

New AASPI Algorithms: September 2022

Application Name	Application Description	Location	Software Documentation	AASPI References
teager_kaiser_energy	Amplitude Volume Transform. Previously was an option inside instantaneous attributes. Although computationally similar, moved because most interpreters think it is something different and may not know where to look for it.	under aaspi_util > Single trace calculations	http://mcee.ou.edu/aaspi/documentation/Single_Trace_Calculations-teager_kaiser_energy.pdf	http://mcee.ou.edu/aaspi/publications/2018/Marc%C3%ADlio_et_al_Seismic%20attributes_complex_Teager_Kaiser_energy.pdf ; http://mcee.ou.edu/aaspi/publications/2008/matos_et_al_seg2008.pdf
spectral_balance	Applies spectral balancing to the input data using either survey-constant or trace-by-trace computations using either the peak power or average power at each smoothed spectral time sample. Algorithm gives similar results to spec_cwt and spec_cmp but because it uses simple FFT-based filterbanks is much faster	under aaspi_util > Data Conditioning	http://mcee.ou.edu/aaspi/documentation/Poststack_Data_Conditioning-spectral_balance.pdf	No publication. Modern implementation of older ideas.
despike_training	A histogram conditioning process in the machine learning workflow that addresses spikes in the histogram due to edge effects (near mute zones and no-permit areas) and clipping (e.g. for porosities that fall beyond 0 to 100% to be at 0 or 100).	under aaspi_util > Machine learning toolbox	under construction	http://mcee.ou.edu/aaspi/publications/2021/Ha_et_al_2021-An_in-depth_analysis_of_logarithmic_data_transformation_and_per_class_normalization_in_machine_learning.pdf
surface_inport	A stand-alone program that reads in multiple vendor surface formats and outputs a single AASPI-format (1 sample per bin) format, thereby isolating all the conversion headaches to a single program	under aaspi_util > Other utilities	under construction	

data_generation	A Python program that generates syntetics for use in machine learning	under aaspi_util > Machine learning toolbox	under construction	http://mcee.ou.edu/aaspi/publications/2021/Vera-Arroyo et al 2021-Fault interpretation of listric faults in the GOM to train CNN fault prediction.pdf
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