

# Mobile Learning with Google App Engine

S.K. Atika, Dr.C. Nalini, Dr.C. Rajabhushanam

Received: 06 November 2016 ▪ Revised: 09 December 2016 ▪ Accepted: 08 January 2017

**Abstract:** The speedy pace of modification being witnessed globally within the info and Communication Technology sector likewise because the skyrocketing prices in obtaining basic education wants met have forced several to hunt for other ways of meeting these wants. Recent innovations in distance education displayed the pathway to new and dynamic ways that of learning through Massively Open online Courses (MOOCs) geared toward providing unlimited participation and open access via the online. Additionally to the current, the quality of today's learners and ubiquitousness of smartphones has seen a surge in analysis focused on ways that of providing contextualized styles of learning that meet the triad anyplace, anytime, and anyone. To the current impact there are growing numbers of analysis publications at intervals the ambits of Mobile Native Apps, Mobile internet Apps, Hybrid Apps and the way they're getting used to facilitate learning. however with every of those solutions comes the difficulty of quantifiability and the way this may be overcome to satisfy the ever increasing demands of passionate learners round the globe. In this paper, we tend to plan to offer a cloud computing resolution for Mobile Learning with Google App Engine.

**Keywords:** Mobile Computing; Web App; Cloud Computing; Mobile Learning; MOOCs.

## INTRODUCTION

MOOCs, a model for delivering learning content on-line to somebody World Health Organization desires to require a course, with no limit has been around for a moment currently. However, the unprecedented growth within the numbers of these taking part in its offerings either as producers (collaborating Universities and their representative instructors) or shoppers (motivated learners) led to a rebranding of the year 2012, as "The year of the MOOCs." This explosive burst has been mostly because of the increasing prices of upper Education; steep cuts in University funding, and several hungry students from round the world World Health Organization lack access to elite universities, clasp MOOCs as a path toward refined skills and high-paying jobs, while not paying tuition or assembling a university degree. In step with the International Telecommunications Union, the quantity of mobile-cellular subscriptions worldwide is approaching the quantity of individuals on earth. Mobile cellular subscriptions can reach nearly seven billion by the tip 2014, love a penetration rate of ninety six. It conjointly means there's roughly one mobile device for each person on this planet. The itinerant has arguably become the most scientific discipline device for several these days. Some years past, the foremost necessary use of the itinerant was for creating and receiving calls yet as text electronic communication. these days from any convenient location, folks are able to receive and reply email on Yahoo, Hotmail, Gmail, video chat with friends on Skype, or free voice calls on Viber, text-chat on Whatsapp, share favourite quotes on Twitter, post photos on Instagram, network on LinkedIn, Facebook, Google+, and also the list goes on. In fact, in step with, the share of mobile internet browsing for the terribly initial time received a twenty one.6% slice of all world browsing with a big fraction of this variety being mobile-only users. I.e. people who don't or terribly seldom use a desktop, portable computer or pill to access the online. With several currently adopting this medium for content delivery, it's extremely expected that these devices would be used extensively for delivering structured learning content, period of time peer-to-peer yet as peer-to-instructor collaboration, quizzes, streaming of live video content, survey taking, sharing of assignment

---

SK. Atika, UG Scholar, Department of Computer Science and Engineering, BIST, BIHER, Bharath Institute of Higher Education & Research, Selaiyur, Chennai. E-mail: afrozeeatika@gmail.com

Dr.C. Nalini, Professor, Department of Computer Science and Engineering, BIST, BIHER, Bharath Institute of Higher Education & Research, Selaiyur, Chennai. E-mail: drnalinihidambaram@gmail.com

Dr.C. Rajabhushanam, Professor, Department of Computer Science and Engineering, BIST, BIHER, Bharath Institute of Higher Education & Research, Selaiyur, Chennai. E-mail: Rajabhushanam.cse@bharathuniv.ac.in

files, lecture slides and far a lot of. This kind of answer got to be associate degree all-in-one learning framework that ought to be able to scale handily and be cross-platform compatible. However, there are well-known limitations with mobile devices like battery life, bandwidth, security, screen sizes, and transmission interferences.

