# Development of RMS Seismic attribute plug-in for OpendTect software using Graphics Processing Unit

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By

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# Abstract

Seismic attributes analysis play a key role in unlocking hidden information from seismic amplitude data, and it has become the integral part seismic data interpretation work flows. The key challenge in seismic interpretation is to extract at most information from 3D seismic volumes in the form of seismic attributes in a time-efficient manner. But as amount of 3D seismic volumes is growing with the exploration in complex areas, the time used to calculate these attributes becomes a bottleneck for seismic data interpretation work flows, and thus affects the turnaround time of the interpretation project. The computation of seismic attributes are independent of each other and it's computation time depends on the size of the data-set. Hardware architectures like General Purpose Graphics Processing Units (GPGPU's), which are known for their unique ability to perform parallel calculations very efficiently, can be used for computation of these seismic attributes. Due to the advantage of parallel computation on GPGPU's, many seismic attribute can be transfered to take the advantage of this processor, and to improve software performance. OpendTect, which is an open source seismic data interpretation software, uses CPU's for computation of seismic attributes. Thus, there is a large scope of using GPGPU's for computation of seismic attributes on this software, where efficient computation and data transfer can reduce the computation time significantly. A plug-in for computation of Root Mean Square (RMS) of seismic amplitude was developed in this study to understand the plug-in development environment of OpendTect, and to test the efficiency of GPGPU platform for computation of seismic attributes. Based on the developed plug-in and benchmark studies, conclusions and recommendation are provided for use of GPGPU's platform for seismic attribute computation in time-efficient manner.