

STDP Motion

An unsupervised & bio-inspired machine learning algorithm for movement recognition pre-processing in event-based vision.

DESCRIPTION*

STDP Motion is a Spiking Neural Network (SNN) dedicated to event-based vision. It can be used to predict the trajectory and landing position of a moving object, or any recurring event given an initial information.

It is based on spike-timing-dependent plasticity (STDP), a bio-inspired concept that makes it particularly applicable to neuromorphic or DVS cameras.

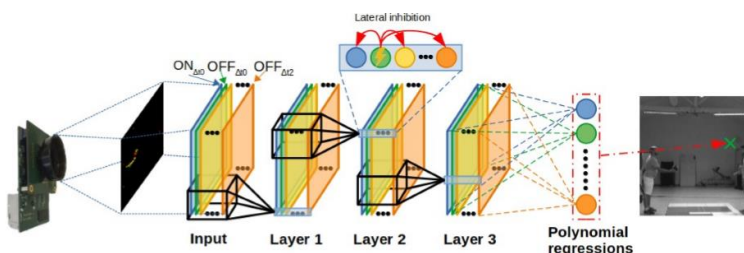
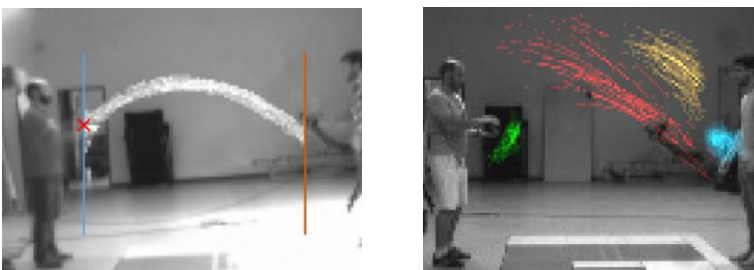
It allows innovative applications in the fields of robotics, computer vision, or surveillance granted by the low latency and low energy expenditure offered by event-based cameras.

The algorithm learns about events to predict their outcome with great accuracy and speed, by becoming selective to specific properties (orientation, direction, speed).

Thanks to a patent-pending innovative approach of the STDP rule, the STDP Motion algorithm:

- Improves neurons selectivity
- Reduces the number of spikes generated when a movement is a strong emitter

Hence the invention allows a better learning of movements by spiking neural networks, especially a better selectivity of neurons to different types of movements.



TECHNICAL SPECIFICATIONS

- C++, Armadillo
- LIF Neuron Model

* Technology requiring license rights.

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COMPETITIVE ADVANTAGES

- Unsupervised algorithm
- Hardware-friendly
- Bio-inspired

APPLICATIONS

- Computer vision
- Surveillance
- Robotics
- Drones

INTELLECTUAL PROPERTY

- Patent-pending

DEVELOPMENT STAGE

- Experimental proof of concept



LABORATORY



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