

A Smart E-Learning System for Social Networking

M.R.M. Veeramanickam*, N. Radhika**

*Department of Computer Sciences and Engineering, Karpagam University

**Department of Computer Sciences and Engineering, Amrita Vishwa Vidyapeetham

Article Info

Article history:

Received Feb 7, 2014

Revised Apr 3, 2014

Accepted Apr 24, 2014

Keyword:

E-Learning

Social Interaction

Social Learning

Social Networking

ABSTRACT

With the development of Cloud Computing, the popularity of E learning, the increasing of social networking services, Smart Cloud E-Learning System with Social Networking has become a research topic. The characteristics of E learning and requirements of Social networking services in environments raise a challenge on building an Architecture and Implementation quite strong. In this paper, we elaborate a Smart Cloud E-Learning System with Social Networking based on architecture level of social networking and E learning cloud system to support E learning interactions in worldwide environments. A prototype of Cloud E-Learning System with Social Networking is developed on cloud, and several applications features are described based on the proposed architecture to demonstrate the effectiveness of the architecture.

Copyright © 2014 Institute of Advanced Engineering and Science.
All rights reserved.

Corresponding Author:

N. Radhika,

Department of Computer Sciences and Engineering,

Amrita Vishwa Vidyapeetham,

Ettimadai, Coimbatore, INDIA.

Email: n_radhika@cb.amrita.edu

1. INTRODUCTION

The development of Cloud Computing and E learning technology, smart learning system can be build to benefit the students and faculty, by using the university and college resources and enhance learning system with proactive services. A smart classroom benefits the teaching process equipped with computer and audiovisual devices (PC with internet access) to a smart campus; to create a social relations among friends and people for sharing our interests, activities. Basically its use creation of user profile and provides a variety of services. All social networks are web-based applications it uses internet for interaction.

A service is based on individual as well as group centered. Community a service is comes under group-centered services. Basically it's allowing users to share their pictures, activities, idea, events, and post among interested people in their network as well as community. Face book like are very popular among students. Millions of students spend their times in logging these sites, to share and communicating with their friends. Nowadays our learning system lagging in using social networks for effective teaching learning processes. So we need to overcome problems related to new architecture model, way of communication, sharing resources, and application setup in cloud environments

Importance of Social Network in E-Learning

Social networking with e learning which can be used to promotes the emergence of E-learning in Cloud system. Different from the normal web based e learning system, Social learning (SL) is capable of continuous, seamless accessing, allows us to obtain e learning text notes from the millions of user in real world. "Social competence in the classroom has been linked with positive intellectual outcomes. Social emotional learning competencies include self awareness, social awareness, self management, relationship skills, and responsible decision making." [1] These characteristics show importance of emotional learning outcomes. E learning is essential in smart learning environment, where the Cloud system with social network

E learning application plays an important role in reaching more number of students user to actively take part in learning a course. The emergence of the social networking support e learning system effectively to make possible interactions among multiple students user in network. A prototype system can be proposed on this e learning cloud with social network to make user experience the learning process in the virtual world.

Now day's social networks play vital role in everyone life. It will become unavoidable in near future like mobile phone. We can integrate this social network with e learning environments for better learning and teaching. So, we need LMS methodology to integrate social media with e learning. Doing so its increases learner continuous by learning with retention of subject knowledge in learning application using collaboration tools. Still we are lagging in providing efficient SNS based E- Learning system to learner.

“An adaptive system modifies its solutions to a problem based on various factors, for instance the learners’ previous experience with the system. Adaptive and Intelligent Web-Based Educational System (AIWBES) is a mixture of adaptive hypermedia technologies and intelligent tutoring technologies. It also contains adaptive information filtering, intelligent monitoring and intelligent collaborative learning.”[2] This clearly status that important of teaching and learning using new adaptive modern technology especially like E-Learning system.

E-Learning to Social Networks

Naturally sharing using-post takes places in the regular activity of social media user. This will be added advantage of sharing our course with other student's user using-post link. So, we can create like this to promote learner platform using social media.