Additionally to the present the extremely fragmented nature and ever evolving mobile landscape makes providing such a completely integrated learning approach a true problem requiring important concerns for the various mobile operational Systems and also the integration of disparate technologies. During this paper, we have a tendency to proffer a mobile cloud computing answer to those issues through the utilization of Google App Engine (GAE) conjointly merely called App Engine (AE). The projected answer for developing mobile learning applications by and for instructional establishments will plenty of work by liberating up the mobile device resources turning it into a skinny shopper whereas creating most use of the ability of the cloud. Conjointly it provides numerous tools for period of time collaboration between peers and instructors, permits video streaming, quiz taking and file sharing. So it's associate degree all-in-one mobile learning approach with automatic measurability and cross-platform compatibility.

## **LITERATURE SURVEY**

[1] Massive open online courses (MOOCs) are a recent addition to the range of online learning options. MOOCs have been run by a variety of public and elite universities, especially in North America. Many academics have taken interest in MOOCs recognizing the potential to deliver education around the globe on an unprecedented scale.

This paper seeks to classify academic research relating to MOOCs, based on a systematic review of the existing peer reviewed MOOC literature. Search techniques for papers related to MOOCs are considered and a corpus of papers identified, then a grounded research approach is presented from which a classification of the works emerges.

[2] In this paper, we have a tendency to aimed to guide concerning latest development and studies concerning student's performance analysis and Learning Analytics in Massively Open online Courses (MOOCs) for researchers related with the topics. For this purpose short review for usage of performance prediction and Learning Analytics in MOOCs is investigated In our study, to assist readers get at home with our topic, firstly literature info concerning basic ideas are explained. Then to know feature's importance level and their relationships a lot of elaborate, info concerning some papers were provided. After that, findings concerning usage of student performance prediction and Learning Analytics in MOOCs are summarized.

[3] Leading on-line supplier's area unit currently providing SAS® users with "free" access to content for learning the way to use and program in SAS. This content is accessible to anyone within the variety of large open on-line content (or courses) (MOOC). Not solely is all the content offered for "free", however it's designed with the gap learner in mind, empowering users to be told employing a versatile and self-directed approach. As noted on Wikipedia.org, "A MOOC is an internet course, content, or different resource geared toward unlimited participation associated created on the market in an open access forum exploitation the online." This presentation illustrates however anyone will access a wealth of learning technologies together with comprehensive student notes, teacher lesson plans, active exercises, Power Points, audio, webinars, and videos.

[4] The development of MOOCs in China has attracted the eye from the govt. to schools and universities additionally because the society, that is additionally the key of the property development of MOOCs. During this study, through information investigation, we tend to analyzed the overall state of affairs of MOOCs, and presents the state of this MOOCs in China. supported the information of fourteen domestic MOOCs platforms with 1388 courses and a survey of forty-one schools and universities, this study analyzed the establishments of the course construction, the course set modes, the course application models, and additionally analyzed the issues like course certificate and credits management. Finally, from the attitude of the standard assurance system, we tend to designed the property development of MOOCs in China.

## **MOBILE LEARNING**

A form of micro learning, mobile learning is the process of gaining knowledge in a chosen subject no matter where you are, who you're surrounded by or which device you have to hand; it can be undertaken on your laptop while your partner enjoys their favorite box set or on your smartphone while riding the bus to work.

Mobile learning is delivered in bite-sized chunks, making it easy to digest, simple to refer to in the future and, crucially, addictive.

For mobile learning to be effective, it must lean on modern forms of content that are designed to engage learners.

Most present day learning systems are built to run on desktop computers which therefore imply that porting to the mobile platform will require not just a certain degree of customization but rather a complete redesign of the entire system.

There are two major ways in which learning content designers generally tend to approach the mobile space; Mobile Native Apps and Mobile Web Apps. Each of this requires a separate approach and do have their unique advantages as well as disadvantages. Some of the advantages with choosing to develop mobile native apps include but are not limited to;

