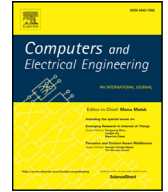




Contents lists available at ScienceDirect

Computers and Electrical Engineering

journal homepage: www.elsevier.com/locate/compeleceng

Editorial

Introduction to the special section on Mobile learning technologies, applications, and evaluation for future mobile networks



Background

With the proliferation of mobile computing technology, mobile learning (m-learning) has played a critical role in the rapidly growing electronic learning community. Through the use of the wireless internet and mobile devices, m-learning enables students to learn anytime and anywhere. More innovative m-learning technology and applications continue to be developed and experimented. Given that m-learning can change students learning style and methods dramatically, the assessment on the effectiveness and impacts of innovative m-learning applications becomes more important than ever. The thought-provoking methods or frameworks for the evolution of m-learning systems are as important as the breakthroughs in the development of m-learning technologies and applications.

This special section aims to bring together researchers, practitioners, system developers, and all those working in different areas related to m-learning technologies, applications, and evaluations. There were 61 submissions for this special section, out of which we feature 10 selected high quality papers. Each selected paper received input during at least two rounds of review with three substantial reviews per round. The accepted papers in this special section are devoted to some of the most recent research and development addressing both theoretical, practical, and application aspects of mobile learning. The contributions of these papers are briefly described below.

Papers in this special section

To ensure data security during its transmission from the source node to the destination, authentication system provides verification of the identity or other attributes to a network usage. The first article by Mary Subaja Christo [1] developed an attack prevention protocol by using Challenge Question with Puzzle hacking method. The Cryptographic Puzzles are used to authenticate the Intermediate nodes in P2P network. When the node acts as Intermediate node, they answer the Challenge Question or Puzzle which becomes necessary. An Intermediate node can decrypt the message only with the correct answer and forward it to the other nodes in the network to find the Responder node. Otherwise, the intermediate node cannot decrypt the original message. Likewise, authenticate the intermediate node. Experimental results show the proposed method work quite well than the existed method.

The second paper by Anandhi D [2] proposed a fusion algorithm based on Synthetic Aperture Radar (SAR) and Panchromatic (PAN) images in Non-subsampled contourlet Transform (NSCT) domain. Experimental results reveal that the SAR image fusion done using NSCT-RLMAP-MESMM gives better preservation of features than the existing spatial, wavelet and contourlet methods. In NSCT model, the texture is better as the number of resolution images are increased through shift-invariance.

The next article “An efficient implementation of novel paillier encryption with polar encoder for 5G systems in VLSI” [3] confirms the appropriateness of paillier homomorphic encryption for the cloud storage environment of 5G with information from the literature. The cross-partitioned add shift processing element design results in a balance in the allocation, enabling a reduction in delay and power consumption for the paillier encryption. Analysis of resource utilization, speed and throughput of the proposed paillier encryption is done and comparison is made with parallelism and pipeline based existing paillier scheme. On comparing with the existing technique, the proposed paillier encryption synthesized on Xilinx Virtex7 (7vx330t-3) field programmable gate array achieves a 4.16% and 2.17% increase in speed and throughput respectively.

Social media is growing incredibly fast these days, which is important for marketing campaigns and celebrities who try to promote themselves by growing their base of followers and fans. However, social networking sites such as Facebook cannot

yet deliver notifications regarding fake profiles in real-time, and discriminating between real and fake profiles is difficult for non-technically savvy users. Moreover, many big data issues, including data storage, how to handle streaming data, and how to provide immediate responses to users, must be handled while simultaneously operating on large volumes of data to achieve accurate profile identification results. Focused on these problems, paper [4] by Devakunchari Ramalingam identifies the improvements in detection techniques over the years and identifies possible future developments. In addition, the paper also examined several metrics to analyze and compare earlier and more recent models.

Focused on the problems of limited computing capacity and small space for storage in mobile phones has inspired the blend of mobile learning and cloud computing. Article [5] focuses on Homomorphic Encryption to achieve privacy over encoded data or search the encrypted information, which is the current research area of majority of the knowledge experts. In this paper, the authors proposed a Shifted Adaption Homomorphism Encryption (SAHE) scheme, which is regarded as the better option for all the current research going on. SAHE implements the smallest public key of 32 bit and is able to encrypt integer and real numbers. A major issue in this field of research is difficulty in protecting user's questions, which is addressed by conceiving a public key encryption technique which is based on the reversed index. The proposed schema preserves search efficiency using inverted index, by solving one time only search drawback encountered in earlier research works. This method is appropriate for mobile learning since the suggested algorithm will not use the mobile memory or power.