Social Networks to E-Learning

This will allow us to post front-page news information related to our el earning course and company brand promotions using social media platforms. Basic purpose of this to keep our user to know about company brand and updating of new course continuously. “The recent emergence of online social networks enabled by social networking software, such as Face book or Google Plus, resulted in renewed interest in social networks in e-learning research.”[3]

Learning Outcomes using Social Learning

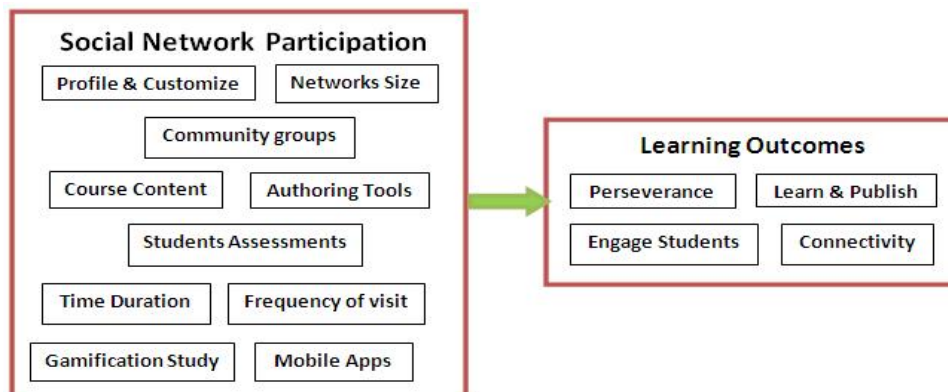


Figure 1. Social Learning Effects on Learning Outcomes

This diagram suggests that importance and use of social networking for E-learning resulting to promote teaching and learning for learner to increase learning outcomes and effects. Social network participation encircle factor framework like authoring tools, students assessment, time duration, frequency of visit. Students user generation used in profile settings and customize, structure of social network by community groups and network size. Gamification studies help us learn through simulation and play, mobile application gives importance of using mobile user to deploy our application to learn.

Learning outcomes give way of engaging learner user and importance of publish their study notes to other's learning processes, perseverance of learning objectives. Connectivity of multiple users to make learning environment live classroom effects. “Asia has the highest growth rate for eLearning in the world at 17.3%. Revenues reached \$5.2 billion in 2011 and will more than double to \$11.5 billion by 2016. Asia will be the top buying region throughout the forecast period.”[4] This research reports show us revenues growth

of E learning expected double of existing figure in 2011. This will reflect in developing e learning product especially if it's based on SNS structure. "Vietnam and Malaysia have the top highest growth rates for eLearning products in the world at 44.3% and 39.4%, respectively. Thailand, the Philippines, China, and India are also in the top ten countries with the highest growth rates on the planet." [4] Among Asian region India also in leading top 10 countries. Its reflect importance of E learning application for future. Comparing other countries Vietnam and Malaysia growth rate is abnormal around 40% by other countries rate relative very low with this figure.

Smart Classroom: Importance

The smart classroom takes a key step in the development of smart e learning system. Teaching is most important activities in traditional learning process for colleges and universities. So this can be replaced with smart e learning system in social networking. In the system everyone is equipped with devices like PC, PDA, mobile phone or tablet to access E learning social network. By enabling access for multiple users naturally it create huge network. Once network is huge then sharing of resources will take places. This prototype can be used to make available more number of subject notes, video-audio lecture, ppt slides...Etc.

E learning - SNS Application appearance based on following categories like

E learning Resources

Resource can be shared among user like ppt slides, audio-video lecture, Images, file to specific users or within their groups.

Post Notification

We could receive post like course link or course information from other user.

Community or Groups

To make relation among other user using community or groups to become friend and group member of other community.

Other Service

Social learning services based on games through Gamification studies

2. RELATED WORK

This related studies shows application are used in sns, educational field, sharing application all are used for their specific purpose only. So, we need to relate their importance in our Social Learning application. Existing Application has to be integrated in some specific functionalities architecture model to make use effective SNS services in E learning application.

SNS Usage Level in Education Field

Educators can use SNS as a separate service or functionalities cover entire system of SNS with LMS. SNS used in Educational can be defined different manner. Using SNS as a media for learning like class room activities. It may be an act as supportive system to pass information among their entire students user related to particular course by using face book or twitter. Specific devoted SNS network can be used for campuses and learning activities. We can use SNS with LMS functionalists to improve their efficiency of SNS services. This will be future of e learning also.

Join.Me -Webinar

"join.me is a simple but powerful screen sharing tool. The product is secure, indefinitely scalable, meets or exceeds 99.99% uptime, and is usable within seconds of visiting the join.me website join.me combines instant screen sharing and powerful meeting tools in an app that anyone can use to present, train, demo or concept. join.me is designed to be intuitive and accessible, providing features that you'll use every day for everything from show-and-tell to formal presentations." [5] Basically Social learning based on various technique especially concept of webinar used for making virtual class room environment for presenting and to teach about subject.

