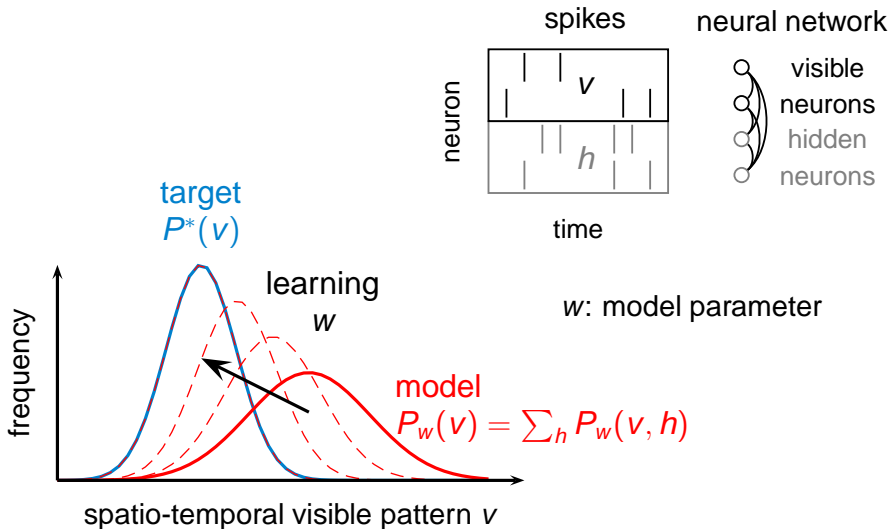# Sequence learning with hidden units in spiking neural networks

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Task: Learning a distribution of sequences
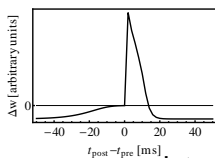
Model

stochastic spike response model

$\downarrow$

model distribution: $P_w(v)$

$\downarrow$

stochastic gradient descent on $KL(P^*(v)||P_w(v))$

$\downarrow$

$\Delta w \propto$ *global factor* $\times$ *pre* $\times$ *post*

consistent with STDP

EM with importance sampling

Results

overlay of 20 recalls

target   simple Hebb   only visible   only readout   our rule

unit

time

visible units

hidden units