



IEEE Cloud Computing Call for Papers

Intelligence in the Cloud

Submission deadline: 1 May 2017 • Publication date: November/December 2017

Artificial intelligence (AI), since its birth in 1950s, has been heralded as the key to our civilization's brightest future. To pursue the vision of AI, various machine learning approaches (for example, deep learning, supervised learning, unsupervised learning, reinforcement learning, and so on) have been proposed and a few have actually been developed and deployed in the market. The recent hype around big data has enthusiastically renewed the call and focus for advanced machine learning technologies to extract knowledge from large data pools. With its rich resource provisioning, cloud computing is widely regarded as an ideal platform to facilitate resource-intensive machine learning so as to enable intelligence in the cloud. Integrating intelligence into the cloud is without doubt a promising development trend to both cloud computing and AI.

We are still at the early stage of integrating intelligence into the cloud. Toward this exciting future, the path still entangles many critical challenges in different aspects.

At the application layer, cloud-based efficient and powerful AI techniques are highly in demand that target various applications such as natural language processing, stock analysis, medical diagnosis, intelligent industry control, intelligent transportation, and scientific discovery.

At the platform layer, while intelligence has been deployed (for example, Spark's scalable machine learning MLlib and Google's cloud machine-learning framework TensorFlow) new machine learning engines are expected for emerging computing frameworks (for example, the dataflow computing model HAMR).

At the infrastructure layer, new cloud computing architecture and resource scheduling strategies are required to support computation-intensive and IO-intensive machine learning algorithms. How to configure cloud computation, storage, and networking resources for fast, efficient, and scalable machine learning must still be addressed.

The goal of this special is to seek original articles examining the state of the art, open research challenges, new solutions,

and applications for intelligence in the cloud with special focus on, but not limited to, the following topics:

- new distributed architecture for machine learning;
- new machine learning engines in the cloud;
- analytics architectures, frameworks, and models for complex intelligent systems;
- intelligent cloud applications or services such as intelligent traffic, intelligent buildings, intelligent environments, intelligent businesses, and so on;
- cloud resource allocation and optimization through machine-learning algorithms;
- machine learning for cloud resource management;
- combining human and machine intelligence in the cloud; and
- security and privacy issues for intelligent systems in the cloud.

Special Issue Guest Editors

- Song Guo, The Hong Kong Polytechnic University, Hong Kong
- Victor Leung, University of British Columbia, Canada
- Xin Yao, University of Birmingham, UK

Submission Information

Submissions should be 3,000 to 5,000 words long, with a maximum of 15 references, and should follow the magazine's guidelines on style and presentation (see <https://www.computer.org/web/peer-review/magazines> for full author guidelines). All submissions will be subject to single-blind, anonymous review in accordance with normal practice for scientific publications. For more information, contact the guest editors at ccm6-2017@computer.org.

Authors should not assume that the audience will have specialized experience in a particular subfield. All accepted articles will be edited according to the IEEE Computer Society style guide (www.computer.org/web/publications/styleguide).

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