

Dataset Structure and File Specification

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Stimulus Movies

For each of the 19 mesoscope scans, a movie representation of the presented stimulus spanning the scan collection times is included. The naming convention for these files is `stimulus_AAAAA_B_C_vD.avi`, where A is the animal id, B is the session id, C is the scan id, and D is the version. A second copy with .mp4 compression was also saved with format `stimulus_AAAAA_B_C_vD_compressed.mp4`. During stimulus presentation, clips were loaded from our database (see Monet2, Trippy, and Clip tables in Metadata and Processed Data) and presented at 1080×1920 ($H \times W$) pixels by bilinear interpolation, and a photodiode was used to record encoded stimulus frame sequence information from the monitor on a clock shared with the scan signal.

In order to reconstruct the displayed stimulus as a single concatenated movie, individual trial stimuli movies were resized to 144×256 ($H \times W$) pixels by frame-wise interpolation using OpenCV's `inter_area` method (chosen by best qualitative match with full size stimuli and minimal resize artifacts in results). For trials shown at 60 Hz (stimulus types: Monet2, Trippy), empirical time stamps of monitor flip times and stimulus movie frames were concatenated directly. For trials shown at 30 Hz (stimulus type: Clip), each movie frame was duplicated (ie. each 30 Hz movie frame persists for two frames at 60 Hz), and frame times are linearly interpolated from empirical 30 Hz flip times. For one scan, 17797_8_9, two delayed frame updates were detected (monitor content update delayed by one 60 Hz frame with no loss) and filled with the preceding frame at linearly interpolated 60 Hz time stamps. All other delayed frame updates were between trials, and were also filled with the preceding frame at 60 Hz. The last frame of the last trial is also assumed to delay for the median intertrial delay time. The monitor contents before and after stimulus trials were either uniform black screens (pixel value 0, at scan start and at scan end) or a uniform gray screen (pixel value 128, during stimulus loading after scan start but before the first trial of the stimulus). Number and timing of uniform frames was linearly extrapolated from the scan empirical monitor refresh rate, to encompass the first and last recorded scan frame times. Stimuli movies were exported via Moviepy as .AVI files with lossless PNG compression, and with lossy mp4 compression. File sizes ~9.8 GB per avi, and ~150 MB per mp4.

Changelog

v3 (7/29/2021): first public version

v4 (1/14/2023): Frame rate increased from 30 Hz to 60 Hz, filtering and temporal downsampling removed. Added detection and handling for intertrial and intratrial monitor refresh delays. Uniform black pre-scan screen replaced with black uniform screen until onset of stimulus loading period, then gray uniform screen until onset of first stimulus trial. Addition of .mp4 compressed file format.