- A richer more compelling User Experience.
- The ability to run offline.
- A better “front of the mind” penetration as the app stores provide a certain level of visibility to app users.
- Native apps are easier to monetize. Google Play provides free, up-front purchase, and in-app billing options for distribution and monetization of your app. However, there are also downsides with choosing to develop native apps. They are;
- Native apps are not cross-platform compatible which implies that several versions of the app are required for the different Operating Systems. This may have a huge effect on cost and time.
- Keeping the apps up-to-date also means that more work will have to be done in terms of development, testing, and distribution for all the platforms represented in the market. Another option available as earlier mentioned could be choosing to go the mobile web app route. Mobile web apps are much simpler to develop than mobile native apps as they require three core technologies namely; HTML (for structuring of content), CSS (for presentation) and JavaScript (for interactivity and animation). Mobile web apps unlike native apps are;
- Browser-based and therefore do not depend on the underlying Operating System. Hence making them platform and device independent.
- It is downloaded from a central server each time it is run hence freeing up the mobile device to act as a thin client. This also makes updating the app easier since only one update is required and every device that accesses the application gets the newer version instantly. The user can then bookmark the URL for repeated use.
- Can also run on the mobile device offline (in cases where HTML 5 is used in its development since this allows for local storage). With this too there are also certain disadvantages to Mobile Web apps. This are;
- Mobile browsers are limited compared to desktop browsers.
- They need connection to function.
- Since they generally can't access on-board hardware and software implies that they can't take full advantage of certain services and drivers for example in the area of serious games.

To deal with the above mentioned issues while taking full advantage of the possibilities made available by the integration of the mobile device and the cloud, several solutions have been proposed in the extant literature. The authors present general requirements and key technologies to achieve the vision of mobile cloud computing.

In, the authors make a strong case for Mobile cloud computing as a potential disruptor of the current traditional educational system while being able to provide mass education for all at very affordable costs. Gonzalo and Dongman, propose a virtual cloud computing platform using mobile phones. Their solution is an Ad Hoc cloud computing provider created by using the mobile phones in the vicinity, which allows them to execute jobs between the devices.

However, the issue of collaboration between learners and the delivery of structured learning content is not clearly taken care of in their approach. We therefore propose a solution based on Google App Engine (GAE), Google's cloud computing platform for developing and hosting web applications. Though a proprietary platform, GAE takes care of many of the bottlenecks inherent with other Cloud based platforms while providing a scalable Mobile Learning solution adapted in the Cloud with full integration to its Google Apps which fosters collaboration.

## **TYPES OF MOBILE LEARNING**

Different types of M - learning using Google app engine:

### **Blogs**

Blogging has long been a practice on the web for self-publishers, hobby enthusiasts and, more recently, business marketing departments. Most of us read blogs whenever we're searching for an answer to a question, even if we only scan for the relevant information.

Blogs are a fantastic tool for micro learning. Just as with this piece, where we've focussed on one particular area of mobile learning, course material can be broken up into individual blog posts that follow a similar format.

### **Video**

If you want to capture people's attention, use video. Still the stickiest form of content on the web, video is used copiously in mobile learning. Split a large course into individual, short videos (30 seconds is often ample), and you'll build an audience that devours whatever it is you're trying to teach them.

### **Info Graphics**

Imagery is powerful, and the rise of the info graphic proves that it doesn't have to be of the moving kind to be captivating.

Typically constructed vertically, info graphics tell stories. They're a brilliant way to make statistical information more interesting and visually appealing and in industries such as construction where data is a key component of learning, info graphics will receive a far better reception than endless Power point slides of graphs.

### **Quizzes**

The gamification of learning refers to the increasing prevalence of video game-like features in course material (the ability to 'level up', gain points and beat fellow students). Quizzes are a perfect example of this, and what better way to encourage learning than to introduce a healthy dose of competition between pupils?

### **Podcasts**

Podcasting has been around for an awfully long time, but it has enjoyed something of a renaissance recently. You can think of it as traditional radio programming, albeit in a form that can be listened to at the audiences' leisure.

In learning, podcasts are treated identically to video; course material is broken up into chunks and then delivered verbally by one or two presenters. The more the better in fact; if a podcast features a roundtable discussion over a particular topic and only lasts for around 30 minutes, learners will quickly be drawn in.

The fabulous thing about mobile learning is that it is accessible to all. Traditional classroom-based tutoring requires dates in diaries and alternative arrangements to be made for the mass exodus of staff. With mobile learning, you can pick it up anytime, anywhere and instantly enjoy the benefits of bite-sized course material.

