Editorial

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Information and communication technology (ICT) refers to technologies that provide access to information through telecommunications. ICTs have provided society with a vast array of new communication capabilities. Modern information and communication technologies have created a 'global village', in which people can communicate with others across the world as if they were living next door. As a result, big data is produced through ICT-based technology. The major source of big data is through ICT that includes internet, telecommunication, social economic web portals, mobile data, and others. Such big data is very difficult to be processed using traditional information management systems, and therefore requires the use of intelligent methods for real time processing. Intelligent information and communication systems are built around intelligent techniques that can process, manage and visualise massive amount of unstructured data accurately and timely. Reliability of information and communication systems assures that such systems should perform their intended tasks as planned for a specific time and in a specific environment. The focus of this issue is concentrated on the development of reliable and intelligent ICT techniques for different applications. The issue consists of four papers briefly introduced in the following paragraphs.

In the first paper, a system for automatic recognition of Arabic sign language (ArSL) is proposed. Authors used modified Fourier transform (MFT), local binary pattern (LBP), histogram of oriented gradients (HOG), and combination of histogram of oriented gradients and histogram of optical flow (HOG-HOF) feature types for ArSL recognition with hidden Markov model (HMM) for classification. They evaluated the proposed system on a dataset consisting of 23 signs and the obtained results showed that the MFT and HOG have the highest recognition rates. To test the scalability of the proposed system on larger datasets, experiments on a datasets composed of 50 signs collected using Microsoft Kinect V2 were conducted. In addition, two algorithms were proposed; one for segmenting the video streams acquired by Microsoft Kinect V2 into signs and the second for detecting hands in video streams. The detection accuracy of second algorithm was evaluated by measuring the overlap ratio between bounding boxes generated by the proposed algorithm and the hand joint location obtained by Kinect. The obtained results showed that this algorithm is efficient for hand detection in video streams.

The second paper incorporated Pareto-optimisation and orthogonal Taguchi approach into conventional cat swarm optimisation (CSO) algorithm to ensure the selection of best trade-offs solution that can minimise execution time and cost. Therefore, a dynamic multi-objective orthogonal Taguchi-based cat swarm optimisation (dMOOTC) algorithm was proposed to be a potential solution for customer QoS expectation in cloud computing environment. The paper contributed the following. First, the formulation of a multi-objective task scheduling model for cloud computing environment, incorporation of orthogonal Taguchi optimisation approach in conventional CSO, application of Pareto-optimisation method to solve the trade-off problem. Second, the implementation of the proposed method on CloudSim tool. Finally, a quantitative comparison of some existing optimisation techniques with the proposed method in term of execution time, execution cost and QoS.

Third paper proposed an enhanced hybrid storage system (EHSS)-based video on demand (VOD) server to improve the performance of the VOD server. The design of the EHSS and its streaming management scheme produce high performance and satisfy the performance requirements of a VOD server in terms of I/O throughput and access latency. The experimental results showed that the proposed VOD server-based EHSS with DSC scheme provides better performance than the VOD server-based FADM because it enhances the average response times for the various scales of intensive workload by 69.89%.

Fourth paper presents a new approach for recognising basic emotions (joy, sadness, anger, disgust, surprise and fear) in image sequences. The approach introduced interest emotion and created its corresponding action units (AUs) based on psychological foundations. The proposed approach is mainly characterised by minimising used data and consequently, optimising the computing time and improving the recognition rate. The proposed approach was divided into three steps. The first step is face detection using the method developed by Viola and Jones. The second step concerns the extraction of facial features. At this level, the facial action coding system proposed by Paul Ekman is adopted, which is based on AUs. To detect AUs, the proposed approach extracted face strategic points (inner, outer and centre points of the eyebrow; centre points of the lower and upper eyelids; right, left, top and bottom corners of the mouth; and left and right external nose wing) using an active appearance model and a block-matching approach. At the last step, the proposed approach classified the results by using the Kohonen self-organising map.