

## *Special Section: Call for Papers*

Announcing a Special Section in **IEEE Access**:  
**Theoretical Foundations for Big Data Applications: Challenges and Opportunities**

*Submission Deadline: March 1, 2016*

**IEEE Access** invites manuscript submissions in the area of **Theoretical foundations for Big Data applications: Challenges and opportunities**.

Big Data is one of the trending research topics in science and technology communities, and it possesses a great application potential in every sector of our society, such as climate, economy, health, social science, etc. Big Data usually includes data sets with sizes beyond the ability of commonly used software tools to capture, curate, and manage. Therefore, we can conclude that Big Data is still in her infancy stage, and we will face many unprecedented problems and challenges along the way of this unfolding chapter of human history.

It is critical to explore the theoretical perspective of Big Data to efficiently and effectively guide its applications. We have witnessed the significant development in Big Data from various communities, such as the mining and learning algorithms from the artificial intelligence community, networking facilities from networking community, and software platforms for software engineering community. However, Big Data applications introduce unprecedented challenges and existing theories and techniques have to be extended and upgraded to serve the forthcoming real Big Data applications, we even need to invent new tools for Big Data applications. For example, tools for the processing of super large graph or matrix and statistical studies in low or extremely low probability events. Furthermore, the needs of multiple correlated flow scheduling in Big Data demands us to update the existing queuing analysis models. Moreover, we also face many problems of Big Data, such as measurement, representation, compression, analysis, etc.

The purpose of this Special Section in *IEEE Access* is to solicit the latest theoretical research for Big Data applications. We prefer survey or tutorial style articles with clear application background information for this Special Section and welcome articles that may also have a multidisciplinary focus. The areas of interest include, but are not limited to, the following.

- Measurement for Big Data
- Mathematical representation for Big Data
- Statistics for Big Data
- Mining and learning theory for Big Data
- Networking theory for Big Data
- Security and privacy theory for Big Data
- Data compression for Big Data
- Parallel and distributed algorithms for Big Data
- Software platform design for Big Data
- Scheduling theory for Big Data
- Performance modelling for Big Data tools
- Theoretical challenges in Big Data
- Theoretical solutions for Big Data
- Data management for Big Data

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