Sclipo - Online Campus Platform

"A Sclipo Online Campus provides e-Learning, social network and promotional applications to help learn, teach and collaborate as well as to promote educational services and to attract new students. The Online Campus is a Learning Management System (LMS), also known as a Virtual Campus or Virtual Learning Environment (VLE) or Course Management System (CMS), providing web applications to teach, collaborate and administer activities, students and teachers, as well as to promote educational services." [6] Application like sclipo provides importance of social learning in near future by focusing on collaborating LMS and LCMS to SNS for creation of smart Social Learning Application in Cloud.

TeacherTube

“TeacherTube is a video sharing website similar to, and based on, YouTube. It is designed to allow those in the educational industry, particularly teachers, to share educational resources such as video, audio, documents, photos, groups and blogs.”[7] Like YouTube this teacher tube is used for sharing educational video content thru website to other learner. So this can be ingrate into our smart social leaning application to make efficient data sharing among multiple users.

3. PROPOSED METHOD

3.1. Social Learning Application: SNS (*Social Networking Service*)

Social Learning application is challenging task to integrate various functionalities in one system. Proposed Architecture model will be utilizing these features and parameters to create effective model to implement in social learning system.

3.2. Learning Management System: LMS

“A Learning Management System (LMS) is a software application for the administration, documentation, tracking, reporting and delivery of e-learning education courses or training programs.”[8]

Importance of LMS functionality

- ✓ We should create way of managing users, learner, teacher, and administrators, by way of assigning roles and responsibility of each and its aspects of LMS
- ✓ By way of creating groups of learners and instructors, assign roles to that community
- ✓ Application should capacity to deliver learning material through efficient techniques. And, also for assessments of learner level. Updates of their regular activities every time.
- ✓ Reports generation on learner learning level to understand their progress and become mastery of that subject.
- ✓ At any point learners should able to communicate their concern course instructors to clarify doubt for full understanding subjects.

LMS Functionality

- ✓ Course Content Delivery
- ✓ Student Registration and Administration
- ✓ Training Event Management (i.e., scheduling, tracking)
- ✓ Curriculum and Certification Management
- ✓ Skills and Competencies Management
- ✓ Skill Gap Analysis
- ✓ Individual Development Plan
- ✓ Reporting
- ✓ Training Record Management
- ✓ Courseware Authoring”[9]

3.3. Learning Content Management System: LCMS

Central object depository is used to store, reuse, manage and deliver content of E learning based subject experts, learner, author, developer becoming multi user environment system from LMS to LCMS.

“LCMS focuses on the development, management and publishing of the content that will typically be delivered via an LMS.” [10]

LCMS Functionality

- ✓ Template-driven, Collaborative Content Development
- ✓ Facilitated Content Management (i.e., indexing and reuse)
- ✓ Publishing
- ✓ Workflow Integration
- ✓ Automated Interface with an LM” [9]

These functionalities are used to bind LMS and SNS to create Social learning application on cloud system. Its naturally explains about way of teaching and learning process in term of SNS system.

3.4. Social Learning using SNS Application

“You can connect and learn from others without ever leaving your chair. Two fascinating learning aspects of this connection are that we can:

- ✓ Get an inside look into what and how people are learning
- ✓ Share your thoughts and engage with others” [11]

Social learning like application called E-learning in Social networks should more accessible to everyone and become part of their learning processes by near future. So, we have to develop tools such like that to help them in learning processes make it simple. By subject experts, we are trying to give solution or course content which will be available immediately to all users in that social learning application under their groups. So this reduce problem of publishing content to reach through online easily by doing so we can more and more number of valuable learner from all the users of that social networks.

3.5. Social Learning: Importance

“As an Individual

- No matter how much you know, you still need others in order to learn.
- No matter how independent you are, you still need others in order to learn.
- No matter how valuable you think your knowledge is inside your head, it’s more valuable when you share with others.

As a Learning Professional

- How do you think it would feel for a someone who was a recipient of your learning solution if it didn’t involve social learning?
- The social network provides far more learning than you ever could, how can you use this in your solutions?
- If you learn more by involving others, consider that this is true for others too.”[12]

As a learner we can understand importance of social learning by as an individual and learning from multiple professionals knowledge helps you to come for understanding even tough concept can be learnt through help of others. Social network services allow us to create an account that identifies users. Then it will allow us to communicate to others through that account as well as group or community based communication. Being members of groups it allows us to use services offered by that groups. So we can use it. When required for new services then first become member of that group to utilize it.

