

Supplemental Online Material

Detailed information about the LSTM layer architectures are presented in this section.

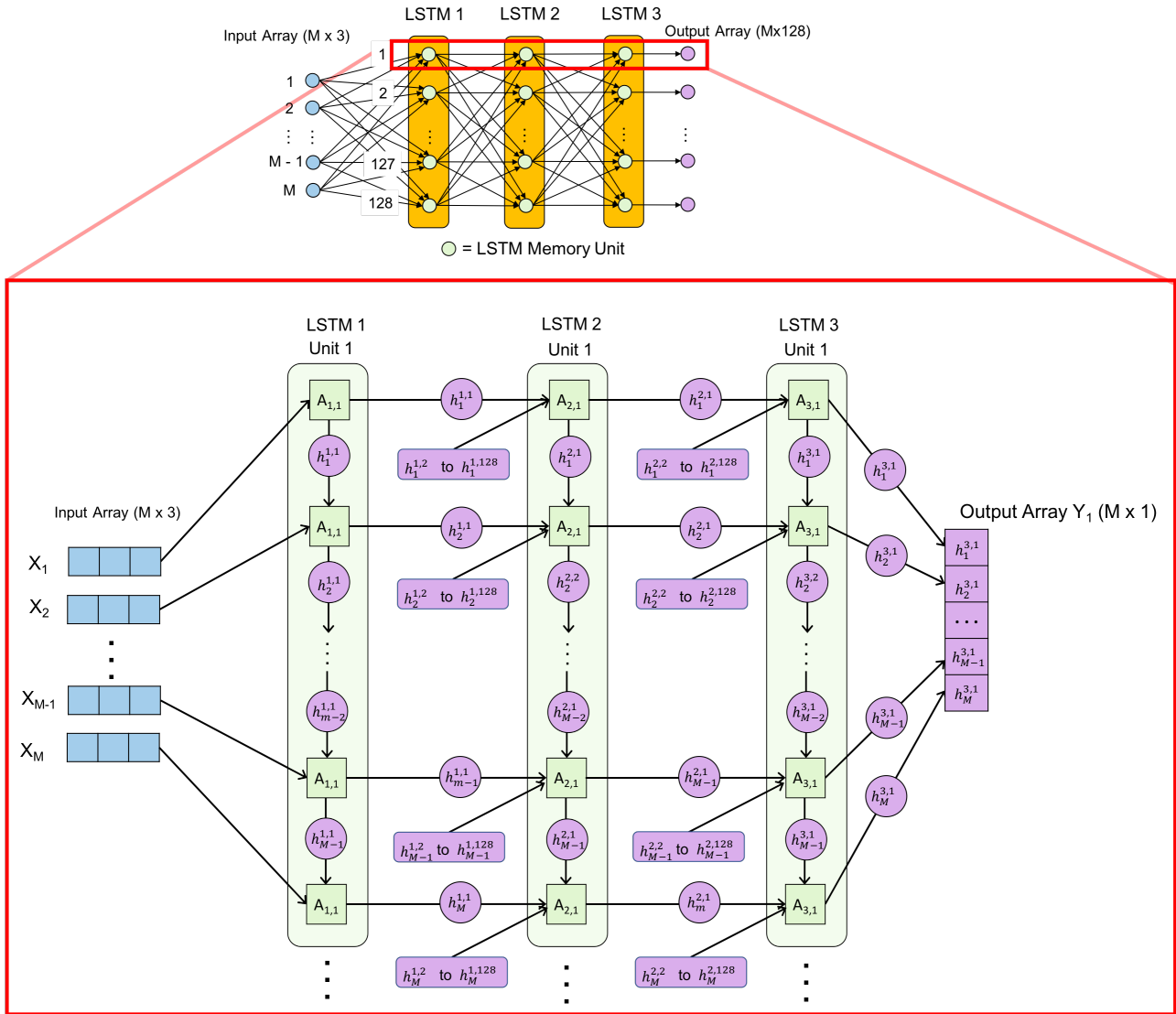


Figure S1. Enhanced detail of the architecture of the first LSTM memory units of the stacked LSTM layers from Figure 4 in section 3.1. Includes details of how the hidden outputs of the LSTM units are passed to the next layer, where M is the input window size, J is the LSTM layer number, K is the unit number in the layer, $A_{J,K}$ is the K th LSTM unit of the J th LSTM layer, and $h_n^{J,K}$ is the hidden output of the n th iteration of the $A_{J,K}$ LSTM unit. $A_{J,K}$ and $h_n^{J,K}$ correspond to A and h in Figure 5, respectively.

