

# **Olfactory Bulb Modeling using Spiking Neurons with Temporal Coding: The OBEONE Model**

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There is increasing evidence from recent neurobiological studies, that biological neural networks use timing of the pulse to encode the relevant information and perform computation, rather than encode information through averaging of firing rates. This evidence compels us to revisit many of the previously proposed models of biological networks. One of the most widely studied biological neural networks is the olfactory bulb. Located in the anterior region of the brain just above the nasal cavity, the olfactory bulb specializes in processing the molecular signals that give rise to the sense of smell. In this paper we describe the OBEONE Model, which employs a spiking neuron network and temporal information processing. The spiking neurons and the spiking neural networks are powerful tools in modeling neurobiological systems. Their concept to integrate and fire and of emission of the PSP (Post Synaptic Potential) models the functions of biological neurons more closely than traditional processing elements viz.