

README

Description of data for the current study:

Agam Y, Liu H, Pappanastassiou A, Buia C, Golby AJ, Madsen JR, Kreiman G. (2010). Robust selectivity to two-object images in human visual cortex. *Current Biology*, 20:872-879.

[PDF](#)

[Supplementary material](#)

[Additional web figures](#)

Data file

AgamEtAl2010_data.tar.gz [1.7 Gb]

`gunzip AgamEtAl2010_data.tar.gz`

`tar -xvf AgamEtAl2010_data.tar`

`ls`

subj1 subj2 subj3 subj4 subj5 subj6 subj7 subj8 subj9 % 9 subjects

`ls subj1/`

session1 session2 % 2 sessions in subject 1

`ls subj1/session1/`

neural_data.mat session_info.mat

session_info.mat % contains information about the experimental session

neural_data.mat % contains neural data

`cd AgamEtAl2010_data/subj1/session1`

`load session_info.mat`

block_struct 1x20 78224 struct

params 1x1 32822 struct

raw_image_list 1x25 3430 cell

raw_image_list [1x25 cell array]

% List of images used in experiment (total of 25 images)

% E.g. raw_image_list{1}='animal_001.tif'

params [struct with fields]

```
    subject: 'm00016' % ignore
    pres_time: 0.1000 % ignore
    image_interval: 1 % ignore
    n_blocks: 20 % number of blocks in session
    n_images_in_block: 50 % number of trials per block
    percent_targets: 50 % percent of trials with target present
    equalize: 1 % ignore
    image_folder: 'images' % ignore
    send_triggers: 1 % ignore
    block_start_n_triggers: 5 % ignore
    block_end_n_triggers: 3 % ignore
    trigger_duration: 0.0150 % ignore
    trigger_interval: 0.1000 % ignore
    test_triggers: 0 % ignore
    exit_key: 41 % ignore
    background_color: 128 % ignore
    pause_after_message: 1 % ignore
    fixation_size: 14 % ignore
    fixation_width: 2 % ignore
    categories: {'car' 'animal' 'house' 'chair' 'face'}
                % list of categories in experiment
    n_objects_per_category: 5 % number of exemplars in each category
    all_images: [875x2 double]
```

```

% internal code to describe which images are shown on the screen in each trial
% e.g. code 1 is [1 0]: that there was only one image, image 1
% e.g. code 300 is [2 25]: there were 2 images, image 2 and image 25
% linked to block_struct(block number).presentations
    all_image_categories: [875x2 double]
% same as previous variable but indicating which categories are shown on the screen in
each trial
% linked to block_struct(block number).presentations

```

```

block_struct [1x20 struct array with fields] % 20 blocks
    target_index % index for target category in each block
    target_category % target category in each block
    presentations % index of which images were shown in each (see below)
    score % scores, note only 10 blocks run in this session
    start_time % start times, note only 10 blocks run in this session
    reaction_times % reaction times in seconds
    end_time % end times, note that 10 blocks run in this session

```

```

E.g. block_struct(1) [struct with fields] % first block
    target_index: 1
    target_category: 'car'
    presentations: [50x1 double]
    score: 46
    start_time: '14:37:44'
    reaction_times: {1x50 cell}
    end_time: '14:38:42'

```

```

E.g. block_struct(1).presentations(1:5) % first 5 trials of block 1
    410
    379
    614
    406
    868

```

```

params.all_images(block_struct(1).presentations(1),:)
7 10 % Images 7 and 10
raw_image_list(7) {'car_002.tif'}
raw_image_list(10) {'car_005.tif'}
params.all_image_categories(block_struct(1).presentations(1),:)
1 1 % Both images are from category 1
block_struct(1).reaction_times{1}
0.3439 % Subject responded in 0.3439 seconds indicating that the target
category was present

```

```

params.all_images(block_struct(1).presentations(2),:)
6 4 % Images 6 and 4
raw_image_list(6) {'car_001.tif'}
raw_image_list(4) {'animal_004.tif'}
params.all_image_categories(block_struct(1).presentations(2),:)
1 2 % First image is from category 1, second image is from category 2
block_struct(1).reaction_times{2}
0.3362

```

```

params.all_images(block_struct(1).presentations(3),:)
15 14 % Images 15 and 14
raw_image_list(15) {'chair_005.tif'}
raw_image_list(14) {'chair_004.tif'}
params.all_image_categories(block_struct(1).presentations(3),:)
4 4 % Both images are from category 4

```

```
block_struct(1).reaction_times{3}
[] % Subject did not respond. The first 3 subjects were instructed
to respond only when the target category was present. The subject
correctly indicated that the target category was absent in this
trial.
```

```
load neural_data.mat
```

```
filtered_data      80x190001      60800320 single
parameters         1x1           3978 struct
trial_data         500x4          16000 double
```

```
parameters
```

```
subject: 16 % Ignore
trigger_threshold: 800 % Ignore
channels: [1x80 double] % 80 channels
sessions: 1 % session number
ref_channel: 0 % Ignore
rereference: 1 % Ignore
overwrite: 1 % Ignore
filter_data: 1 % Ignore
low: 100 % Ignore
low_trig: 0 % Ignore
high: 0.1000 % Ignore
high_trig: 1 % Ignore
notch: 60 % Ignore
general_info: 1 % Ignore
trigger_info: 0 % Ignore
trig_pic_order: 0 % Ignore
output_file: 'preprocessed_data.mat' % Ignore
trigger_channel: 81 % Ignore
```

```
filtered_data      80x190001      60800320 single
% Intracranial field potential recorded for each channel, in microvolts
% Each entry is one sample. See Sampling Rates table for sampling rates
% E.g. subject 1, sampling rate = 256 Hz
% This session lasted 190001 samples / 256 samples/sec = 742.191 seconds
```

```
% Show intracranial field potential for channel 1 for the whole session:
```

```
t=1:190001;
sr=256;
t=t/sr;
plot(t,filtered_data(1,:));
xlabel('Time (secs)');
ylabel('Intracranial field potential (microvolts)');
```

```
trial_data         500x4          16000 double % 500 trials in this session
% column 1: trial number
% column 2: block number
% column 3: ignore
% column 4: trial start time (sample)
```

```
% Mark trial start times in plot
trial_start_times=trial_data(:,4);
trial_start_times=trial_start_times/sr;
```

```
hold on;
for i=1:500
    plot([trial_start_times(i,1),trial_start_times(i,1)],[-1000 1000],'k--');
end
```

Sampling rates

Subject	Sampling rate (Hz)
1	256
2	256
3	500
4	256
5	256
6	500
7	500
8	256
9	256
