A low-latency Glitch Classification Algorithm Based in Waveform Morphology[1] HUNTER GABBARD, University of Mississippi, SOMA MUKHERJEE, University of Texas Rio Grande Valley, ROBERT STONE, University of Texas Rio Grande Valey — We present a novel and efficient algorithm for classification of signals that arise in gravitational wave channels of the Laser Interferometer Gravitational Wave Observatory (LIGO). Using data from LIGOs sixth science run (S6), we developed a new glitch classification algorithm based mainly on the morphology of the waveform as well as several other parameters (signal-to-noise ratio (SNR), duration, bandwidth, etc.). This is done using two novel methods, Kohonen Self Organizing Feature Maps (SOMs), and discrete wavelet transform coefficients. This study shows the feasibility of utilizing unsupervised machine learning techniques (SOMs) in order to display a multidimensional trigger set in a low-latency two dimensional format.

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