## **CLOUD COMPUTING**

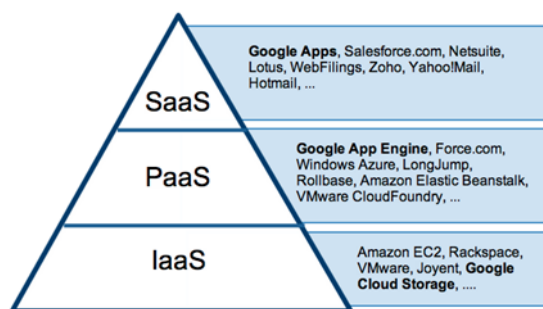
The goals for Mobile learning will solely be higher accomplished by using the facility of a strong, economical and ascendable network of resources through what's referred to as Cloud Computing. As this paper isn't regarding cloud computing in itself however rather the appliance of cloud computing in mobile learning, we are going to solely bit a trifle bit on a number of the key aspects of cloud computing and so withdraw into its application within the mobile learning house. Cloud computing will merely be outlined because the use of process resources (hardware and software) that square measure delivered as a service over a network [11]. Four sorts additionally referred to as readying models square measure outlined within the literature;

1. Non-public Cloud- may be a cloud infrastructure operated just for one organization. The cloud will be managed either internally or by a third-party and hosted internally or outwardly.
2. Public Cloud- Provides resources for open use by the overall public. Users pay a monthly bill in keeping with their utilizing of services.

3. Hybrid Cloud- a mix of 2 cloud infrastructures that stay distinctive entities.
4. Community Cloud- This infrastructure is shared between many organizations from a particular community. It's additionally managed internally or by a third-party and hosted internally or outwardly.

There are 3 service levels related to cloud computing services;

#### Cloud Computing as Gartner Sees It



Source: Gartner AADI Summit Dec 2009

1. Software-as-a-Service (SaaS):- this can be code that's solely offered on-line. No transfer and install is required however rather access is formed via an online browser or mobile app. Users not ought to worry concerning managing, saving, and backing up their files. However, little changes are often created to the appliance except user application settings outlined by the cloud trafficker. Security of files within the cloud is additionally taken care of by the seller.
2. Infrastructure-as-a-Service (IaaS):- At this service level the hardware is outsourced. Users then pay money for power, cooling, networking and even storage.
3. Platform-as-a-Service (PaaS):- Viewed by some because the most powerful service level of the 3, the seller takes care of the underlying infrastructure whereas creating offered a whole platform with that to (build and) host your application(s).

#### ADVANTAGES

1. Extreme Scalability: Provides extreme measurability, as unlimited range of users will access it. Google mechanically creates new choices, shares databases and expands the information measure once required.
2. Server management: No ought to worry concerning server management and configuration. when the readying of associate application, server aspect management is completed by Google, therefore all developers ought to do is concentrate on content.
3. Security: Since the apps square measure sandboxed, it implies larger performance, responsibleness and tight security. Sandbox isolates apps from the underlying package and, thus, protects them.
4. Access to Google's Infrastructure: By virtue of the actual fact that GAE is Google's PaaS, it's access to Google's Infrastructures, which incorporates networks, servers, storage, and alternative services offered to host applications.
5. Multiple programming languages support: GAE supports Java, Python, Go and PHP and conjointly provides their own SDK. For computer hardware intensive tasks like image manipulation, the Go surroundings are often used.
6. Cost: No set-up prices needed. Free -up to a particular limit of consumed resources.
7. Simple to Build: internet application development wont to be for skilled developers however with GAE any novice will place some one thing extremely nice and extremely quick.

#### DIS-ADVANTAGES

1. Portability: Being a proprietary technology, there's the worry of being tied all the way down to Google technology. If one decides to depart GAE these days once building a full scale application porting to a different platform would require an entire plan of the applying from scratch.
2. Not enough programming languages supported: At the instant the languages supported area unit Java, Python, Go and PHP with the last 2 still in experimental and preview phases severally. There area unit a number of alternative extremely popular languages that require to be enclosed like Perl, Ruby, C#, etc.

3. Level of Access to classification system: Developers have read-only access to File System so not enough to try to with the exception of what's created on the market by Google.

