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 $x=\left[x\_{t-1, }x\_{t}, x\_{t+1}…\right]$ where $x\_{t}$represents the input at a specific time step "*t*" within the sequence.1. The hidden state at time step "*t*", denoted as $f\_{t}$, is calculated by combining the current input $x\_{t}$with the previous hidden state $f\_{t-1}$. This computation is expressed as:

$$f\_{t}=σ\left(αx\_{t}+θf\_{t-1}\right)$$where $σ$ 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 $y\_{t}$ at time step *"t"* can be computed using the hidden state:

$$y\_{t}=σ(βf\_{t})$$where $β$ is the weight matrix for the hidden-to-output connections.**Output:** Output at time step *“t”* i.e $y\_{t}$ |