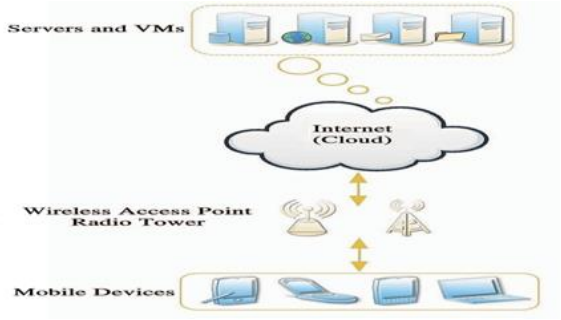

Figure 1. Mobile Cloud Computing

While mobile cloud computing make an extraordinary commitment to our day by day lives, it will likewise, notwithstanding, bring various difficulties and issues. So, the center of such difficulties and issues is exactly how to consolidate the two advancements consistently. On one hand, to guarantee that mobile gadgets sufficiently make best utilization of focal points of cloud computing to enhance and broaden their capacities. Then again, to conquer the burdens of constrained assets and computing capacity in mobile gadgets keeping in mind the end goal to get to cloud computing with high effectiveness like conventional PCs and Servers. Therefore, keeping in mind the end goal to explain the specified difficulties and call attention to additionally research, getting an intensive comprehension of the novel computing worldview - mobile cloud computing, is vital. This paper presents the fundamental model of mobile cloud computing, its experience, key innovation, ebb and flow research status, and its further research viewpoints too.

II. BACKGROUND

As an advancement and augmentation of Cloud Computing and Mobile Computing, Mobile Cloud Computing, as another expression, has been conceived since 2009. To enable us to get a handle of better understanding of Mobile Cloud Computing, we should begin from the two past systems: Mobile Computing and Cloud Computing.

A. Mobile Computing

Portability has turned into an exceptionally prominent word and quickly in-wrinkling part in the present computing zone. An inconceivable development has showed up in the advancement of mobile gadgets, for example, cell phone, PDA, GPS Navigation and workstations with an assortment of mobile computing, networking and security advances. What's more, with the advancement of remote innovation like WiMax, Ad Hoc Network and WIFI, clients might surf the Internet considerably simpler however not restricted by the links as previously. Along these lines, those mobile gadgets have been acknowledged by an ever increasing number of individuals as their first decision of working and amusement in their day by day lives.

All in all, what is Mobile computing precisely? In Wikipedia, it is portrayed as a type of human-PC connection by which a PC is relied upon to be transported amid ordinary utilization [2]. Mobile computing depends on an accumulation of three noteworthy ideas: equipment, software and communication. The ideas of equipment can be considered as mobile gadgets, for example, cell phone and workstation, or their mobile segments. Software of mobile computing is the various mobile applications in the gadgets, for example, the mobile program, hostile to infection software and

amusements. The communication issue incorporates the framework of mobile networks, conventions and information conveyance in their utilization. They should be straightforward to end clients.

1) **Features: the features of mobile computing are as follows:**

versatility: mobile hubs in mobile computing network can set up association with others, even settled hubs in wired network through Mobile Support Station (MSS) amid their moving.

a) **Diversity of network conditions:** regularly the networks utilizing by mobile hubs are not one of a kind, such networks can be a wired network with high-bandwidth, or a remote Wide Area Network (WWAN) with low bandwidth, or even in status of separated.

b) **Frequent disconnection and consistency:** as the limitation of battery control, charge of remote communication, network conditions and so on, mobile hubs won't generally keep the association, yet separate and steady with the remote network latently or effectively.

c) **Dissymmetrical network communication:** servers and access focuses and different MSS empower a solid send/get capacity, while such capacity in mobile hubs is very powerless comparatively. In this manner, the communication bandwidth and overhead amongst downlink and uplink are disparity.

d) **Low reliability:** because of signs is powerless to between ference and snooping, a mobile computing network framework must be considered from terminals, networks, database stages, and additionally applications improvement to address the security issue.

2) **Challenges:** Compared with the customary wired net-work, mobile computing network may confront different issues and difficulties in various angles, for example, flag aggravation, security, hand-off postponement, restricted power, low computing capacity, and so on. because of the remote condition and various mobile hubs. What's more, the Quality of Service (QoS) in mobile computing network is significantly simpler to be influenced by the landforms, climate and structures.

