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Visual analysis on multidimensional massive data

Huge data are being generated by our everyday actions and the plethora of machines and sensors which surround us. This is especially true for the fields of study which regularly deal with Earth Science and Earth Observation data. The last decade has seen a dramatic increase in the data volumes available to the general public, and especially to creative people, in order to produce unexpected valuable results through flexible and adaptive approaches.

The high performance computation systems are able to satisfy the requirements for data transformation, classification, and highlighting of the significant data. Even so, the capacity of these systems for data analysis is quite limited. Nevertheless, the human brain has much more capacity for data analysis, synthesis and understanding. The human brain uses the greatest capacity of the visual channel to receive information. Therefore, combining the great computing capacity of the computer and, the visual analysis and reasoning of the human brain, could be an interesting and promising approach for data processing, mining and understanding.

The presentation highlights the solutions and issues of the visual analysis on multidimensional massive data. The experiments consider the n-dimensional value space of data and techniques for interactive navigation and visualization. The user may control the visualization and navigation in order to identify and detail the critical regions, points and tendencies within the value space. The examples cover use cases in the domains of Earth Science, Earth Observations and medicine.

Biography

Dorian Gorgan is Professor in Computer Science Department of the Technical University of Cluj-Napoca and PhD supervisor in Computers and Information Technology, and coordinator of the Computer Graphics and Interactive System Laboratory. His 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 350 papers and presentations in journals and prestigious conferences in the domains of Computer Science and Earth Observation.

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