Computational Neuroscience Seminar

Suspicious Coincidences in the Brain

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Fung Auditorium, Powell-Focht Bioengineering Building
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Brains need to make quick sense of massive amounts of ambiguous information with minimal energy costs and have evolved an intriguing mixture of analog and digital mechanisms to allow this efficiency. Analog electrical and biochemical signals inside neurons are used for integrating synaptic inputs from other neurons. The digital part is the all-or-none action potential, or spike, that lasts for a millisecond or less and is used to send messages over a long distance. Spike coincidences occur when two or more neurons fire together at nearly the same time. In this lecture I will show how rare spike coincidences can be used efficiently to represent important visual events and how this architecture can be implemented with analog VLSI technology to simplify the early stages of visual processing.

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