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Searches for Compact Binary Coalescence Events using Neural Networks in LIGO/Virgo Second Observation Period ALEXIS MENENDEZ-VAZQUEZ, MACHIEL KOLSTEIN, MARIO MARTINEZ, LLUSA-MARIA MIR, Inst High Enrgy Phy (IFAE) UAB — We present results on the search for the coalescence of compact binary mergers using convolutional neural networks and the LIGO/Virgo data, corresponding to the O2 observation period. Two-dimensional images in time and frequency are used as input, and two sets of neural networks are trained separately for low mass (0.2 - 2.0 solar masses)and high mass (25 - 100 solar masses) compact binary coalescence events. We explored neural networks trained with input information from a single or a pair of interferometers, indicating that the use of information from pairs leads to an improved performance. A scan over the full O2 data set using the convolutional neural networks for detection demonstrates that the performance is compatible with that from canonical pipelines using matched filtering techniques. No additional events with significant signal-to-noise ratio are found in the O2 data.

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