

New AASPI Algorithms: June 2018

Application Name	Application Description	Location	Software Documentation	AASPI References
ica3d	Independent component analysis. Unlike principal component analysis, which constructs orthogonal components that best represent the data in a mathematical sense, ICA attempts to separate different patterns of signal from each other and from coherent noise such as acquisition footprint using a principal of negentropy.	under aaspi_util > Attribute Correlation Tools tab	http://mcee.ou.edu/aaspi/documentation/Volumetric_Classification-ica3d.pdf	http://mcee.ou.edu/aaspi/AASPI_Theses/2018_AASPI_Theses/David_Lu_bo-Robles_MS_Thesis_Spring_2018.pdf
rfc3d	Random forest classification is one of the more promising decision tree supervised learning techniques that uses training data to identify similar patterns in the seismic data volume.	under aaspi_util> Attribute Correlation Tools tab	http://mcee.ou.edu/aaspi/documentation/Volumetric_Classification-rfc3d.pdf	in progress
iterative_fault_enhancement workflow	Using iteratively energy-weighted directional Laplacian of a Gaussian filtering for fault enhancement, which rejects lateral discontinuity anomalies, smooths faults, and enhances low incoherent anomalies.	under aaspi_util > AASPI Workflows tab	http://mcee.ou.edu/aaspi/documentation/Image_Processing-fault_connectivity.pdf	http://mcee.ou.edu/aaspi/publications/2018/Qiet al. 2018 Image processing for automatic fault extraction.pdf
nonparallelism	Computation of the variance of the dip vector within an analysis window. This measure is complementary to reflector convergence and has shown some value in machine learning and supervised classification of chaotic features such as mass transport deposits and salt	under aaspi_util> Geometric Attributes tab	documentation in progress	in progress