B. Cloud Computing

In the time of PC, numerous clients found that the PCs they purchased 2 years back can't keep pace with the improvement of software these days; they require a higher speed CPU, a bigger limit hard circle, and a higher execution Operation System (OS). That is the enchantment of 'Moores Law' which urges client redesigning their PCs continually, however never at any point overwhelmed the improvement of methods. Consequently, a term called 'Cloud Computing' burst upon our lives.

Cloud Computing has turned into a mainstream expression since 2007. Be that as it may, there is no consensual definition on what a Cloud Computing or Cloud Computing System is, because of many engineers and associations portrayed it from alternate points of view. C. Hewitt [3] presents that the significant capacity of a cloud computing framework is putting away information on the cloud servers, and employments of reserve memory innovation in the customer to bring the information. Those customers can be PCs, workstations, cell phones and so on. R. Buyya [4] gives a definition from the point of view of denoting that cloud computing is a parallel and circulated computing framework, which is joined by a gathering of virtual machines with inner connections. Such frameworks progressively offer computing assets from specialist organizations to clients as indicated by their Service level Agreement (SLA). In any case, a few creators said that cloud computing was not a totally new idea. L. Youseff [5]

from UCSB contend that cloud computing is simply consolidated by numerous existent and couple of new ideas in numerous research fields, for example, appropriated and matrix computing, Service-Oriented Architectures (SOA) and in virtualization.

In this paper, we consider the cloud computing is a vast scale financial and business computing worldview with virtualization as its center innovation. The cloud computing framework is the improvement of parallel handling, appropriated and network computing on the Internet, which gives different QoS ensured administrations, for example, equipment, foundation, stage, software and capacity to various Internet applications and clients.

1) **Framework:** cloud computing frameworks really can be considered as an accumulation of various administrations, subsequently the framework of cloud computing is isolated into three layers, which are foundation layer, stage layer, and application layer

a) Infrastructure layer: it incorporates assets of computing and capacity. In the base layer of the framework, physical gadgets and equipment, for example, servers and stockpiles are virtualized as an asset pool to give computing stockpiling and network administrations clients, so as to introduce activity framework (OS) and work software application. In this way it is indicated as Infrastructure as a Service (IaaS). Regularly benefits in this layer, for example, Elastic Computing Cloud of Amazon [6].

b) Platform layer: this layer is considered as a center layer in the cloud computing framework, which incorporates the environ-ment of parallel programming configuration, disseminated capacity and administration framework for organized mass information, dispersed record framework for mass information, and other framework administration devices for cloud computing. Program designers are the significant customers of the stage layer. All stage assets, for example, program testing, running and keeping up are given by the stage specifically yet not to end clients. Along these lines, this kind of administrations in a stage layer is called Platform as a Service (PaaS). The normal administrations are Google App Engine [7] and Azure from Microsoft [8].

Application layer: this layer gives some straightforward software and applications, and in addition costumer interfaces to end clients. Along these lines we name this kind of administrations in the application layer as Software as a Service (SaaS). Clients utilize customer software or a program to call administrations from suppliers through the Internet, and pay costs as per the utility plan of action (like water or power) [9]. The soonest SaaS is the Customer Relationship Management (CRM) [10] from Salesforce, which was created in view of the force.com (a PaaS in Salesforce). Some different administrations gave by Google on-line office, for example, records, spreadsheets, introductions are all SaaS.

Features: the features of Cloud Computing are as follows:

c)Virtualization: the 'Cloud' can be considered as a virtual asset pool [11] where all base layer equipment de-indecencies is virtualized. End clients get to wanted assets through a program and get information from cloud computing suppliers without keeping up their own particular server farms. Besides, some virtual machines (VMs) are often introduced in a server to enhance the proficiency to utilize assets; and such VMs bolster stack movement when there is a server over-stack.

d) Reliability, ease of use and extensibility: cloud computing gives an experimental mode to store client's information while clients don't stress over the issues, for example, software refreshing, spill fixing, infection assaults and information misfortune. On the off chance that disappointment occurs on a server or VM, the cloud computing

frameworks exchange and reinforcement those information to different machines, and then erase those disappointment hubs from the frameworks naturally keeping in mind the end goal to ensure the entire framework has ordinary activity [12]. Then, cloud can be reached out from even and vertical [13] in an extensive scale network, to process various solicitations from thousands of hubs and hosts.