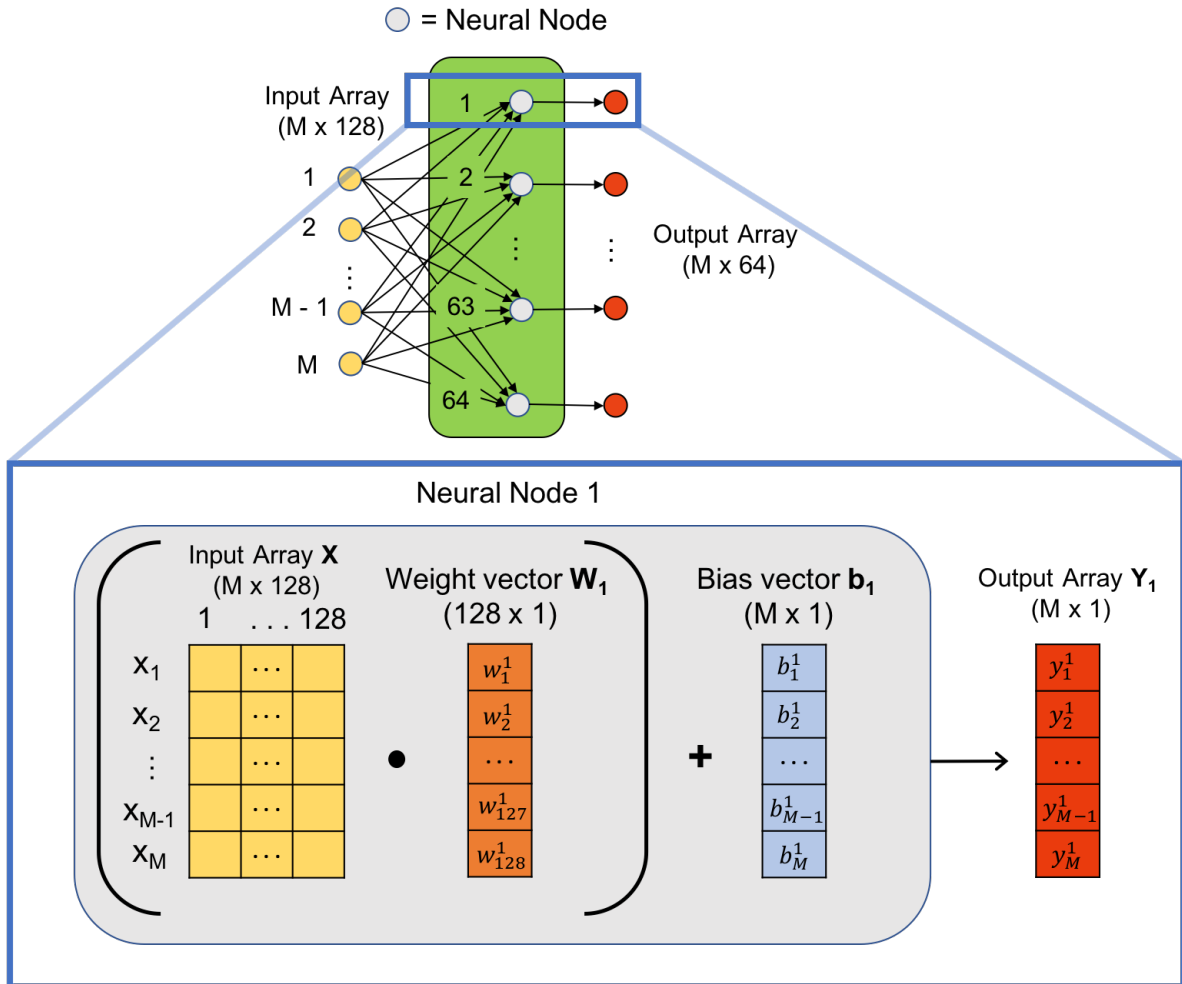


Figure S2. Enhanced detail of the architecture of the dense layer from Figure 4 in section 3.1. Shows the details of how the neural node processes the input data by $W_1(X) + b_1 = Y_1$, where M is the input window size, X is the input array, W_1 is the weight vector of the first neural node, w_q^1 is the q th weight of W_1 , b_1 is the bias vector of the first neural node, b_m^1 is the m th bias of b_1 , and Y_1 is the output.

