Category: Uncategorized

Correlational Strength and Computational Algebra of Synaptic Connections Between Neurons

Authors:

Eberhard Fetz

Abstract:

Intracellular recordings in spinal cord motoneurons and cerebral cortex neurons have provided new evidence on the correlational strength of monosynaptic

connections, and the relation between the shapes of postsynaptic potentials and the associated increased firing probability. In these cells, excitatory

postsynaptic potentials (EPSPs) produce cross(cid:173) correlogram peaks which resemble in large part the derivative of the EPSP. Additional synaptic noise

broadens the peak, but the peak area -- i.e., the number of above-chance firings triggered per EPSP -- remains proportional

to the EPSP amplitude. A typical EPSP of 100 ~v triggers about .01 firings per EPSP. The consequences of these

data for information processing by polysynaptic connections is discussed. The effects of sequential polysynaptic links can be calculated by convolving

the effects of the underlying monosynaptic connections. The net effect of parallel pathways is the sum of the individual contributions.

Title: Category: Uncategorized

Category: Uncategorized