– Review–
Computer Science and Artificial Intelligence

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The following contributions present novel solutions to traditional long-standing problems.

M. Karrenbach and M. Jacob show in an interdisciplinary feasibility study (geophysics and computer science), that the novel programming language "Java" can be used for implementing large-scale seismic operators in a parallel inversion framework. While most current seismic applications are implemented in C, Fortran or C++, Java offers new perspectives in creating a flexible inversion environment. The new language is suited for heterogeneous computing environments, but has lacked performance in the past. In this paper a variety of parallelization techniques and its performance are compared on a variety of parallel computer platforms which are commonly used in the oil and gas industry. The language's natural parallelism is exploited and complemented with JavaParty to allow remote object distribution in a user transparent manner.

R. Essenreiter et al. apply neural networks to estimate and remove multiple energy from reflection seismic data sets. The nonlinear behaviour of a multi-layer perceptron neural network is shown to be superior to a traditional linear predictive Wiener Filter. The neural network adjusts its internals by learning from an appropriately chosen training data set that is derived from well log information. Results are shown for removing multiple energy from a CDP gather.

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