Introduction to Computational Neuroscience
Practice III: Data Analysis - Spiking Data

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Exercise 1: Questionnaire (0.5pt)

Q_1 : ...

Exercise 2: Spikes (0.5pt)
Some theoretical exercise

Exercise 3: Extract orientation (1.5pt)
Some introductory text ...
Data description `http://crcns.org/files/data/lgn-1/crcns_lgn-1_data_description.pdf`

These files contain the spiking responses of LGN neurons in the mouse to drifting gratings. Each file contains the spiking responses and stimulus specifications for a single neuron.

These files are in the Matlab format. Loading one in MatLab will bring a structure called mlgn into MatLab's memory. The structure has two elements:

spktimes: MxNxT size array, where M is the stimulus number, N is the repeat number and T is time in milliseconds. Value of 1 in the array indicates a spike. Value of 0 indicates no spike. The order of the presentation of the stimulus repeats is not provided.

stim: M size array, where M is the number of stimulus conditions. stim for this dataset indicates the contrast used, spatial frequency, temporal frequency, stimulus duration (in seconds), prestimulus duration, poststimulus duration, the original scanrate, orientation, and whether muscimol was present in V1.

Data `http://crcns.org/data-sets/lgn/lgn-1/about`
Article `http://www.jneurosci.org/content/33/26/10616.full.pdf`

1. Download and understand data
2. Extract orientation from data

Exercise 4*: Where is the rat? (1pt)
Data `http://crcns.org/data-sets/hc/hc-3/about-hc-3`
Description `http://crcns.org/files/data/hc3/crcns-hc3-data-description.pdf`
Where is rat at time moment 12:09?

Exercise 5: ??? (0.5pt)
Discuss something

Please submit a `pdf` report with answers to the questions and comments about your solutions. Also submit a code for the programming exercise(s). Pack those into `zip` archive and upload to the course web page.