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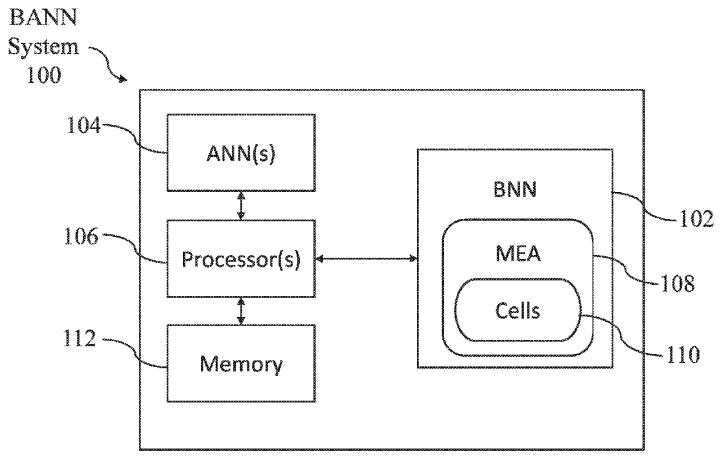



FIG. 1

(57) Abstract: Techniques for using a biological and artificial neural network (BANN) system to perform a task. The BANN system comprises a multi-electrode array (MEA); a biological neural network (BNN) comprising neurons arranged on the MEA, a trained statistical model trained using inputs generated using responses of the BNN to training data inputs; and at least one processor. The method comprises using the BANN system to receive an input signal; encode the input signal to generate a stimulation pattern; stimulate the BNN by using the MEA to generate electrical signals in accordance with the stimulation pattern; measure, using the MEA, a response of the BNN responsive to the stimulating; generate, based on the measured response, an input for the ANN; process the input with the trained statistical model to obtain corresponding output; and use the output from the trained statistical model in furtherance of performing the task.

WO 2025/188474 A8

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