Special issue on future directions for intelligent information systems

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We are proud to present this Special Issue on Future Directions for Intelligent Information Systems. We have invited a collection of Editorial Board Members to look into their crystal balls to envision the future, and to write about the research and development themes in their own research areas.

Before introducing the articles in this issue, we would like to take a moment to thank Dr. Maria Zemankova, for her service to IIIS as a Co-Editor-in-Chief. Dr. Zemankova recently retired from the Editorial Board and we would like to thank her for her leadership in growing the reputation of our journal.

This Special Issue also commemorates over 22 years of continuous publication of the *Journal of Intelligent Information Systems* (IIIS), published initially by Kluwer Academic Publishers, and now by Springer. Our first issue appeared in August 1992 and was a Special Issue of articles written by Editorial Board members. Since then we have grown considerably and now publish two volumes per year with three issues per volume.

When IIIS began publishing in 1992, many research areas were still in their infancy or had not even emerged yet. These include: the World Wide Web, Knowledge Discovery from Data, Intelligent Information Integration, Multimedia Databases and Streaming, Digital Libraries, Search Engines, E-Commerce, Scientific and Statistical Databases, etc.

The buildout of the Internet has brought major changes to our society. We now have Internet giants such as Google, Yahoo!, Amazon.com, Apple, eBay, Netflix, and Facebook. They have transformed the way we search, shop, listen to music, watch movies, and interact with each other online.

The Internet has also transformed the research and publishing enterprise. We now have access to the ACM Digital Library, DBLP, Springer Online, and other online publishing venues. Conferences in our field use online collaboration tools to review and select papers. At IIIS we use Springer's Editorial Manager for online submission and review.

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During our 22 years of publication, JIIS has published Special Issues as a way to focus attention on important research trends. Some topics of previous special issues include: Deductive Object-Oriented Databases, Knowledge Discovery from Data, Intelligent Integration of Information, Functional Approach to Intelligent Information Systems, Data Warehousing and Knowledge Discovery, Multimedia Data Mining, Temporal Information Systems in Medicine, Scientific and Statistical Databases, and Music Information Research Reflects on its Future, to name a few.

We are sure that the next 20 years will bring new research challenges, and JIIS will be there to publish leading-edge articles to promote these new fields.

The Special Issue “Future Directions for Intelligent Information Systems” is comprised of papers covering diverse topics: Visual Analytics, Intelligent Information Integration, Digital Libraries, Secure Data Provenance, Home Automation, and Video Surveillance Systems.

In the paper, “The Human is the Loop: New Directions for Visual Analytics”, Professor Naren Ramakrishnan and his colleagues—Alex Endert, Mahmud S. Hossain, Chris North, Patrick Fiaux and Christopher Andrews—explore the marriage of interactive visualizations and analytic algorithms as a way to support knowledge discovery in large datasets. They review a number of projects focusing on humans guiding the discovery process.

In “Data-Centric Intelligent Information Integration—From Concepts to Automation”, Drs. Matthias Jarke, Manfred Jeusfeld and Christoph Quix discuss the issues involved in Enterprise Information Integration (EII), especially in light of the requirements of managing ever-increasing data volumes, data heterogeneity, and the enterprise applications that access this data.

Drs. Edward A. Fox and Jonathan P. Leidig in their paper “Intelligent Digital Libraries and Tailored Services”, discuss the role of digital libraries in next-generation intelligent information systems. In particular, they explore the use of digital library tools and techniques to support scientific applications that produce large amounts of complex numeric content. This field is known as eScience. Fox and Leidig propose using simulation digital libraries (SimDLs) to model, represent and simulate the dynamics of real-world scenarios.

Dr. Elisa Bertino and her colleagues—Gabriel Ghinita, Murat Kantarcioglu, Dang Nguyen, Jae Park, Ravi Sandhu, Salmin Sultana, Bhavani Thuraisingham, and Shouhuai Xu—in their paper “A Roadmap for Privacy-Enhanced Secure Data Provenance”, address the issue of Secure Data Provenance and propose a framework and a research roadmap to achieve the security and privacy of provenance data.

In their paper “Mining the Home Environment”, Drs. Diane Cook and Narayanan Krishnan, explore the use of smart sensors in the home environment, collecting data from those sensors, and mining that data to gain insights into human daily behavior. They discuss techniques to understand behaviors, recognize activities, and other challenges in realizing the “smart” home.

Finally, Drs. Andrzej Czyżewski and Karol Lisowski in their paper “Employing Flowgraphs to Forward Route Reconstruction in Video Surveillance System” address the problem of reconstructing a person’s route in a building from partial video snapshots taken by multiple video cameras. They use Pawlak flowgraphs together with prediction techniques to extrapolate a person’s movements within buildings.