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SPIKING NEURON MODELS Single Neurons, Populations, Plasticity Wulfram Gerstner Swiss Federal Institute of Technology, Lausanne Werner M. Kistler ... 1.1.1 The ideal spiking neuron 2 1.1.2 Spike trains 3 1.1.3 Synapses 4 1.2 Elements of neuronal dynamics 4 1.2.1 Postsynaptic potentials 6

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Simple Model of Spiking Neurons Eugene M. Izhikevich ... brain models consisting of spiking neurons, we must find compromises ... The model for a single neuron must be: 1) computationally simple, yet 2) capable of producing rich firing patterns exhibited by real biological neurons.

Simple Model of Spiking Neurons - Izhikevich

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It is relatively easy to construct a spiking neural network model and observe its dynamics. It is much harder to develop a model with stable behavior that computes a specific function. [citation needed] ... Full text of the book Spiking Neuron Models. Single Neurons, ...

Spiking neural network - Wikipedia

model based on simplified "binary" neurons, where a single neuron implements a simple thresholding function: a neuron's state is either "active" or "not active", and at each neural computation step, this state is determined by calculating the weighted

Computing with Spiking Neuron Networks - Semantic Scholar

model is supposed to generate one or more spikes. The basic assumption underlying the implementation of most of spiking neuron models is that it is timing of spikes rather than the specific shape of spikes that carries neural information (Gerstner and Kistler 2002b). In mathematical terms a sequence of the firing

introduction to spiking neural networks: information

Spiking neural model ... learning rules for spiking neurons. 4.1 Biological neuron physiology ... the greater are the computational demands of the model. Detailed neural models One trend in computational neuroscience is oriented towards creating ever more detailed

Spiking neural model - Maynooth University

models that reproduce the variety of spiking patterns of real neurons [3], and routing circuits that transmit information about the time and place of spikes across the system [4,5].

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