Editorial Introduction to the Special Articles in the Spring Issue

Innovative Applications of Artificial Intelligence 2013

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■ *This issue of* AI Magazine *features expanded versions of articles that discuss innovative applications from the 2013 AAAI Conference on Innovative Applications of Artificial Intelligence (IAAI-13).*

The Innovative Applications of Artificial Intelligence conference (IAAI) is the premier conference focusing on applied AI research ranging from exciting new potential applications to innovative deployments of AI technology. This special issue of *AI Magazine* brings seven articles presenting extended versions of papers from IAAI 2013. These articles were selected for their description of AI technologies that are either in practical use or close to it.

Five of the articles describe deployed application case studies. These articles present fielded AI applications that distinguish themselves for their innovative use of AI technology. One article describes an emerging application. It presents an area where AI technology can have a practical impact. Another article describes a challenge problem; it presents to the AI community at large a problem where AI could make a significant difference.

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The first article in the special issue is AI Challenge Problem: Scalable Models for Patterns of Life by J. T. Folsom-Kovarik, Sae Schatz, Randolph M. Jones, Kathleen Bartlett, and Robert E. Wray. It focuses on the problem of patterns of life (POL), which emerge from human social systems. The article describes conflicting requirements for this problem and potential AI solutions.

The next two articles describe fielded applications of AI in medicine. The article An Antimicrobial Prescription Surveillance System That Learns from Experience by Mathieu Beaudoin, Froduald Kabanza, Vincent Nault, and Louis Valiquette describes a surveillance system that assists a wide range of practioners in identifying innapropriate medical prescriptions. It is deployed in a Canadian academic medical center. The article Integrating Digital Pens in Breast Imaging for Instant Knowledge Acquisition by Daniel Sonntag, Markus Weber, Matthias Hammon, and Alexander Cavallaro, showcases the design and implementation on a pen-based interface for breast imaging. A crucial property of the system is that it adds little overhead to existing reporting requirements. The system is deployed in a hospital in Germany.

The article Natural Language Access to Enterprise Data by Ulli Waltinger, Dan Tecuci, Mihaela Olteanu, Vlad Mocanu, and Sean Sullivan focuses on USI Answers, which is a corporate-developed question answering system used in 18 countries. It aims at facilitating access to enterprise data for users that might not have background on technical areas such as databases.

The final three articles describe two deployed applications and an emerging application related to education, although lessons learned from these systems could be used in other fields. The article A Constraint-Based Dental School Timetabling System by Hadrien Cambazard, Barry O'Sullivan, and Helmut Simonis describes a constraint programming solution to the problem of dental school timetabling. It discusses scheduling constraints that are unique to dental schools (that is, compared to scheduling comstraints for other university disciplines). The system is deployed at a university hospital in Ireland. The article GRADE: Machine-Learning Support for Graduate Admissions by Austin Waters and Risto Miikkulainen showcases a statistical machine-learning application to the problem of graduate admissions. It focuses on identifying borderline application cases that are to be reviewed by the faculty, thereby reducing reviewing time by a factor of at least 74 percent. The system is deployed at a university in the United States.

Closing the IAAI articles in this issue is the the article Using Analogy to Cluster Hand-Drawn Sketches for Sketch-Based Educational Software by Maria D. Chang and Kenneth D. Forbus. It demonstrates how analogical reasoning techniques can be used to determine common answer patterns from hand-drawn sketches. It presents a study using real data in the form of hand-drawn sketches made for a university course's work.

Overall the special issue presents a collection of applications deployed in several countries around the world, a promising emerging field of application and a challenge problem. We hope you will enjoy this special issue and invite submissions of applied AI research and solutions to future iterations of AAAI's Innovative Applications of Artificial Intelligence conference.

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