Application system should offer to create e-learning notes and materials using multimedia with its tools. And, also should allow us to develop different assessment method to implement. LMS and LCMS are used to deploy these methods and technique to be online in SNS application.

“Their goal in creating this standard was to achieve the following utilities

Accessibility: The ability to locate and access instructional components from one remote location and deliver them too many other locations.

Adaptability: The ability to tailor instruction to individual and organizational needs.

Affordability: The ability to increase efficiency and productivity by reducing the time and costs involved in delivering instruction.

Durability: The ability to withstand technology evolution and changes without costly redesign, reconfiguration or recoding.

Interoperability: The ability to take instructional components developed in one location with one set of tools or platform and uses them in another location with a different set of tools or platform.

Reusability: The flexibility to incorporate instructional components in multiple applications and contexts.” [13] These utilities used to create mechanism for delivering E-learning materials for learner in SNS application.

4. SOCIAL LEARNING APPLICATION ARCHITECTURE MODEL -(Analysis Method)

4.1. Steps involved in Social Learning Application: SNS

- ✓ Creation of account
- ✓ User authentication
- ✓ Creation of groups
- ✓ Managing groups – Identify, Add, Remove members
- ✓ Group Members Communication
- ✓ Sharing among User – Public, Private among members
- ✓ Course Services (Subject offered under Social Learning)
- ✓ Creating E learning Notes
- ✓ Learn and Share –among members
- ✓ Test and Assessment
- ✓ Content Management
- ✓ Publishing Notes
- ✓ Tracking User Activities

Importance of this steps deals with basic functionalities of social learning application with involvement of User related function, Groups activities, Courses, E learning materials, sharing with members, Content generation and management, Publishing content and Assessment of learning processes to create efficient teaching, learning function.

Basically learners have less interest on creating course content so it's very important role of instructor and course content authors to create E learning materials. This is will be added advantage for learner to go through page content in application with less option on navigation and control over in their flow. So it improves computing, data transfer speed of learner.

4.2. Social Learning Model Architecture

This architecture explains about flow and connectivity between different entities in social learning application.

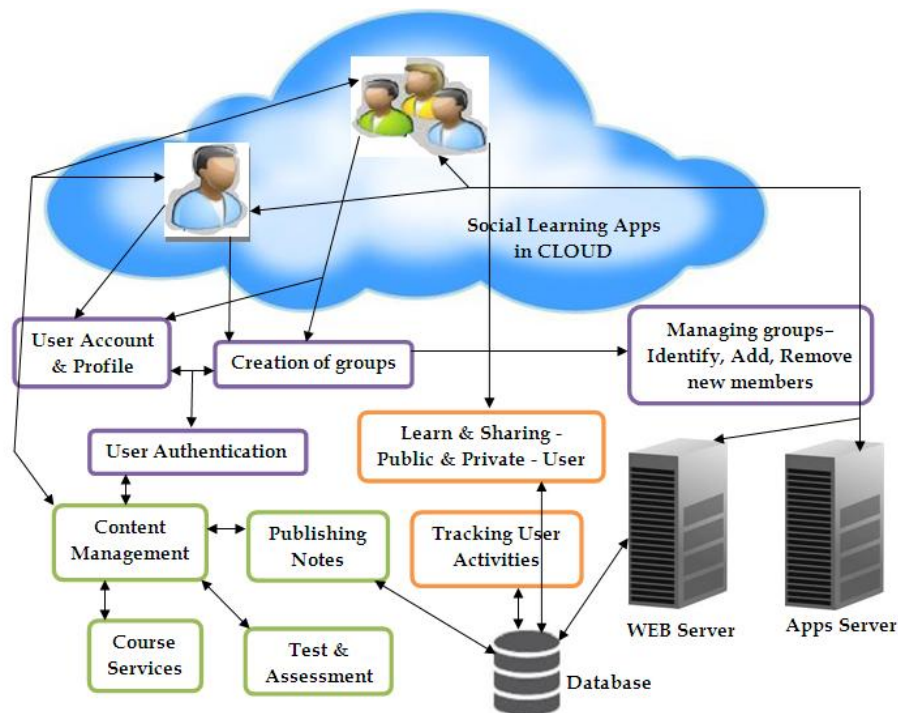


Figure 2. Social E-Learning System Architecture

So in teaching and learning activities should have proper function flow to understand it's important for teachers and learners to access concern function from listed pages. So this SNS based E-learning called social learning application should allow us to customize learning, creation of content for author, configure to map group learning, towards successful launch of teaching, learning process.

