The volume of data being created and digitized is growing at an unprecedented rate. The efficient and effective mining of useful information from high volume data sets is becoming an increasing scientific challenge. While a wealth of data processing techniques have been proposed, traditionally these algorithms can only be deployed on single computers utilizing limited computing resources for small scale data processing.

The past few years have witnessed a rapid development of novel distributed computing paradigms, notably grid computing, peer-to-peer (P2P) computing, cloud computing. These computing paradigms can utilize various resources over the Internet for solving data and computationally intensive problems in an efficient way. Implementation of data processing algorithms and systems in high-performance distributed computing environments is thus becoming crucial to ensure system scalability as data continues to grow inexorably in size and complexity.

This special issue includes five high quality papers with an aim to collate efforts and main achievements that contribute to high performance data processing by employing distributed computing paradigms.

Advanced Data Mining and Integration Research for Europe (ADMIRE) is a research project funded by the European Union for designing new methods and tools for mining and integration of large distributed data sets. Building on the ADMIRE environment, Habala et al present a number of scenarios in application of ADMIRE techniques.

Traffic information service plays an important role in our daily lives. However, traffic information processing is computationally intensive and dynamic in nature. Fang et al present a real time grid system for dynamic traffic monitoring.

Collaborative video annotation has become a key component of e-learning. Jia et al present a distributed collaborative environment based on a distributed messaging system called NaradaBrokering.

Load balancing is critical for distributed systems which can be achieved by replication techniques. Belalem et al present a study on balancing influence in maintenance of consistencies of replicas.

It has been widely recognized that bibliographic information plays an increasingly important role for scientific research. Liu et al present a P2P system for bibliographic information retrieval which is enhanced with semantic annotations. When searching for information, users can incorporate their domain knowledge.
into their queries which guides the system to discover the bibliographic records that are of most interest of users.

In closing, we would like to thank all the authors who submitted their work to this special issue. We hope you will find the material in this special issue of the IJDST interesting and useful.

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