e) Large-scale: keeping in mind the end goal to have the capacity of supercomputing and mass stockpiling, a cloud computing framework typically comprises of thousands of servers and PCs. Google Cloud Computing, for instance, has effectively controlled 2% of all servers or around 1 million servers situated in two hundred better places on the planet, and will move upward to 10 million servers in the following decade [14].

f) Autonomy: a cloud framework is an autonomic framework, which naturally designs and dispenses the assets of equipment, software and capacity to customers on-demand, and the administration is straightforward to end clients.

Difficulties: above all else, cloud computing needs an enhanced system to give a sheltered and high productivity benefit as the various summoned outsider software and foundations are actualizing in computing. What's more, because of server farms of asset utilizing a mass of power, productive asset planning methodology and strategies are required keeping in mind the end goal to spare vitality. Moreover, as a Service Level Agreement (SLA) is built up amongst clients and specialist co-ops in cloud computing, so the execution and investigation of administrations are important to be observed. To wrap things up, straightforward and helpful application interfaces are crucial for specialist organizations in cloud computing, therefore a uniform standard is required energetically.

III. MOBILE CLOUD COMPUTING

These days, both equipment and software of mobile gadgets get more noteworthy change than previously, some cell phones, for example, iPhone 4S, Android serials, Windows Mobile serials and Blackberry, are never again simply customary mobile telephones with discussion, SMS, Email and site program, yet are every day necessities to clients. In the mean time, those cell phones incorporate different detecting modules like route, optics, gravity, orientation, and so on which brings a helpful and intelligent mobile experience to clients. In 2010, Google CEO Eric Schmidt portrayed mobile cloud computing in a meeting that 'in view of cloud computing administration improvement, mobile telephones will turn out to be progressively convoluted, and advance to a compact super PC' [15].

Comparable with Cloud Computing, there are a ton however no consensual definitions on what mobile cloud computing is. In this paper, we think of it as is a novel computing mode comprising of mobile computing and cloud computing, which give cloud based administrations to clients through the Internet and mobile gadgets. On one hand, the mobile cloud computing is an advancement of mobile computing, and an expansion to cloud computing. In mobile cloud computing, the past mobile gadget based escalated computing, information stockpiling and mass data preparing have been exchanged to 'cloud' and in this manner the necessities of mobile gadgets in computing capacity and assets have been diminished, so the creating, running, conveying and utilizing method of mobile applications have been completely changed. Then again, the terminals which individuals used to get to and procure cloud administrations are reasonable for mobile gadgets like cell phone, PDA, Tablet, and iPad yet not limited to settled gadgets, (for example, PC), which mirrors the points of interest and unique aim of

cloud computing. In this way, from the two parts of mobile computing and cloud computing, the mobile cloud computing is a combi-country of the two advances, an improvement of disseminated, lattice and brought together calculations, and have expansive prospects for application. As demonstrated is the Fig 2, mobile cloud computing can be just isolated into cloud computing and mobile computing. Those mobile gadgets can be PCs, PDA, cell phones, and so on which associates with a hotspot or base station by 3G, WIFI, or GPRS. As the computing and real information preparing stages have been relocated to 'cloud', the capacity requirement of mobile gadgets is constrained, some minimal effort mobile gadgets or even non-cell phones can likewise accomplish mobile cloud computing by utilizing a cross-stage mid-product. Al-however the customer in mobile cloud computing is changed from PCs or settled machines to mobile gadgets, the primary idea is still cloud computing. Mobile clients send benefit solicitations to the cloud through a web program or work area application, at that point the administration segment of cloud assigns assets to the demand to build up association, while the observing and ascertaining elements of mobile cloud computing will be actualized to guarantee the QoS until the point when the association is finished.

