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GRID based high performance computing in satellite imagery. Case Study –UNOSAT.

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The present paper presents a novel approach for efficient satellite image processing. The increasing number of high resolution satellites into orbit and the number of applications using satellite images lead to petabytes of data to be processed. Unfortunately, infrastructures like UNOSAT cannot store and process such amount of information. Consequently, dividing the processing tasks and storage within a GRID infrastructure could represent a solution to this kind of problem. However, for the iterative algorithms and iterative processing tasks applied to high resolution images, the strategy of distributing the jobs over a GRID infrastructure still has its limitation. Thus, FPGA or GPU based application specific hardware architectures can be used together with the GRID infrastructure in order to increase the computing performances. An example of FPGA application specific hardware architecture which makes use of spatial and temporal parallelism is proposed for the iterative Perona Malik image processing filter.

Primary author: Dr BELEAN, Bogdan (National Institute for R&D of Isotopic and Molecular Technologies, Cluj-Napoca, Romania)

Co-authors: Dr BOT, Adrian (National Institute for R&D of Isotopic and Molecular Technologies, Cluj-Napoca, Romania); Dr FLOARE, Calin Gabriel (National Institute for R&D of Isotopic and Molecular Technologies); BELEAN, Carmen (Babes-Bolyai University, Faculty of Mathematics and Computer Science, Department of Mathematics, Cluj-Napoca, Romania); Mrs VARODI, Codruta Mihaela (National Institute for R&D of Isotopic and Molecular Technologies, Cluj-Napoca, Romania); Prof. ADAM, Gheorghe (JINR)

Presenter: Prof. ADAM, Gheorghe (JINR)

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