Guest Editorial: 2013 Technologies and Applications of Artificial Intelligence

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Over the past few years we have seen that advances are made in artificial intelligence and that artificial intelligence is getting recognized by the public. As an example, the question answering system developed by IBM, Watson, defeated human champions on the popular TV game show, Jeopardy. This example simply represents one of most exciting subfields of artificial intelligence. The success of Watson has proved that state-of-the art artificial intelligence techniques can handle complex problems that traditionally would require the involvement of human experts. As another example, the automatic driving system developed by Google could use the result of analyzing the data collected by sensors to drive a vehicle on road for over 1,000 miles without human intervention.

Artificial intelligence is finding applications in our daily lives. This is in part because of the evolution of the Internet and in part due to the growing ubiquity of smartphones, tablets, and other types of mobile devices. In the mobile industry, developers have been working on the integration of mobile technologies, speech recognition, machine vision, etc. In machine learning, a subfield of artificial intelligence, researchers have been working on techniques to analyze the ever growing data generated by location based services, social networking services, etc. This special issue provides a forum where researchers can exchange ideas related to artificial intelligence and the Internet.

The papers contained in this special issue are primarily from the 2013 Technologies and Applications of Artificial Intelligence (TAAI), an international conference that was held 6 ~ 8 December 2013, in Taipei, Taiwan. Each of these papers contains at least 30% new material when compared to its earlier version published in the TAAI 2013 proceedings. This special issue is also open to submissions from others. To maintain the quality of the journal, all papers have gone through the same peer review process and have been reviewed by two or three highly qualified reviewers.

The paper "A Hybrid Learning Algorithm for Generating Multi-Agent Daily Activity Plans" by Ma and Gerber proposes a risk and entropy based algorithm for the generation of agents' activity plans for traffic simulations, and the experiment result reported in the paper show the encouraging performance of the algorithm.

In their paper "The 5R Adaptation Framework: Concepts, Systems, and Learning Scenarios," Tan, Zhang, Pivot, Evans, Kinshuk, and McGreal present a framework that takes the learning context into consideration in order to improve mobile learning management systems, and they demonstrate three mobile applications to show the usefulness of the framework.

Li, Zhao, and Zhu in the paper "Feature Selection with Multi-Cost Constraint" consider the feature selection task in the cost-sensitive learning setting, and they propose an algorithm to find a subset of features giving the minimal average total cost on data with which multiple costs are associated. The experiment result reported in the paper shows the effectiveness and efficiency of the algorithm proposed by the authors.

Chang, Tsai, and Chen's paper introduces Cloud-VVoIP, a cloud service for real-time video/voice over IP (VVoIP), and it presents a cloud-mobile computing system in which, for example, artificial intelligence techniques are used to optimize network traffic flow.

Biographies

Kuo-Wei Hsu is currently an assistant professor in the Department of Computer Science at the National Chengchi University. He earned his PhD degree from the Department of Computer Science and Engineering at the University of Minnesota. Prior to that, he worked as an Information Engineer in the National Taiwan University Hospital. He obtained his MS degree from the Department of Computer Science and Information Engineering at the National Taiwan University, and BS degree from the Department of Electrical Engineering at the National Chung Hsing University. His current research interests include data management and analysis.

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250 refereed journal papers. He has completed over 50 PhD and 200 MS thesis students. Dr. Huang has received many research awards, including 2 times of national outstanding research award in 2013 and 2016, given to Taiwan's top 100 scholars in 3-year term. Dr. Huang is in the editorial board of over 10 SSCI- and SCI-indexed journals. He became the Fellow of British Computer Society (FBCS) in 2010.