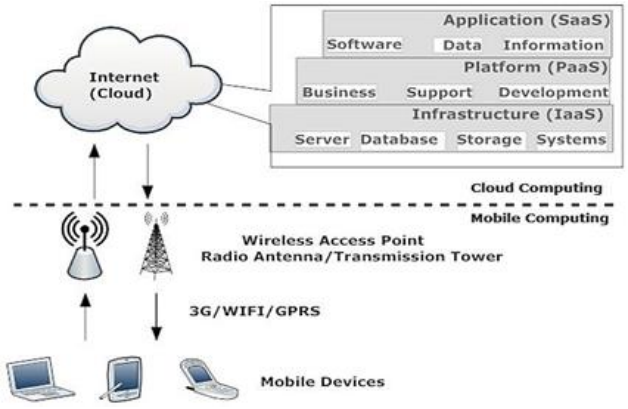

Figure 2. Architecture of Mobile Cloud Computing

B. Challenges and solutions

The fundamental goal of mobile cloud computing is to give an advantageous and fast strategy for clients to get to and get information from the cloud, such helpful and quick technique implies getting to cloud computing assets adequately by utilizing mo-bile gadgets. The real test of mobile cloud computing originates from the characters of mobile gadgets and remote networks, and also their own particular confinement and constraint, and such test makes application planning, programming and sending on mobile and circulated gadgets more convoluted than on the settled cloud gadgets [16]. In mobile cloud computing condition, the constraints of mobile gadgets, nature of remote communication, sorts of utilization, and support from cloud computing to mobile are terrifically essential factors that influence surveying from cloud computing. Table 2 gives a review of proposed difficulties and a few arrangements about mobile cloud computing.

1) Limitations of mobile gadgets: While talking about mo-bile gadgets in cloud the main thing is asset compel. In spite of the fact that cell phones have been enhanced clearly in different viewpoints, for example, ability of CPU and memory, stockpiling, size of screen, remote communication, detecting innovation, and activity frameworks, still have genuine impediments, for example, restricted computing capacity and vitality asset, to send convoluted applications. By appear differently in relation to PCs and Laptops in a given condition, these cell phones like iPhone 4S, Android serials, Windows Mobile serials diminish 3 times in preparing limit, 8 times in memory, 5 to 10 times away limit and 10 times in network bandwidth.

Typically, cell phone should be charged regular as dialling calls, sending messages, surfing the Internet, people group getting to, and other web applications. As indicated by past advancement inclines, the expanded mobile computing capacity and quick improvement of screen innovation will prompt more

Table 1. Challenges and Solutions of Mobile Cloud Computing

Challenges	Solutions
Limitations of mobile devices	Virtualization and Image, Task migration
Quality of communication	Bandwidth upgrading, Data delivery time reducing
Division of applications services	Elastic application division mechanism

and more muddled applications sent in cell phones. In the event that the battery innovation can't be enhanced in a brief timeframe, at that point how to adequately spare battery control in cell phone is a noteworthy issue we meet today. The handling limit, stockpiling, battery time, and communication of those cell phones will be enhanced reliably with the improvement of mobile computing. Be that as it may, such huge varieties will endure as one of significant difficulties in mobile cloud computing.

IV. OPEN RESEARCH ISSUES

Albeit a few ventures of mobile cloud computing have just been conveyed far and wide, there is as yet far for business execution, and some research angles ought to be considered in additionally work.

A. Data conveyance

Because of the element of asset obliges, mobile gadgets have potential difficulties in cloud getting to, steady air conditioning cessing, information transmission, and so on. Such difficulties can be tackled utilizing: exceptional application (administration) and center product (give a stage to all mobile cloud computing frameworks).

B. Task division

Researchers isolate errands (applications) from mobile gadgets into different sub-assignments and convey some of them to keep running in cloud, which is a decent answer for the asset restricted mobile gadgets. Be that as it may, we don't have an ideal system or calculation on the most proficient method to separate these assignments, which one ought to be handled by cloud and which one by gadgets.

C. Better benefit

The first reason for mobile cloud computing is providing PC-loved administrations to mobile terminals. Be that as it may, as the current distinctive features between mobile gadgets and PCs, we can't specifically transplant the administrations from PCs' stage to mobile gadgets. In this way, additionally research should endeavor to recognize the technique on the most proficient method to give reasonable and amicable intuitive administrations for mobile gadgets.

