Editors' Introduction to the Special Issue on "End-user Privacy, Security, and Copyright issues"

**"All artists are protected by copyright...
and we should be the first to respect copyright"
— Billy Cannon**

With the rapid growth in the internet technology, end-user privacy has tremendous impact on the society and a firm's business. Technological solutions to minimize the digital piracy such as unofficial downloading of E-books, product models, songs, movies and commercial software, is the need of the hour for marketers. Investigating effective techniques and measures for reduction of piracy protects human resources and skills, and resolves the nightmare of marketers and investors. Further, it ensures fairness and accountability, and builds economic growth of a country.

This special issue is organized to promote the marketers and investors trust, and to enhance businesses by publishing the state-of-art research and developments in privacy, security and copyright concerns of multimedia content, with emphasis on organizational and end user computing. This special issue includes original research works; insightful research and practice notes, case studies, and surveys on vulnerabilities, requirements, attacks, challenges, reviews, mechanisms, tools, policies, emerging technologies and technological innovations for minimizing the digital piracy. This special issue includes six articles as follows:

In the first article **Ahmad *et al.*** proposed a novel hybrid watermarking method based on three different transforms: Discrete Wavelet Transform (DWT), Discrete Shearlet Transform (DST) and Arnold transform one after the other. To evaluate the proposed method authors used six performance measures namely peak signal to noise ratio (PSNR), mean squared error (MSE), root mean squared error (RMSE), signal to noise ratio (SNR), mean absolute error (MAE) and structural similarity (SSIM), which indicated a stable outcome under any type of attack and performs significantly better than state-of-the-art watermarking approaches. According to the results achieved, it is recommended to consider extending this hybrid method for other multimedia data such as video, text and audio.

Wang *et al.* in the second article proposed an improved gene expression programming algorithm based on niche technology of outbreeding fusion (OFN-GEP). This algorithm uses population initialization strategy of gene equilibrium for improving the quality and diversity of population. Further, the algorithm introduced the outbreeding fusion mechanism into the niche technology, to eliminate the kin individuals, fuse the distantly related individuals, and promote the gene exchange between the excellent individuals from niches. The authors then verified the effectiveness and competitiveness of the algorithm through function finding problems, and by relating it to literatures. The results being effective in convergence speed, quality of solution and in restraining the premature convergence phenomenon; the OFN-GEP algorithm promises a great application value in solving practical problems related to privacy and security related issues such as data hiding, hash function generation and Boolean function evolution etc.

Secret key generation and establishment plays main role in launching the data sharing sessions, and is consequently used for authentication, confidentiality and integrity of data. In contrast to traditional key establishment protocols, where one user decides the key and communicates it to other user, the key agreement protocols involve all the users in the communication in key establishment process. **Sivaranjani and Surekha** in the third article presented an enhanced ID-based authenticated key agreement protocol using hybrid mixing of bilinear pairing and Malon-Lee approach for secure communication between two users. The results proved that the protocol stands secure and satisfies desired security properties at minimum time. The authors also extended the algorithms for multiple users.

Traffic and road accident safety are a big issue in every country. Data science, being assisting in analyzing different factors behind traffic and road accidents, **Prayag Tiwari *et al.*** in fourth article analyzed different clustering and classification techniques such as Decision Tree, Lazy classifier, and Multilayer perceptron classifier to classify datasets based on casualty class. Further, authors proposed clustering techniques which are k-means and hierarchical to cluster dataset. After analyzing dataset without and with clustering, the authors reported a noticeable improvement in the accuracy level by using clustering techniques on dataset compared to a dataset which was classified without clustering. Better results for reducing the accident ratio and improving the safety are reported after using hierarchical clustering as compared to k mode clustering techniques.

In the fifth article, **Siba and Ajanta** presented an enhanced distributed fault tolerant architecture and the related algorithms for connectivity maintenance in Wireless Sensor Networks (WSN) of various surveillance applications. The algorithms and hence the recovery actions are initiated based on fault diagnosis notifications, data checkpoints and state checkpoints in a distributed manner.

In the sixth article, **Thuong *et al.*** proposed a simple and less expensive hybrid approach based on the multiscale Curvelet analysis and the Zernike moment for detecting image forgeries. The results proved its effectiveness in copy-move detection.

As guest editors, we hope the research work covered under this special issue will be effective and valuable for multitude of readers/researchers. In addition, the technical standard and quality of published content is based on the strength and expertise of the submitted papers. We are grateful to the authors for their imperative research contribution to this issue and their patience

during the revision stages done by experts in the editorial board. We take this opportunity to give our special thanks to Prof. Matjaz Gams, Editor-in-chief of the Informatica: An International Journal Of Computing And Informatics, for all his support, and competence rendered to this special issue.

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