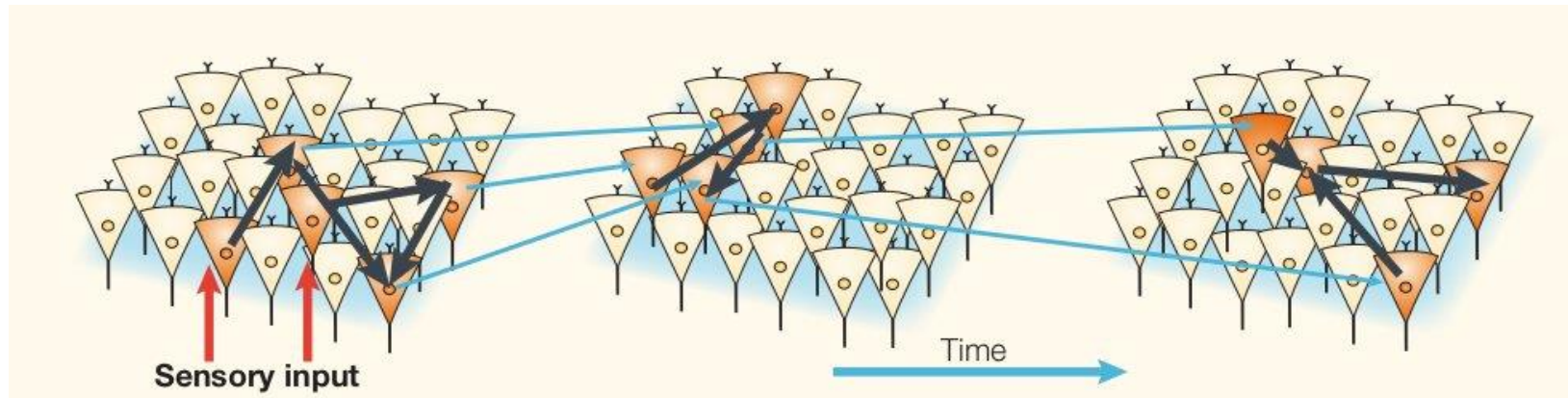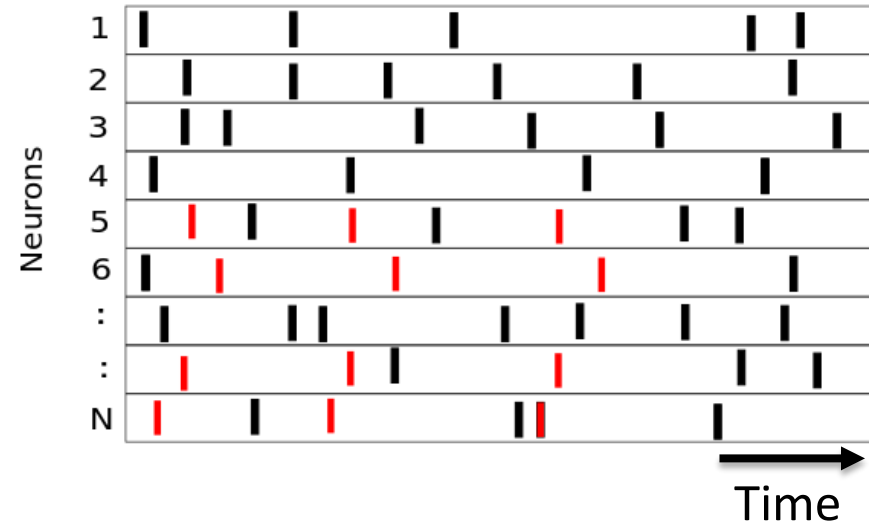# SPADE: Spike Pattern Detection and Evaluation in Massively Parallel Spike Trains
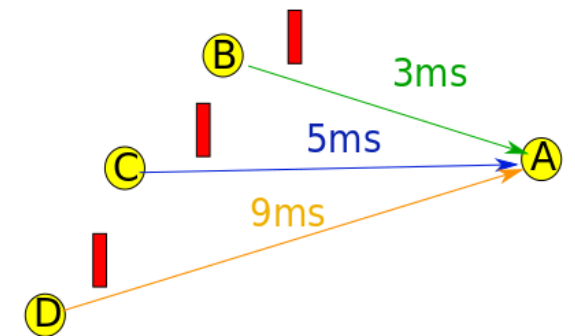
Pietro Quaglio

February 28, 2017

# Motivations

- Spatio-Temporal Patterns (STPs) are intended as repeated precise sequences of spikes