V. CONCLUSION

With the high expanding of information calculation in trade and science, the limit of information handling has been considered as a key asset in numerous nations. Mobile cloud computing (MCC), as an improvement and expansion of mobile computing (MC) and cloud computing (CC), has acquired the high versatility and adaptability, and turn into a hot research theme as of late. We presume that there are three fundamental advancement approaches in MCC, which are concentrating on the impediments of mobile gadgets, nature of communication, and division of uses administrations. Right off the bat, utilizing virtualization and picture innovation can address it viably, and move assignment from terminal to cloud is additionally a decent method to accomplish better outcomes. Besides, as we probably am aware the nature of communication in wired network is superior to in remote network, so diminishing the extent of information conveyance in remote condition is a viable method to enhance the quality. Furthermore, redesigning bandwidth is imagined to be a straightforward method to increment performance yet it brings about extra cost to clients. Sending a powerful flexible application division system is esteemed to be the best answer for ensure the application benefit in

MCC; its confounded, however encouraging high effect comes about.

VI. REFERENCES

[1]. M. Cooney. The main 10 vital innovation patterns for 2012. Online]. Accessible: http://www.networkworld.com/news/2011/101811-gartner-innovation patterns 252100.html

[2]. (2009, Sept) Mobile distributed computing endorsers of aggregate almost one billion by 2014. Online]. Accessible: http://www.abiresearch.com/press/1484

[3]. C. Hewitt, "Organizations for versatile, vigorous, protection well disposed customer distributed computing," Internet Computing, IEEE, vol. 12, no. 5, pp. 96-99, 2008.

[4]. C. Yeo, R. Buyya, "Market-situated distributed computing: Vision, buildup, and reality for conveying it benefits as registering utilities," in High Performance Computing and Communications, 2008. HPCC'08. tenth IEEE International Conference on. IEEE, 2008, pp. 5-13.

[5]. L. Youseff, M. Butrico, and D. Da Silva, "Toward a bound together metaphysics of distributed computing," in Grid Computing Environments Workshop, 2008. GCE'08. IEEE, 2008, pp. 1-10.

[6]. S. Shankar, "Amazon flexible process cloud," 2009.

[7]. A. Zahariev, "Google application motor," Helsinki University of Technology, 2009.

[8]. (2011) Microsoft sky blue landing page. Online]. Accessible: http://www. windowsazure.com/en-us/

[9]. J. McCarthy. (1961) Speech given to celebrate mits centennial. Online]. Accessible: http://en.wikipedia.org/wiki/John McCarthy (PC researcher)

[10]. (2009) The client relationship administration (crm). Online]. Profit capable: http://en.wikipedia.org/wiki/Customer relationship administration

[11]. K. Nagin, B. Rochwerger, E. Impose, A. Galis, "The supply model and engineering for open unified distributed computing," IBM Journal of Research and Development, vol. 53, no. 4, pp. 1-11, 2009.

[12]. G. Manager, P. Malladi, D. Quan, L. Legregni, and H. Lobby, "Distributed computing," IBM white paper, Version, vol. 1, 2007.

[13]. L. Mei, W. Chan, and T. Tse, "A story of mists: worldview examinations and a few contemplations on look into issues," in Asia-Pacific Services Com-puting Conference, 2008. APSCC'08. IEEE. IEEE, 2008, pp. 464-469.

[14]. R. Cohen. (2010, O) The distributed computing opportunity by the numbers. Online]. Accessible: http://www.elasticvapor.com/2010/05/distributed computing opportunity-by-numbers.html

[15]. B. Marrapese. (2010, Dec.) Google president: a couple of years after the fact, the cell phone turns into a super PC. Online]. Accessible: http://www.itnews-blog.com/it/21320.html

[16]. S. Chetan, G. Kumar, K. Dinesh, K. Mathew, and M. Abhimanyu, "Distributed computing for versatile world," accessible at chetan. ueuo. com.

[17]. B. Chun, S. Ihm, P. Maniatis, M. Naik, and A. Patti, "Clonecloud: Elastic execution between cell phone and cloud," in Proceedings of the 6th gathering on Computer frameworks. ACM, 2011, pp. 301-314.

[18]. X. Zhang, A. Kunjithapatham, S. Jeong, and S. Gibbs, "Towards a versatile application show for expanding the processing abilities of cell phones with distributed computing," Mobile Networks and Applica-tions, vol. 16, no. 3, pp. 270-284, 2011.

[19]. Y. Lu, S. Li, and H. Shen, "Virtualized screen: A third component for cloud-portable union," Multimedia, IEEE, vol. 18, no. 2, pp. 4-11, 2011.

