

# Distributed Polychronous Spiking Neural Net (DPSNN) application code for evaluation of off-the-shelf and custom systems dedicated to neural network simulations

*Thursday, 12 February 2015 17:10 (20 minutes)*

In the framework of the EURETILE European project, a natively distributed application has been developed, as a representative of plastic spiking neural network simulators. The DPSNN-STDP (Distributed Simulation of Polychronous Spiking Neural Network with synaptic Spike-Timing Dependent Plasticity) will be used in the context of the CORTICONIC European FET project to produce simulations of cortical slices for the comparison with in-vivo experiments. The application will be also used to drive the development of future parallel/distributed computing systems dedicated to the simulation of plastic spiking networks.

The DPSNN-STDP simulator has been designed to generate identical spiking behaviours and network topologies over a varying number of processing nodes, simplifying the quantitative study of scalability on both commodity and custom architectures. Moreover, it can be easily interfaced with standard and custom software/hardware communication interfaces. Being natively distributed and parallel, it should not pose major obstacles against distribution and parallelization on several platforms. During 2015, the DPSNN-STDP application will be further enhanced to enable the description of larger networks, more complex connectomes, and finalize it for the application to biological simulations.

The development of the DPSNN-STDP simulator has been funded by the European FET FP7 projects CORTICONIC (grant 600806) and EURETILE (grant 247846), in cooperation with the SUMA project.

**Presenter:** PASTORELLI, Elena