Supplementary Algorithm S1 **Working of Recurrent Neural Network (RNN)**

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| **Algorithm 1: Working of Recurrent Neural Network (RNN)** |
| **Input:** A sequence of data points *x*, denoted as where represents the input at a specific time step "*t*" within the sequence.   1. The hidden state at time step "*t*", denoted as , is calculated by combining the current input with the previous hidden state . This computation is expressed as:   where represents activation function applied to the sum of weighted inputs, α represents the weight matrix for the connections from the input to the hidden state and θ represents the weight matrix for the connections within the hidden state.   1. The output at time step *"t"* can be computed using the hidden state:   where is the weight matrix for the hidden-to-output connections.  **Output:**  Output at time step *“t”* i.e | |