[20]. I. Giurgiu, O. Riva, D. Juric, I. Krivulev, and G. Alonso, "Calling the cloud: Enabling cell

phones as interfaces to cloud applications," in Proceedings of the ACM/IFIP/USENIX tenth worldwide meeting on Middleware. Springer-Verlag, 2009, pp. 83-102.

[21]. G. Alonso, J. Rellermeyer, and T. Roscoe, "R-osgi: Distributed applica-tions through programming modularization," IFIP Lecture Notes in Computer Science (LNCS), vol. 4834, no. 4834, pp. 1-20, 2011.

[22]. S. Jeong, X. Zhang, A. Kunjithapatham, and S. Gibbs, "Towards a flexible application display for enlarging figuring abilities of portable stages," Mobile Wireless Middleware, Operating Systems, and Applications, pp. 161-174, 2010.

[23]. M. Satyanarayanan, P. Bahl, R. Caceres, and N. Davies, "The case for vm-based cloudlets in portable processing," Pervasive Computing, IEEE, vol. 8, no. 4, pp. 14-23, 2009.

[24]. E. Marinelli, "Hyrax: distributed computing on cell phones utilizing mapre-duce," DTIC Document, Tech. Rep., 2009.

[25]. B. Srinivas, Shoban Babu Sriramoju, "A Secured Image Transmission Technique Using Transformation Reversal" in "International Journal of Scientific Research in Science and Technology", Volume-4, Issue-2, February-2018, 1388-1396 Print ISSN: 2395-6011 | Online ISSN: 2395-602X]

[26]. B. Srinivas, Gadde Ramesh, Shoban Babu Sriramoju, "A Study on Mining Top Utility Itemsets In A Single Phase" in "International Journal for Science and Advance Research in Technology (IJSART)", Volume-4, Issue-2, February-2018, 1692-1697, ISSN(ONLINE): 2395-1052]

[27]. B. Srinivas, Shoban Babu Sriramoju, "Managing Big Data Wiki Pages by Efficient Algorithms Implementing In Python" in "International Journal for Research in Applied Science & Engineering Technology (IJRASET)", Volume-6, Issue-II, February-2018, 2493-2500, ISSN : 2321-9653]

[28]. Shoban Babu Sriramoju, "Analysis and Comparison of Anonymous Techniques for Privacy Preserving in Big Data" in "International Journal of Advanced Research in Computer and Communication Engineering", Vol 6, Issue 12, December 2017, DOI 10.17148/IJARCCE.2017.61212 ISSN(online) : 2278-1021, ISSN(print) : 2319-5940]

[29]. Shoban Babu Sriramoju, "OPPORTUNITIES AND SECURITY IMPLICATIONS OF BIG DATA MINING" in "International Journal of Research in Science and Engineering", Vol 3, Issue 6, Nov-Dec 2017 ISSN : 2394-8299].

[30]. Guguloth Vijaya, A. Devaki, Dr. Shoban Babu Sriramoju, "A Framework for Solving Identity Disclosure Problem in Collaborative Data Publishing" in "International Journal of Research and Applications" (Apr-Jun © 2015 Transactions), Vol 2, Issue 6, 292-295 1

[31]. Shoban Babu Sriramoju, "Heat Diffusion Based Search for Experts on World Wide Web" in "International Journal of Science and Research", https://www.ijsr.net/archive/v6i11/v6i11.php, Volume 6, Issue 11, November 2017, 632 - 635, #ijsrnet

[32]. Dr. Shoban Babu Sriramoju, Prof. Mangesh Ingle, Prof. Ashish Mahalle "Trust and Iterative Filtering Approaches for Secure Data Collection in Wireless Sensor Networks" in "International Journal of Research in Science and Engineering" Vol 3, Issue 4, July-August 2017 ISSN : 2394-8299].

[33]. Ajmera Rajesh, Siripuri Kiran, " Anomaly Detection Using Data Mining Techniques in Social Networking" in "International Journal for Research in Applied Science and Engineering Technology", Volume-6, Issue-II, February 2018, 1268-1272 ISSN : 2321-9653], www.ijraset.com

[34]. Shoban Babu Sriramoju, "A Framework for Keyword Based Query and Response System for Web Based Expert Search" in "International

Journal of Science and Research" Index Copernicus Value(2015):78.96 ISSN : 2319-7064].

