**Title:** Spiking Neural Networks and where should they be used

**Description:**

Spiking Neural Networks (SNNs) are a type of artificial neural network that mimics the behavior of biological neurons. Unlike traditional artificial neural networks (ANNs) where information is represented as a continuous value, SNNs use discrete events called spikes to represent and process information. These spikes, also known as action potentials, are generated when a neuron's internal state, modeled as its membrane potential, reaches a certain threshold. This process of information encoding and processing is believed to be more like how neurons in the brain work. The use of SNNs has several advantages over traditional ANNs. They are more efficient in terms of computational resources, as neurons in an SNN only need to process information when they receive a spike. This makes them well-suited for tasks involving spatiotemporal data, such as speech and video recognition. Furthermore, SNNs are believed to be capable of utilizing more information from the input data, as they consider not only the frequency of spikes but also their timing. The conversion of existing ANNs to SNNs can potentially decrease the costs of signal transmission and computation. Binary-valued spikes both reduce the number of bits per transmission by turning real-valued signals into binary ones, and they make signals sparse in time by not transmitting information for each connection every timestep. SNNs have the potential to revolutionize the field of artificial intelligence and neuroscience. Their ability to mimic the behavior of biological neurons, combined with their computational efficiency, makes them a promising tool for tasks that require a deep understanding of data or the ability to process large amounts of spatiotemporal data.

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**Presentation slot**: latest possible that is still available