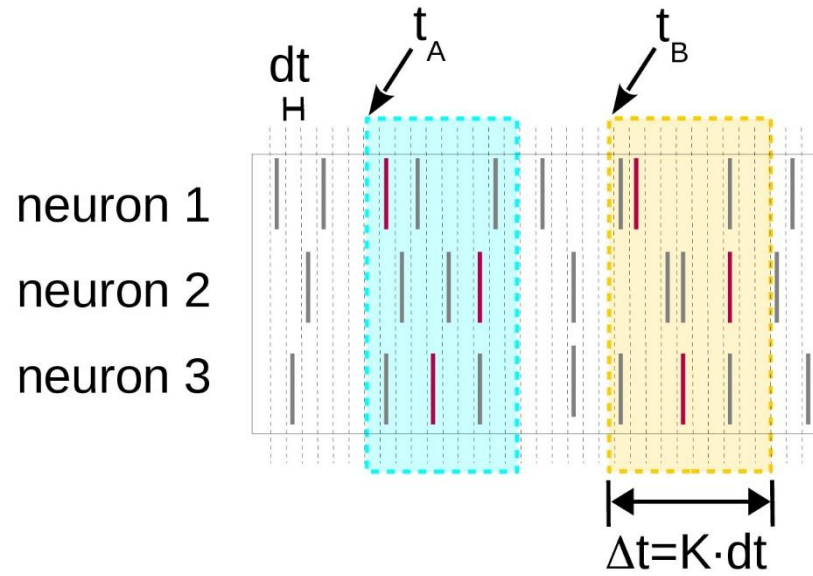- STPs are assumed to be a signature of cell assembiles activation in MPST
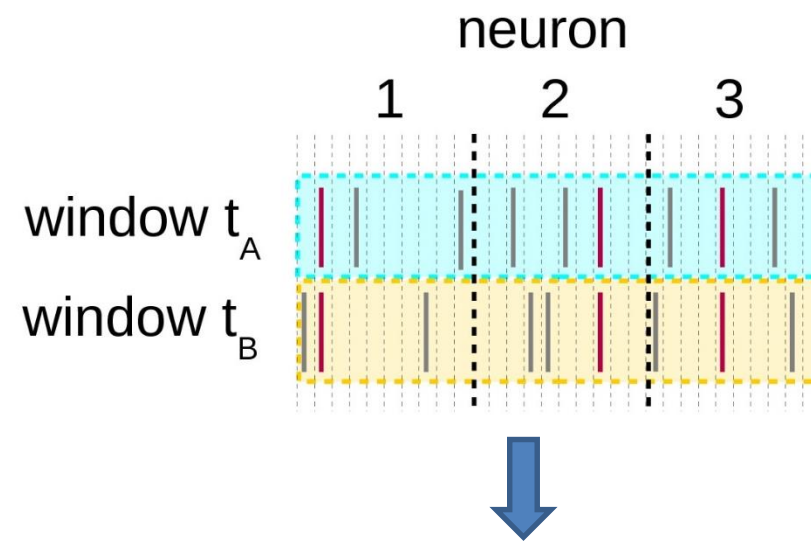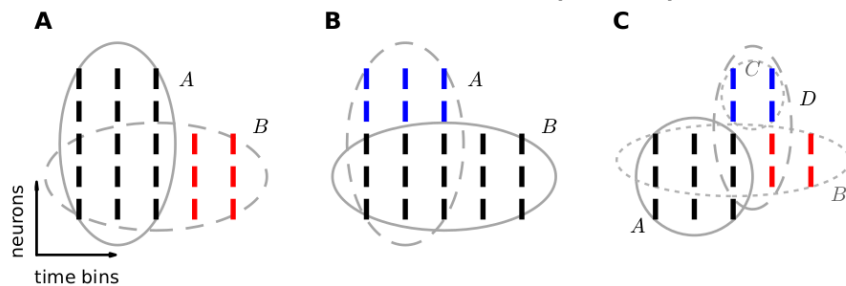
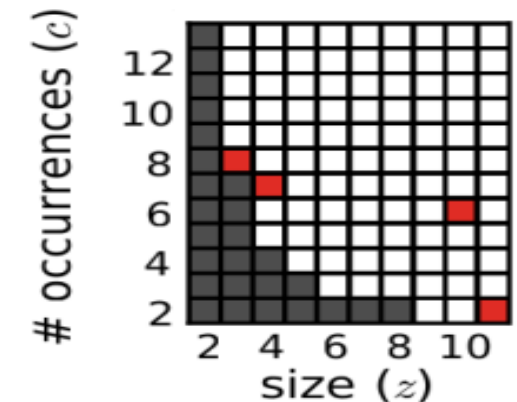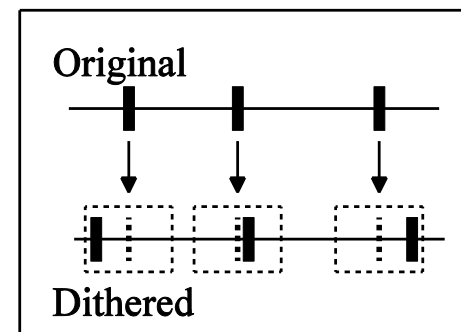Harris et al 2005

