Contemporary Software Challenges: Big Data and Cloud Computing

Cloud computing and data storage options lowering down the cost of hosting server farms, the rush for interpreting large amounts of data for predicting the advent of events of interest for business, politicians, social behaviors, or endemics changed the way that the data was regarded and produced in the last decade.

The success stories of the results obtained by the Narval, the big data analytics used by the winner of the 2012 Presidential Elections in the US, demonstrated that it is not enough to have or host a huge amount of data, rather there is a need to know how to use it, too.

Recently, industries become interested in the high potential of big data, and many government agencies announced major plans to accelerate big data research and applications. However, the data deluge in the big data era brings about huge challenges on data acquisition, storage, management and especially in the data analysis.

Many solutions for big data storage and processing have been experimented with. As such permanent storage and management of large-scale disordered datasets, distributed file systems and NoSQL databases are mentioned as good choices for approaching big data projects.

Cloud computing main goal is to provide hosting to huge computing and storing resources under concentrated management, thus providing big data applications with fine-grained computing and storage capacity.

In this talk, the Dr. Ionescu will review the background and state-of-the-art of big data research related to software technologies. After focusing on data generation, data acquisition, data storage, and data analysis discussing the technical challenges of the latest advances in the associated software technologies, the talk will make an attempt to associate big data analysis algorithms with the Digital Signal Processing (DSP) techniques. Several representative applications of big data, including enterprise management, Internet of Things, online social networks, e-health applications, collective intelligence, and smart grid will be presented at the end.