In wireless radio systems, overall system performance is highly affected by the statistical modeling and characterization of the wireless channel between the transmitter and the receiver sides. Therefore, the requirement of accurate modeling and efficiently design for the three-dimension (3-D) channel is necessary. It is also great important to estimate the available knowledge previously on certain parameters of the communication channel, such as, angle of departure (AoD) and angle of arrival (AoA), path loss, and multipath time delay spread measurements, when one models the channel consistent with the information available and held a joint probability distribution for the attribution of the channel matrix. Paper [6] focuses on performance evaluation of BER and outage probability for an M-MIMO system over correlated 3-D channel model and beamforming technique. The assumption of fading model involves spatial correlation effect in the transmitting and receiving branches. Moreover, the deployment involves an arbitrary correlation coefficient and the AoA parameter also considered. Furthermore, both transmitter and receiver environment is assigned with different antenna numbers, and the receiver is considered to combine with maximal ratio combining (MRC) for a 3-D M-MIMO system operating over correlated fading channel.

Big data plays an important role in mobile learning technologies, application and evaluation for future mobile networks, such as prediction of diseases that occur due to climate change. For such predictions, scalable data storage platforms and efficient change detection algorithms are required to monitor the climate change. However, traditional data storage techniques and algorithms are not applicable to process the huge amount of climate data. Paper [7] by Gunasekaran Manogaran presents a scalable data processing framework with a novel change detection algorithm. The large volume of climate data is stored on Hadoop Distributed File System (HDFS) and MapReduce algorithm is applied to calculate the seasonal average of climate parameters. Spatial autocorrelation based climate change detection algorithm is proposed in this paper to monitor the changes in the seasonal climate. The proposed climate change detection algorithm is compared with various existing approaches such as pruned exact linear time method, binary segmentation method, and segment neighborhood method.

Wearable sensor devices are another important role of mobile learning application, which wide used in health monitoring system, have been generating an enormous amount of data on a continuous basis. The data generation speed of IoT sensor devices is very high. Hence, the volume of data generated from the IoT-based health monitoring system is also very high. In order to overcome this issue, paper [8] proposes a scalable three-tier architecture to store and process such huge volume of wearable sensor data. Tier-1 focuses on collection of data from IoT wearable sensor devices. Tier-2 uses Apache HBase for storing the large volume of wearable IoT sensor data in cloud computing. In addition, Tier-3 uses Apache Mahout for developing the logistic regression-based prediction model for heart diseases. Finally, ROC analysis is performed to identify the most significant clinical parameters to get heart disease.

Evolutionary learning is one of the most important application of mobile learning, in paper [9] the author created a personalized learning path for each student as per their calibre and make the learning immersive and retainable using virtual reality. The proposed model emulates the innate natural learning process in humans and uses that to customize the virtual simulations of the lessons by applying the evolutionary learning technique. The experimental results show that the proposed learning model is immersive and gives long term retention while enhancing creativity through reinforced customization of the simulations.

Current mobile devices are equipped with sensors and have sufficient processing power to use augmented reality technologies. Despite the heavy use of mobile devices in students' lives, the use of augmented reality mobile applications as learning tools is not widespread among teachers. The last paper [10] presents a framework comprising the development tool and a method for designing and deploying learning activities. It focuses on the augmented reality components of the authoring tools, which allow users to create their own mobile augmented reality learning apps. It also presents the results of the evaluation of the framework with 47 third-level educators, and two case studies of classroom implementations of mobile augmented reality apps developed by these educators. The results illustrate the suitability of the framework and authoring tool for supporting users without programming skills in developing their own apps.

In conclusion, we feel that the outcome of this special section reinforces how important the mobile learning research has become over the last few years. At the same time, it seems clear that much has yet to be learned about how to strengthen

Download English Version:

<https://daneshyari.com/en/article/6883549>

Download Persian Version:

<https://daneshyari.com/article/6883549>

[Daneshyari.com](https://daneshyari.com)