# SPADE

## Binning + sliding window



$\Delta t = K \cdot dt$

## Mining (FIM)



## Conditional test (PSR)

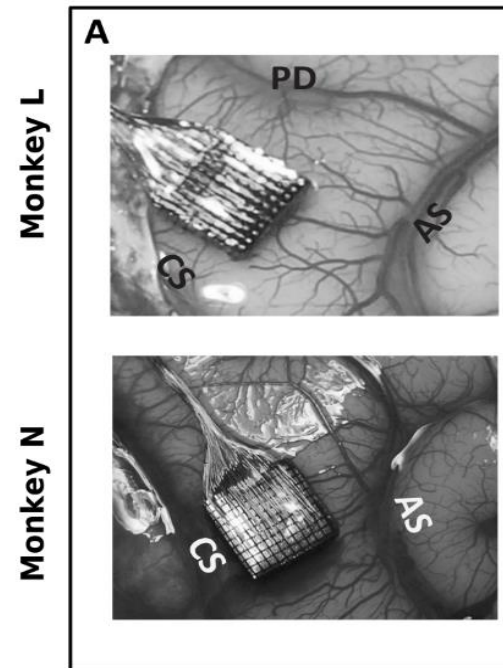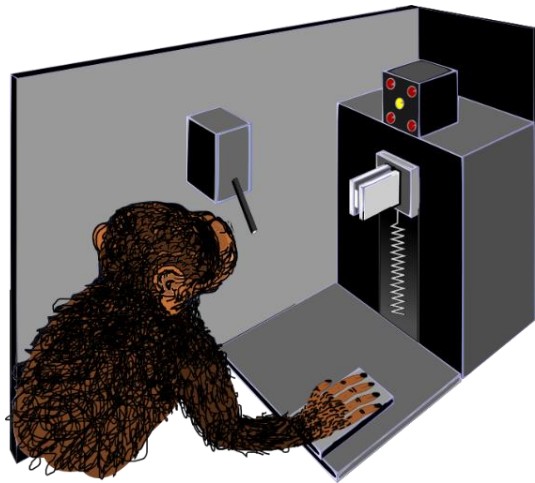Torre et al. (2013) Front. Comp. Neurosci.

Quaglio et al. (2016) under review

## Test for independence (PSF)

# Application to experimental data
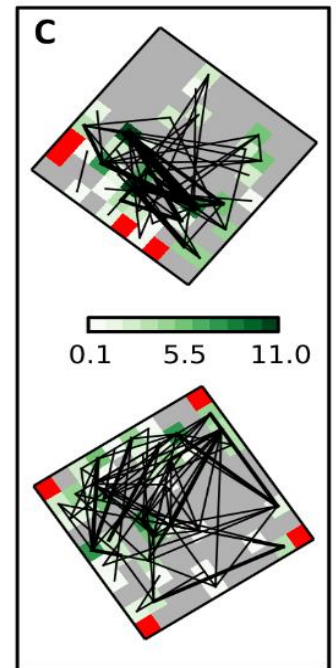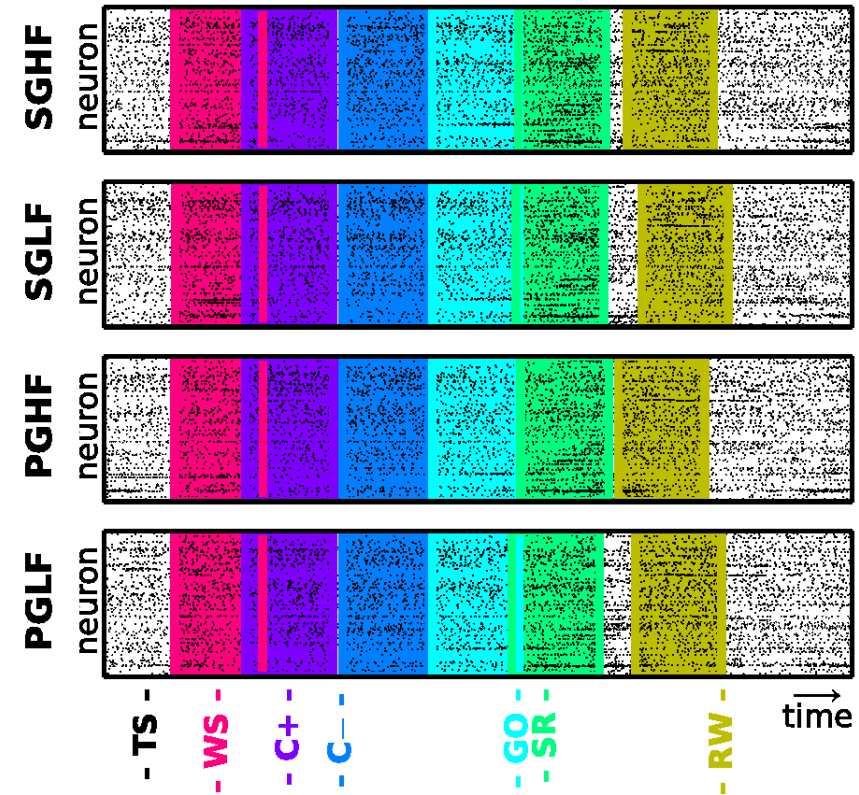


Torre et al. (2016) J. Neurosci.

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