“The supply-side section provides revenue forecasts for five types of Self paced eLearning products and services including:

- ✓ Packaged content
- ✓ Custom content development services
- ✓ Cloud-based authoring tools and learning platform services
- ✓ Installed authoring tools
- ✓ Installed learning platforms” [14]

Revenue forecast list out importance of content development & management, Authoring tools, development & deployment learning platform –Social learning application.

4.3. Content Management

“Grey Catalyst delivers custom e-learning and content development services. Our approach to delivering e-learning solutions is driven by three key rules:

- Clarity & completeness in requirement gathering

- Cost effectiveness through practical solutions against idealistic solutions
- Precision in developing and delivering solutions”[15]

As per this Grey catalyst solutions clarity of course content, cost effectiveness of simulation, Content delivering importance is clearly defined to take as input for developing social learning application.

5. RESULTS AND DISCUSSION

5.1. E learning Content: Technical Standard

“Technical Standard: Content Format –E Learning Application

- ✓ XHTML 1.0 Transitional
- ✓ UTF-8 character encoding
- ✓ C SS.2.1, 3.0
- ✓ Text Document
- ✓ PDF –fixed display
- ✓ RTF, DOC X –Editable display
- ✓ EBooks – EPUB
- ✓ Spread sheet – XLSX
- ✓ Presentation – PPTX
- ✓ Web Graphics – GIF, JPEG, PNG
- ✓ Audio formats-MP3
- ✓ Video file formats-MPEG4” [16]

E learning content can be created for web application using these standard content formats to make it very effective in social learning application. It’s also implies content standard based on supporting AICC, SCORM, and Tin Can content standards.

Three role-play in social learning application by category

- Course Author (or Instructor)
 - Application Admin
 - Learner
- ✓ Author can edit course content by changes to be made, assign accesses permissions level, delete if it under required standardetc.
 - ✓ Admin is to check all functionalities application according to defined standard.
 - ✓ Learners can learn courses by engage in it with individual or as group. Then instructor can be either learner or author of any course to create understand it benefits to students

Examination pattern is not productive and different from new technologies so we need to be updated with new modern SNS usage into our learning process using E learning system

“A teacher suggested following steps:

- Increase of practical
- Shift to E-based assignments
- Discussing gadgetry with students
- Creating a more interactive learning environment with use of internet, blogs etc.”[17]

5.2. Teaching processes (Author and Instructor) by following interfaces:

- ✓ To create course
- ✓ To create learner groups by sharing it to others
- ✓ To learn through individual courses
- ✓ To edit course content
- ✓ Assign accesses level permissions to any course shared between users
- ✓ Engaged in teaching and learning processes
- ✓ To create reports on value of course and it’s his history
- ✓ To delete only shared and created courses.

5.3. Learning processes (Learners) by following interfaces:

- ✓ To search required course
- ✓ Selected course content
- ✓ To learn through group member and instructor
- ✓ To communicate between learner and instructor

“SNS can be a great education tool, and it is possible to integrate SNS to Model with different level and aspect.”[18] Authors or instructors are responsible for course content generation with proper content management system and publishing course to learner through application. Inviting learner through group or community post share. Group or community capable of doing teaching and learning processes between all members. Learn and share will take places naturally it grows with huge number of member with network group connectivity.

6. CONCLUSION

Model open source E-Learning platform used to design application for learners by creating personalized learning system. Likewise application can be built with SNS features in E learning to develop social leaning application. The users will be allowed to use social learning which collaborates on LMS, LCMS with content standard like Scorn, AICC or Tin Can. In this paper, described about importance of Learning Management Systems and LCMS with relating Social Networks site for Social learning (e-Learning). Finally, architecture shows functionalities of social leaning application with their connectivity between entities. Application should be made for user without having knowledge of that platform and tools to deploy or to become user of social learning tools and application.

ACKNOWLEDGEMENTS

The first author would like to thank corresponding author for giving valuable guidance and support to carry out his research work. And, also would like to thank the Principal and Information Technology - Head of Department from Trinity College of Engineering and Research, affiliated to University of Pune for giving him opportunity to carry out his research work and providing him with the requisite resources and infrastructure.

