

International Conference and Exhibition on **Satellite**

August 17-19, 2015 Houston, USA



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Visual analytics on multidimensional big data geospace

Earth Observation data repositories increase significantly each day, and operations such as storage, processing, management, and nevertheless understanding are nowadays challenges. The new concept of big data concerns with massive data of large diversity, received from heterogeneous sources, in various formats and contents, and requiring high performance computation. The scientific community works on developing performant algorithms for mining such huge repositories in order to classify data in expected categories. The high performance computation infrastructures such as cloud, grids, multicore, clusters, are able more or less to cover the computation requirements for huge distributed data. Moreover we are able to combine the performant software packages with high performance computation resources in order to transform, classify, and highlight significant data. Even so, the analytical capacity of the systems is still limited. Nevertheless the human brain has a much greater analytical and synthetic capacity. The presentation highlights and analyzes some related questions such as: How we could combine in an efficient manner the high computation capacity of the machine with the analytical capacity of the human in the context of multidimensional data? How we could comprehend the flow of data through multiple dimensions when the human is able to perceive data in just a few dimensions? How we could interact with the system in order to control the visual analytics? A few use cases will exemplify the concepts and notions.

Biography

Dorian Gorgan is a Professor in Computer Science Department of the Technical University of Cluj-Napoca, PhD supervisor in Computers and Information Technology, and coordinator of the Computer Graphics and Interactive System Laboratory. The fields of interest involve parallel and distributed processing over HPC infrastructures such as Grid, Cloud, Multicore, and cluster, development of platforms and applications for spatial data processing and visualization, interdisciplinary research in the domains of Earth Sciences and Earth Observations. He has been involved as scientific coordinator and WP leader in national and international research projects such as BIGEARTH, PECSA, enviroGRIDS, IASON, SEE-GRID-SCI, GISHEO, mEducator, iTRACE, MedioGrid, COMPLEXHPC, and KEYSTONE. He has been member of scientific and reviewing committees of many ISI Journals and international conferences, and gave more than 300 papers and presentations in journals and prestigious conferences in the domains of Computer Science and Earth Observation.

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