[35]. Mounika Reddy, Avula Deepak, Ekkati Kalyani Dharavath, Kranthi Gande, Shoban Sriramoju, "Risk-Aware Response Answer for Mitigating Painter Routing Attacks" in "International Journal of Information Technology and Management" Vol VI, Issue I, Feb 2014 ISSN : 2249-4510]

[36]. Mounica Doosetty, Keerthi Kodakandla, Ashok R, Shoban Babu Sriramoju, "Extensive Secure Cloud Storage System Supporting Privacy-Preserving Public Auditing" in "International Journal of Information Technology and Management" Vol VI, Issue I, Feb 2012 ISSN : 2249-4510]

[37]. Shoban Babu Sriramoju, "Multi View Point Measure for Achieving Highest Intra-Cluster Similarity" in "International Journal of Innovative Research in Computer and Communication Engineering" Vol 2,Issue 3,March 2014 ISSN(online) : 2320-9801, ISSN(print) : 2320-9798]

[38]. Ajay Babu Sriramoju, Dr. S. Shoban Babu, "Analysis on Image Compression Using Bit-Plane Separation Method" in "International Journal of Information Technology and Management", Vol VII, Issue X, November 2014 ISSN : 2249-4510]

[39]. Shoban Babu Sriramoju, "Mining Big Sources Using Efficient Data Mining Algorithms" in "International Journal of Innovative Research in Computer and Communication Engineering" Vol 2, Issue 1,January 2014 ISSN(online) : 2320-9801, ISSN(print) : 2320-9798]

[40]. Ajay Babu Sriramoju, Dr. S. Shoban Babu, "Study of Multiplexing Space and Focal Surfaces and Automultiscopic Displays for Image Processing" in "International Journal of Information Technology and Management" Vol V, Issue I, August 2013 ISSN : 2249-4510]

[41]. Shoban Babu Sriramoju, Dr. Atul Kumar, "An Analysis on Effective, Precise and Privacy Preserving Data Mining Association Rules with Partitioning on Distributed Databases" in "International Journal of Information Technology and management" Vol-III, Issue-I, August 2012 ISSN : 2249-4510]

[42]. Monelli Ayyavaraiah, "Review of Machine Learning based Sentiment Analysis on Social Web Data" in "International Journal of Innovative Research in Computer and Communication Engineering" Vol 4,Issue 6,March 2016 ISSN(online) : 2320-9801, ISSN(print) : 2320-9798]

[43]. Dr. Shoban Babu Sriramoju, Ramesh Gadde, "A Ranking Model Framework for Multiple Vertical Search Domains" in "International Journal of Research and Applications" Vol 1, Issue 1,Jan-Mar 2014 ISSN : 2349-0020].

[44]. Monelli Ayyavaraiah, " A Study on Large-Scale Cross-Media Retrieval of Wikipedia Images towards Visual Query and Textual Expansion" in "International Journal for Research in Applied Science and Engineering Technology", Volume-6, Issue-II, February 2018, 1238-1243 ISSN : 2321-9653], www.ijraset.com

[45]. Monelli Ayyavaraiah, "Nomenclature of Opinion Miningand Related Benchmarking Tools" in "International Journal of Scientific & Engineering Research" Vol 7,Issue 8, February 2018, ISSN 2229-5518]

[46]. Siripuri Kiran, 'Decision Tree Analysis Tool with the Design Approach of Probability Density Function towards Uncertain Data Classification', International Journal of Scientific Research in Science and Technology(IJSRST), Print ISSN : 2395-6011, Online ISSN : 2395-602X,Volume 4 Issue 2, pp.829-831, January-February 2018. URL : http://ijsrst.com/IJSRST1841198

[47]. Shoban Babu Sriramoju, Madan Kumar Chandran, "UP-Growth Algorithms for Knowledge Discovery from Transactional Databases" in "International Journal of Advanced Research in Computer Science and Software Engineering", Vol 4, Issue 2, February 2014 ISSN : 2277 128X]

[48]. Siripuri Kiran, Ajmera Rajesh, "A Study on Mining Top Utility Itemsets In A Single Phase" in "International Journal for Science and Advance Research in Technology (IJSART)", Volume-4, Issue-2, February-2018, 637-642, ISSN(ONLINE): 2395-1052]