### CONCLUSION

During this paper we've got seen the advantages of GAE as a climbable resolution for mobile learning. Mobile learners area unit perpetually on the go and then an efficient resolution ought to be one that permits associate anyplace, anytime and anyone approach to learning. GAE will that because it conjointly provides cooperative tools through Google Apps for video streaming, file sharing, survey taking, quizzes and feedback, email, simply to call a couple of. Establishments don't have to be compelled to worry concerning server purchase, setup and maintenance as all of this is often already taken care of. They don't even have to be compelled to worry conjointly concerning traffic within the case wherever this is often being employed to serve myriads of learners during a distance learning state of affairs as automatic quantifiability is bonded through GAE additionally as ninety-nine.95% uptime. This is often associate all-in-one resolution which will be enforced with nice success by any establishment that would selected a cross-platform compatible approach to instructional content delivery through the cloud to mobile learners.

### REFERENCES

- [1] Das, J., Das, M.P., & Velusamy, P. (2013). Sesbania grandiflora leaf extract mediated green synthesis of antibacterial silver nanoparticles against selected human pathogens. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 104, 265-270.
- [2] Umanath, K.P.S.S.K., Palanikumar, K., & Selvamani, S.T. (2013). Analysis of dry sliding wear behaviour of Al6061/SiC/Al2O3 hybrid metal matrix composites. *Composites Part B: Engineering*, 53, 159-168.
- [3] Udayakumar, R., Khanaa, V., Saravanan, T., & Saritha, G. (1786). Cross layer optimization for wireless network (WIMAX). *Middle-East Journal of Scientific Research*, 16(12), 1786-1789.
- [4] Kumaravel, A., & Rangarajan, K. (2013). Algorithm for automaton specification for exploring dynamic labyrinths. *Indian Journal of Science and Technology*, 6(5S), 4554-4559.
- [5] Pieger, S., Salman, A., & Bidra, A.S. (2014). Clinical outcomes of lithium disilicate single crowns and partial fixed dental prostheses: a systematic review. *The Journal of prosthetic dentistry*, 112(1), 22-30.
- [6] Vijayaraghavan, K., Nalini, S.K., Prakash, N.U., & Madhankumar, D. (2012). One step green synthesis of silver nano/microparticles using extracts of Trachyspermum ammi and Papaver somniferum. *Colloids and Surfaces B: Biointerfaces*, 94, 114-117.
- [7] Khanaa, V., Mohanta, K., & Satheesh, B. (2013). Comparative study of uwb communications over fiber using direct and external modulations. *Indian Journal of Science and Technology*, 6(6), 4845-4847.
- [8] Khanaa, V., Thooyamani, K.P., & Udayakumar, R. (1798). Cognitive radio based network for ISM band real time embedded system. *Middle-East Journal of Scientific Research*, 16(12), 1798-1800.
- [9] Vijayaraghavan, K., Nalini, S.K., Prakash, N.U., & Madhankumar, D. (2012). Biomimetic synthesis of silver nanoparticles by aqueous extract of Syzygium aromaticum. *Materials Letters*, 75, 33-35
- [10] Caroline, M.L., Sankar, R., Indirani, R.M., & Vasudevan, S. (2009). Growth, optical, thermal and dielectric studies of an amino acid organic nonlinear optical material: l-Alanine. *Materials Chemistry and Physics*, 114(1), 490-494.
- [11] Kumaravel, A., & Pradeepa, R. (2013). Efficient molecule reduction for drug design by intelligent search methods. *International Journal of Pharma and Bio Sciences*, 4(2), B1023-B1029.
- [12] Kaviyarasu, K., Manikandan, E., Kennedy, J., Jayachandran, M., Ladchumananandasivam, R., De Gomes, U.U., & Maaza, M. (2016). Synthesis and characterization studies of NiO nanorods for enhancing solar cell efficiency using photon up conversion materials. *Ceramics International*, 42(7), 8385-8394.
- [13] Sengottuvel, P., Satishkumar, S., & Dinakaran, D. (2013). Optimization of multiple characteristics of EDM parameters based on desirability approach and fuzzy modeling. *Procedia Engineering*, 64, 1069-1078.
- [14] Anbuselvi S., Chellaram, C., Jonesh S., Jayanthi L., & Edward J.K.P. (2009). Bioactive potential of coral associated gastropod, Trochus tentorium of Gulf of Mannar, Southeastern India. *J. Med. Sci*, 9(5), 240-244.

