
ID: Type: **Poster**

# neural network architecture optimization and performance amelioration for seismic signal classification using genetic algorithms

Artificial Neural Networks ANNs, inspired by the biological neurons in the human brain, are recently showed great results on a variety of classification problems. The main advantage of ANNs is their ability to learn easily and directly complex non-linear mappings from data without requiring mathematical models of the problem. However, the main difficult task in using ANNs is to determine an optimal topology that achieves the best results. Frequently, this task is performed using a trial-and-error process. Nevertheless, this method demands enormous amount of time and effort, and it may not lead to the best performance. Therefore, in this paper, we propose an automatic genetic optimization algorithm for seismic signal classification using the Multilayer Perceptron neural network. This methodology was applied to real seismic data, composed of four classes. The result is an optimized MLP that achieves good performance. Furthermore, the most important thing is the fact that the algorithm searches for the best configuration by testing a large number of configurations without the intervention of the user and in less amount of time, and thus it reduces the designing effort and time compared to the classical method.

**Primary author:** ATMANI, Abderrahman (ENSA, Ibn Zohr University)

**Presenter:** ATMANI, Abderrahman (ENSA, Ibn Zohr University)

**Track Classification:** Theme 3. Verification Technologies and Technique Application