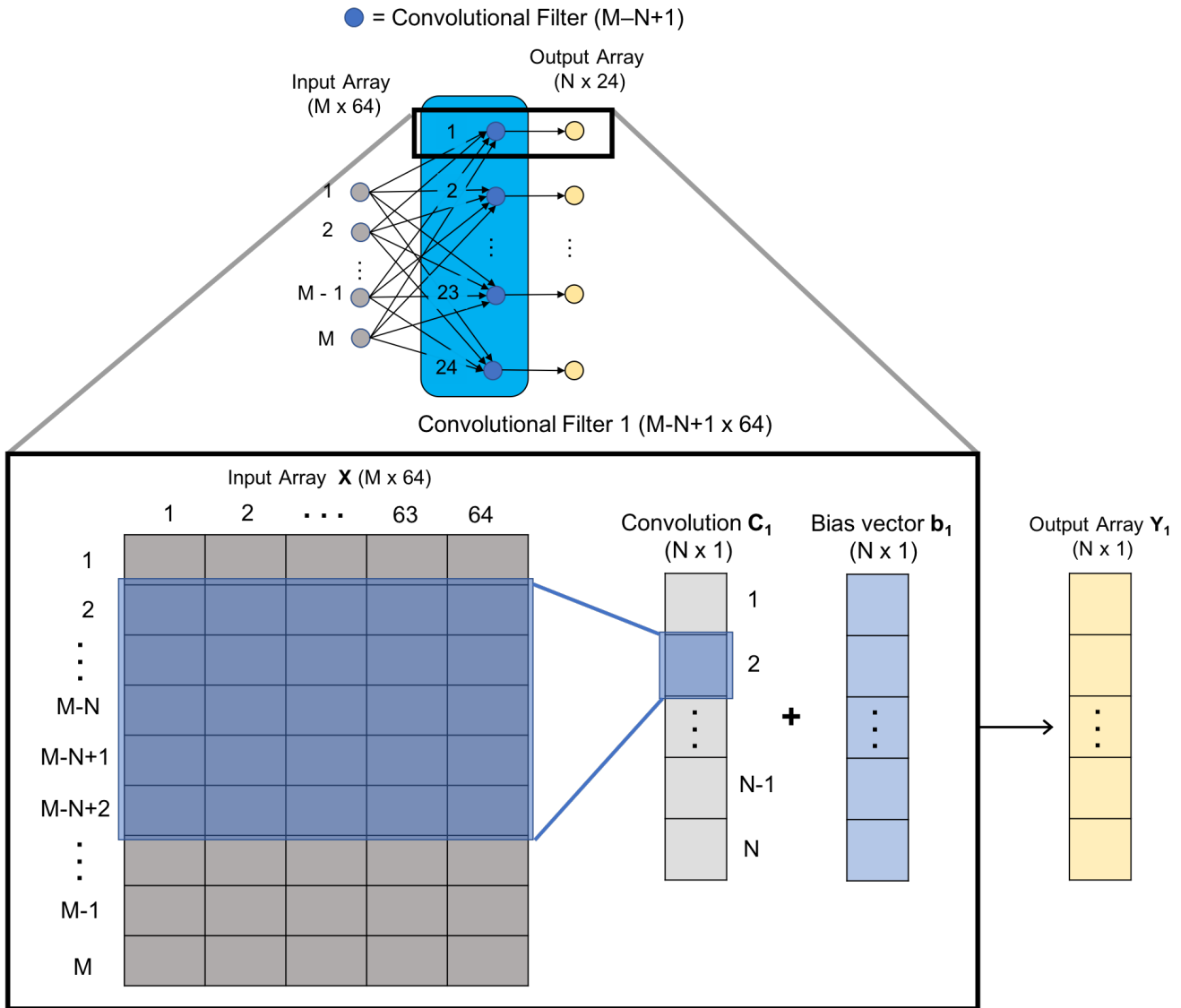


Figure S3. Enhanced detail of the architecture of the convolutional layer from Figure 4 in section 3.1. Shows the details of how convolutional filter 1 of size $M - N + 1 \times 64$ slides over X , where M is the input window size, N is the output window size, X is the input array, C_1 is the output of convolutional filter 1, b_1 is the bias vector, and Y_1 is the output.