- [15] Kaviyarasu, K., Ayeshamariam, A., Manikandan, E., Kennedy, J., Ladchumananandasivam, R., Gomes, U.U., & Maaza, M. (2016). Solution processing of CuSe quantum dots: Photocatalytic activity under RhB for UV and visible-light solar irradiation. *Materials Science and Engineering: B*, 210, 1-9.
- [16] Kumaravel, A., & Udayakumar, R. (2013). Web portal visits patterns predicted by intuitionistic fuzzy approach. *Indian Journal of Science and Technology*, 6(5S), 4549-4553.
- [17] Srinivasan, V., & Saravanan, T. (2013). Reformation and market design of power sector. *Middle-East Journal of Scientific Research*, 16(12), 1763-1767.
- [18] Kaviyarasu, K., Manikandan, E., Kennedy, J., & Maaza, M. (2015). A comparative study on the morphological features of highly ordered MgO: AgO nanocube arrays prepared via a hydrothermal method. *RSC Advances*, 5(100), 82421-82428.
- [19] Kumaravel, A., & Udhayakumarapandian, D. (2013). Construction of meta classifiers for apple scab infections. *International Journal of Pharma and Bio Sciences*, 4(4), B1207-B1213.
- [20] Sankari, S.L., Masthan, K.M.K., Babu, N.A., Bhattacharjee, T., & Elumalai, M. (2012). Apoptosis in cancer-an update. *Asian Pacific journal of cancer prevention*, 13(10), 4873-4878
- [21] Harish, B.N., & Menezes, G.A. (2011). Antimicrobial resistance in typhoidal salmonellae. *Indian journal of medical microbiology*, 29(3), 223-229.
- [22] Manikandan, A., Manikandan, E., Meenatchi, B., Vadivel, S., Jaganathan, S.K., Ladchumananandasivam, R., & Aanand, J.S. (2017). Rare earth element (REE) lanthanum doped zinc oxide (La: ZnO) nanomaterials: synthesis structural optical and antibacterial studies. *Journal of Alloys and Compounds*, 723, 1155-1161.
- [23] Caroline, M.L., & Vasudevan, S. (2008). Growth and characterization of an organic nonlinear optical material: L-alanine alaninium nitrate. *Materials Letters*, 62(15), 2245-2248.
- [24] Saravanan T., Srinivasan V., Udayakumar R. (2013). A approach for visualization of atherosclerosis in coronary artery. *Middle - East Journal of Scientific Research*, 18(12), 1713-1717.
- [25] Poongothai, S., Ilavarasan, R., & Karrunakaran, C.M. (2010). Simultaneous and accurate determination of vitamins B1, B6, B12 and alpha-lipoic acid in multivitamin capsule by reverse-phase high performance liquid chromatographic method. *International Journal of Pharmacy and Pharmaceutical Sciences*, 2(4), 133-139.
- [26] Udayakumar, R., Khanaa, V., & Saravanan, T. (2013). Synthesis and structural characterization of thin films of SnO<sub>2</sub> prepared by spray pyrolysis technique. *Indian Journal of Science and Technology*, 6(6), 4754-4757
- [27] Anbazhagan, R., Satheesh, B., & Gopalakrishnan, K. (2013). Mathematical modeling and simulation of modern cars in the role of stability analysis. *Indian Journal of Science and Technology*, 6(5S), 4633-4641.
- [28] Caroline, M.L., & Vasudevan, S. (2009). Growth and characterization of bis thiourea cadmium iodide: A semiorganic single crystal. *Materials Chemistry and Physics*, 113(2-3), 670-674.
- [29] Sharmila, S., Jeyanthi Rebecca, L., & Das, M.P. (2012). Production of Biodiesel from *Chaetomorpha antennina* and *Gracilaria corticata*. *Journal of Chemical and Pharmaceutical Research*, 4(11), 4870-4874.
- [30] Thooyamani, K.P., Khanaa, V., & Udayakumar, R. (2013). An integrated agent system for e-mail coordination using jade. *Indian Journal of Science and Technology*, 6(6), 4758-4761.
- [31] Caroline, M.L., Kandasamy, A., Mohan, R., & Vasudevan, S. (2009). Growth and characterization of dichlorobis l-proline Zn (II): A semiorganic nonlinear optical single crystal. *Journal of Crystal Growth*, 311(4), 1161-1165.
- [32] Mohamed Ibrahim, B., & Dr. Mohamed Shanavas, A.R. (2015). An Approach to Predict SOA Security Vulnerabilities using Feed Forward Artificial Neural Networks. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*, 3(3), 1-5.
- [33] Yen, M.H., Lin, Y.H., Chang, Y.C., & Tsai, P. J. (2015). The Implementation of 8051 MCU for IC-EMC Testing. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*, 3(5), 1-6.
- [34] Mohammed, M., & Abdessadek, A. (2016). Weight Distribution and Bounds of Turbo-Code with 3 Dimensions. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*, 4(2), 7-12.