REFERENCES

- [1] “*The Importance of Social Learning*”, Retrieved 27 January 2014, <http://thesocialexpress.com/resources/about-social-learning>
- [2] George Abraham, Balasubramanian Vand RA. K. Saravanaguru. “Adaptive e-Learning Environment using Learning Style Recognition” *International Journal of Evaluation and Research in Education (IJERE)* Vol.2, No.1, pp. 23~31, March 2013.
- [3] “A model for the effects of online social networks on Learning” by Jonnavithula, L., & Tretiakov, A. (2012), In M. Brown, M. Hartnett & T. Stewart (Eds.), Future challenges, sustainable futures. *Proceedings ascilite Wellington 2012*. (pp.435-437).
- [4] “*International eLearning Market Research*” by Sam S. Adkins, publishing in October 2012 <http://www.ambientinsight.com/Reports/eLearning.aspx>
- [5] “*join.me architecture whitepaper*” by Marton Anka, CTO, LogMeIn, Inc. Retrieved 27 January 2014, <https://join.me>
- [6] “*Online Campus Platform*”, Retrieved 27 January 2014, <http://www.crunchbase.com/company/sclicpo>
- [7] “*Teacher Tube*”, Retrieved 27 January 2014, <http://www.teachertube.com>
- [8] “*A field guide to Learning Management Systems*” by Ryann K. Ellis. Retrieved 27 January 2014 http://www.astd.org/~media/Files/Publications/LMS_fieldguide_20091
- [9] Kerschenbaum, Steven (4 June 2009). “*LMS Selection Best Practices*” (White paper). Adayana Chief Technology Officer. pp. 1–15. Retrieved 27 January 2014. http://www.trainingindustry.com/media/2068137/lmsselection_full.pdf
- [10] “*Learning Management System*”, Retrieved 27 January 2014, http://en.wikipedia.org/wiki/Learning_management_system#LMS_and_LCMS_compared
- [11] “*Don’t Forget The You in Social Learning*” by Dennis Callahan in July 9, 2011, Retrieved 27 January 2014, <http://learnstreaming.com/don-forget-the-you-in-social-learning>
- [12] “*What if Social Learning Was Gone?*” by Dennis Callahan in October 8, 2010, Retrieved 27 January 2014, <http://learnstreaming.com/what-if-social-learning-was-gone>
- [13] “*Advanced Distributed Learning: SCORM Sharable Content Object Reference Model. SCORM 2004*”, 2nd Edition. Overview (2004) Retrieved 27 January 2014, <http://www.adlnet.gov/scorm/history/2004/documents.cfm>
- [14] “*International eLearning Market Research*” by Sam S. Adkins, publishing in October 2012, Retrieved 27 January 2014, <http://www.ambientinsight.com/Reports/eLearning.aspx>
- [15] “*E-learning & Custom Content Development*”, Retrieved 27 January 2014, <http://www.greycatalyst.com/elearning.php>
- [16] “*Summary list of VET E-standards*”, Retrieved 27 January 2014, http://e-standards.flexiblelearning.net.au/technical_standards/content_formats.php

- [17] Taimur-ul-Hassan and Abdur Rahim Sajid. "ICTs in learning in Pakistan", *International Journal of Evaluation and Research in Education, IJERE* Vol.1-No.2, pp. 51~60, Oct 6, 2012.
- [18] "Integrating Social Network Service into Learning Management System" by Won Ho. Retrieved 27 January 2014, [http://www.elearningasia.net/_program/pdf_pt/\[Paper%208-4\]Won%20Ho.pdf](http://www.elearningasia.net/_program/pdf_pt/[Paper%208-4]Won%20Ho.pdf)

BIOGRAPHIES OF AUTHORS



Mr. M.R.M. Veera Manickam is currently working as an Assistant Professor in Dept. of Information Technology, Trinity College of Engineering and Research, affiliated to University of Pune, Pune. And also working as part time Research Scholar in Dept. of Computer Science and Engineering at Karpagam University, Coimbatore, India. He received his B.Tech.degree in Information Technology from LVEC, Anna University, Chennai, India, in 2006, and M. Tech. degree in Information Technology from Sathyabama University, Chennai, India, in 2011. His main research work focuses on E-Learning, Social Network and Cloud Application.



Dr. Radhika N. completed her post doctoral studies in the department of Computer Science and Engineering at IITM, Chennai, Tamil Nadu, India in the area of Smart Grids. Dr. Radhika holds a position of Associate professor in the department of Computer Science and Engineering, Amrita University, Amrita Vishwa Vidyapeetham, Coimbatore. She has a decade of teaching and research experience. She has more than 20 papers published in International and national journals and International conferences. She is a reviewer of several international journals including Springer.