

Preface

As we all know, Intelligent-interactive Systems (IIS) are systems that interact with human beings, media, or virtual agents in intelligent computing environments. The emergence of Big Data and Internet of Things opened new opportunities in both academic and industrial research for successful design and development of Intelligent-interactive Systems. These systems are usually embodied with human capabilities such as to reason, learn, perceive, take decisions, make plans, and perform actions in a wide range of applications such as smart navigation of automobiles so as to avoid traffic congestion, intelligent transportations, smart light, virtual environments, mood-based music systems, and many more. The development of these Intelligent-interactive Systems involves fabricating and controlling machines to perform tasks usually need to be done by human beings.

Since research on Intelligent-interactive Systems deals with the pressing need of designing innovative systems requiring new approaches to current computing architectures and interactions between systems and their peripherals, it explicitly demands knowledge acquisition in many cross-disciplinary subjects such as algorithmic foundations, computational and mathematical modeling fundamentals, artificial and cognitive intelligence foundations, human-computer interaction, software architecture, and developmental concepts and logics of embedded systems.

Some of the significant underlying questions include the following: How huge amounts of data are to be collected and how can they be further analyzed for enhancing the interaction between intelligent systems and users, what are the various issues and challenges faced during technical design and realization of Intelligent-interactive Systems?

This volume explores how novel interactive systems can intelligently face various challenges and limitations previously encountered by human beings using different machine learning algorithms along with analysis of recent trends.

However, designing and development of Intelligent-interactive Systems are quite hard to implement due to variations in abilities of human being, preferences, and limitations. The current researchers are focusing on two major areas: artificial intelligence and human-computer interaction. Further, these two areas are classified into application-specific sub-areas such as computer vision, speech recognition or

processing, Web-based systems, data visualization. Some of the widely adopted research areas include information retrieval, recommender systems, intelligent learning systems, natural language processing, multimodal interactions, ubiquitous computing, personalized applications, and semantic-based applications.

Although many researchers are working on various issues of the above-mentioned areas, still lots of challenges and problems arise since it is still in an immature stage. One of the common issues is how both human and artificial intelligence can be combined together to attain efficient results. Apart from these, there are issues relating to users' preferences and privacy protection, which have to be addressed by various intelligent algorithms.

The volume further discusses current research issues and sheds light on future research directions by including various recent and original research articles systematically addressing real-world problems, proposing novel interfaces such as virtual environments, wearable interfaces, and novel interaction models such as touch screens, speech-enabled systems, establishing new standards and metrics for evaluations of model effectiveness and so on. The current research scenario of Intelligent-interactive Systems involves understanding the mechanism lying behind human interactions and how that can be embedded into various applications.

Various dimensions of the IIS includes intelligent user interfaces, context awareness and adaptability, human-computer interaction, wearable technologies, smart solutions for real-time problems, smart navigation, data-driven social analytics, mobile robotics, virtual communication environments, face and gesture analysis, and crowdsourcing.

This volume contains 125 contributions from diverse areas of Intelligent-interactive Systems (IIS), which has been categorized into seven sections, namely (i) Autonomous Systems; (ii) Pattern Recognition and Vision Systems; (iii) E-Enabled Systems. (iv) Mobile Computing and Intelligent Networking; (v) Internet & Cloud Computing; (vi) Intelligent Systems and (vii) Various Applications.

- (I) **Autonomous Systems:** This is one of the established areas of interactive intelligence system typically consisting of learning, reasoning, decision making which support the system's primary function. There are nine (9) contributions consisting of various algorithms, models, and learning techniques.
- (II) **Pattern Recognition and Vision Systems:** This is one of the primary functions of any Intelligent-interactive Systems. There are forty-five (45) contributions comprised in this section covering the developments in this area of deep learning to binocular stereovision to 3D vision.
- (III) **E-Enabled Systems:** This is one of the essential areas of Intelligent-interactive Systems, as many interactive systems are now designed through Internet. It covers information navigation and retrieval, designing intelligent learning environments, and model-based user interface design. There are twelve (12) contributions covered in this section.

- (IV) **Mobile and Wireless Communication:** This area is one of the leading areas of IIS, which covers ubiquitous or mobile computing and networking. This section covers twenty-three (23) contributions.
- (V) **Internet and Cloud Computing:** It is one of the essential areas of IIS, which caters to enhance communication between the system and users, in a way which may not be closely related to the system's main function. This is commonly found in the areas of multimodal interaction, natural language processing, embodied conversational agents, computer graphics, and accessible computing. In this section, there are four (4) contributions consisting of micro-blogging, user satisfaction modeling to the design and construction of graphical cloud computing platform.
- (VI) **Intelligent Systems:** This is the nervous system of IIS, and many researchers are engaged in this area of research. This section contains 11 contributions.
- (VII) **Applications:** Applications of IIS in various domains are covered in the last section which consists of 21 contributions.

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We look forward to your valued contribution and supports to next editions of the International Conference on Intelligent and Interactive Systems and Applications.

We are sure that the readers shall get immense benefit and knowledge from the second volume of the area of Intelligent and Interactive Systems and Applications.

Fatos Xhafa
Srikanta Patnaik
Albert Y. Zomaya

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Xhafa, F.; Patnaik, S.; Zomaya, A.Y. (Eds.)

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