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EDITORIAL

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Algorithms, Processes, and Frameworks for User-Oriented Applications

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Executive Editor and Editor-in-Chief, *JIPS*

1. Introduction

The *Journal of Information Processing Systems* (*JIPS*) is the journal published by the Korean Information Processing Society (KIPS), which has indices such as ESCI, SCOPUS, EI-COMPENDEX, DOI, DBLP, EBSCO, and Google Scholar. The research on computer system and theory, multimedia systems and graphics, communication systems and security, and information systems and application is introduced. Especially, JIPS contains diverse kinds of hot issues related to the research topics of artificial intelligence, network, database, security and so forth.

With more user-oriented applications released recently, related algorithms, processes, and frameworks should be researched in advance for the development of user-oriented applications. This issue deals with novel algorithms, processes, and frameworks in the fields of network, digital forensic, software & system architectures, image processing, and so on. Specifically, this issue includes 17 peer-reviewed papers on speaker verification, lexical semantics, transaction malleability in Bitcoin, motion-blurred shadows, gait recognition algorithm, academic evaluation indicators, clustering algorithm, and so on.

2. Theories, Algorithms, and Frameworks of User-Oriented Applications

In this section, diverse kinds of algorithms, processes, and frameworks for user-oriented applications are introduced and published by JIPS as regular papers.

Kumari and Jayanna [1] propose an approach that involves utilizing Mel-frequency cepstral coefficients and linear prediction cepstral coefficients from speakers. The Gaussian mixture model and GMM-universal background model are then utilized for modeling the speakers and verified.

Murat et al. [2] introduce an approach for TE extraction in Uyghur based on three approaches: morphology-based approach, syntax-based approach using Uyghur sentence constituent analyzer, and lexical semantic-based approach using TCBW for Uyghur.

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Rajput et al. [3] present an approach related to bitcoin transactions and various attacks based on transaction malleability, since the latter has caused serious damage to the bitcoin community in terms of loss of money and reputation. Their approach consists of a combination of the hash of transaction script without signature and the hash of final transaction. This combined hash is provided for the purposes of both transaction verification and identification.

Boulnemour and Boucheham [4] propose an approach that combines SEA and DTW. Our main contribution consists of elevating the DTW power of alignment from the lowest level to the highest level according to the recent classification of time series alignment methods proposed by Boucheham.

Hong and Oh [5] propose an approach to rendering motion-blurred shadows based on a shadow map of depth-time ranges. Scenes are rendered from the light source to generate shadow maps. Each pixel of the shadow maps stores the corresponding list of depth-time ranges. Each depth-time range has two points and two distances from lights. The two points indicate a period of time when a geometry is visible to the light source.

Huang et al. [6] present a gait recognition approach based on the feature fusion of gait energy image (GEI) dynamic region and Gabor. The gait contour images are extracted. The features of GEI at different angles and Gabor features with multiple orientations are extracted from the dynamic part of GEI. The averaging method is adopted to fuse the features of the GEI dynamic region with the features of Gabor wavelets on the feature layer, and the feature space dimension is reduced by an improved Kernel Principal Component Analysis (KPCA). The vectors of feature fusion are inputted into the support vector machine based on multi-classification to carry out the classification and recognition of gait.

Ryu [7] present an approach that predicts the unemployment rate using social media analysis based on natural language processing and statistical modeling. Such approach collects social media contents including news articles, blogs, and tweets written in Korean and extracts data for modeling using part-of-speech tagging and sentiment analysis techniques. The models autoregressive integrated moving average with exogenous variables (ARIMAX) and autoregressive with exogenous variables (ARX) for unemployment rate prediction are fit based on the analyzed data.

Zhang et al. [8] introduce various citation quality-based evaluation indicators and categorize them considering the applied algorithms. The evaluation indicators are compared from four dimensions. The outcomes are useful for further research on distinguishing citation quality.

Yu et al. [9] propose an approach called CACD (clustering algorithm considering node distribution), which is not only distance-aware but also node density-aware. The number of nodes of CACD clusters is limited by the distance between sink and cluster head.

Liu and Ma [10] present a de-noising approach based on wavelet transformation and characteristics of spin echo train in NMRL. A 32-point forward model with big porosity is built. The signals of spin echo sequence with adjustable SNR are generated by the forward model.

Muthohar et al. [11] introduce an adaptive sampling approach for location and motion sensors. Major motion sensors are utilized to facilitate adaptive sampling. Two sampling strategies are introduced in using major motion sensors to realize low-power consumption during continuous sampling. One involves using the sensor only naively, whereas the other involves adding the duty cycle to the naive approach. Both strategies consume low energy, but the one combined with the duty cycle achieves a better result.

Bhatnagar et al. [12] show an approach to stable marriage problem by computing a weighted score for the users registered at matrimonial websites. The approach has been formulated into profit maximization of matrimonial websites in terms of the ability to provide a suitable match for users. Greedy and genetic algorithm-based approaches are introduced to solve the optimization problem.

Sung et al. [13] propose an approach that estimates the arm orientations based on the Bayesian probability of the pre-measured hand positions. HTC VIVE is an excellent device for estimating motions but only considers the positions of the hands, not the orientations of the arms. Even if the positions of the hands are the same, the meaning of motions can differ according to the orientations of the arms. Therefore, when the positions of the arms are measured and utilized, their orientations are estimated as well.

Srinivasan et al. [14] present a framework that builds Hadoop clusters on new single-board computer Mobile Raspberry Pi. The Hadoop clusters offer facilities for storage as well as computing. Regular data centers require large amounts of energy for operation. Therefore, cooling equipment is needed, and prime real estate is occupied. These issues are solved by employing a Mobile Raspberry Pi with Hadoop clusters, which provides a cost-effective, low-power, high-speed solution along with micro-data center support for big data.

Fattah and Chong [15] propose a semantic modeling approach for manual and semi-automated service composition. A framework is introduced to enable RESTful web services composition using semantic ontology for the creation of elderly living assistance services in WoO-based smart home environments.

Abdurohman et al. [16] introduce an integrated lighting enabler approach based on standard machine-to-machine (M2M) platforms. The approach provides common services of end-to-end, M2M communication for the smart lighting system, which is divided into two subsystems: end-device system and server system. For the server side, the M2M platform OpenMTC is used to receive data from sensors and send a response for the activation of actuators. At the end-device system, programmable smart lighting devices are connected to the actuators and sensors for communicating their data to the server.

Keum et al. [17] present an approach that utilizes a portable, dry electroencephalogram sensor device to overcome the limitations of the existing conventional approaches and to advance existing EEG-based research further. The approach uses a portable EEG sensor device with a small, dry, simple sensor using a single channel.

3. Conclusion

This issue features 17 enhanced peer-reviewed papers from India, China, Korea, Algeria, Taiwan, Indonesia, and so on. We present diverse kinds of algorithms, processes, and frameworks for user-oriented applications, which cover diverse kinds of research fields such as speaker verification, lexical semantics, transaction malleability in bitcoin, motion-blurred shadows, gait recognition algorithm, academic evaluation indicators, clustering algorithm, and so on. We would like to thank all authors who submitted their papers for this issue and all reviewers who accepted our review invitations.

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