- [35] Dr. Malhotra, R., & Sachdeva, B. (2016). Multilingual Evaluation of the DSR, DSDV and AODV Routing Protocols in Mobile Ad Hoc Networks. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*, 4(3), 7-13.
- [36] Prathibha, P.H., & Dr.Chandran, C.P. (2016). Classification Mining SNPs from Leukaemia Cancer Dataset Using Linear Classifier with ACO. *Bonfring International Journal of Data Mining*, 6(2), 10-15.
- [37] Sadeghi, K., & Hashemi, S.S. (2015). Customer selection to pay more to browser on credit card of using data mining and data warehouse. *International Academic Journal of Innovative Research*, 2(4), 28-34.
- [38] Sundhar, C., & Archana, D. (2014). Automatic Screening of Fundus Images for Detection of Diabetic Retinopathy. *International Journal of Communication and Computer Technologies*, 2(1), 29-35.
- [39] Elijah, and Dilber, M.N. (2017). Complete Analysis of Fault Tolerance Schemes in Mobile Agents for a Reliable Mobile Agent Computation. *Bonfring International Journal of Industrial Engineering and Management Science*, 7(1), 20-24.
- [40] Toupchi, M., & Abolghasempur, S.A. (2015). Modify improved ant colony for fuzzy Clustering in image segmentation. *International Academic Journal of Science and Engineering*, 2(4), 19-28.
- [41] Agnes Christy, V., & Navaneetha Velammal, M. (2014). Analysis and Design of Low Power Dynamic Memory using FVD and SPD Methods. *International Journal of System Design and Information Processing*, 2(2), 40-44.
- [42] Caroline, M.L., & Vasudevan, S. (2009). Growth and characterization of L-phenylalanine nitric acid, a new organic nonlinear optical material. *Materials Letters*, 63(1), 41-44.
- [43] Kaviyarasu, K., Xolile Fuku, Gene T. Mola, E. Manikandan, J. Kennedy, and M. Maaza. Photoluminescence of well-aligned ZnO doped CeO<sub>2</sub> nanoplatelets by a solvothermal route. *Materials Letters*, 183(2016), 351-354.
- [44] Saravanan, T., & Saritha, G. (2013). Buck converter with a variable number of predictive current distributing method. *Indian Journal of Science and Technology*, 6(5S), 4583-4588.
- [45] Parthasarathy, R., Ilavarasan, R., & Karrunakaran, C. M. (2009). Antidiabetic activity of Thespesia Populnea bark and leaf extract against streptozotocin induced diabetic rats. *International Journal of PharmTech Research*, 1(4), 1069-1072.
- [46] Hanirex, D.K., & Kaliyamurthie, K. P. (2013). Multi-classification approach for detecting thyroid attacks. *International Journal of Pharma and Bio Sciences*, 4(3), B1246-B1251
- [47] Kandasamy, A., Mohan, R., Lydia Caroline, M., & Vasudevan, S. (2008). Nucleation kinetics, growth, solubility and dielectric studies of L-proline cadmium chloride monohydrate semi organic nonlinear optical single crystal. *Crystal Research and Technology: Journal of Experimental and Industrial Crystallography*, 43(2), 186-192.
- [48] Srinivasan, V., Saravanan, T., Udayakumar, R., & Saritha, G. (2013). Specific absorption rate in the cell phone user's head. *Middle-East Journal of Scientific Research*, 16(12), 1748-50.
- [49] Udayakumar R., Khanaa V., & Saravanan T. (2013). Chromatic dispersion compensation in optical fiber communication system and its simulation. *Indian Journal of Science and Technology*, 6(6), 4762-4766.
- [50] Vijayaragavan, S.P., Karthik, B., Kiran, T.V.U., & Sundar Raj, M. (1990). Robotic surveillance for patient care in hospitals. *Middle-East Journal of Scientific Research*, 16(12), 1820-1824.