This document describes the Fujita lab Natural Movie V1 Calcium Imaging Data Samples. The data set contains two-photon fluorescence responses in macaque V1 to a set of natural movie stimuli.

Fluorescence response data

The fluorescence responses were collected for neurons in layers 2 and 3 of macaque V1 in vivo. The data are stored in MATLAB version 7.3 format, which is hf5 format and can be read directly into Python using PyTables library.

The variables are:

resp_trn

Model training responses: 10,800 (timepoints at 6 Hz) x 131 (neurons).

resp_val

Model testing responses: 1,080 (timepoints at 6 Hz) x 131 (neurons). This is the average responses of 10 repeated stimulus presentations.

resp_val_all:

Non-averaged model testing responses: 1,080 (timepoints at 6 Hz) x 10 (repeats) x 131 (neurons).

xy:

The cortical location of the neurons within the recording site: 2 (X-Y, in micrometer) x 131 (neurons).

Movie stimuli

The movie stimuli can be downloaded from the following data repository:

Shinji Nishimoto, An T. Vu, Thomas Naselaris, Yuval Benjamini, Bin Yu, Jack L. Gallant (2014): Gallant Lab Natural Movie 4T fMRI Data. CRCNS.org.
http://dx.doi.org/10.6080/K00Z715X

The stimulus set for this calcium imaging study was a subset of the movie stimuli stored above. Specifically, fluorescent responses were collected using the first 43,200 frames (30 minutes at 24 Hz) of the training stimuli and the first 4,320 frames (3 minutes at 24 Hz) of the validation stimuli.

References

Ikezoe K, Amano M, Nishimoto S, Fujita I. Mapping stimulus feature selectivity in macaque V1 by two-photon Ca2+ imaging: Encoding-model analysis of fluorescence responses to natural movies. NeuroImage, 180(Pt A):312-323.