Readme for data

Calcium imaging and behavior data

Calcium imaging and behavior data of three fish that were mainly mentioned in Torigoe, M et al., Zebrafish capable of generating the prediction error showed improved active avoidance behavior. Nature Communications (2021). In this paper, we show that zebrafish are capable of assigning rules to the scenery they see, and one-third of fish are capable of generating a state prediction error by comparing reality with a prediction derived from an internal model. Besides, the fish with the prediction error escape more efficiently than the fish with the rule assignment alone, even though both fish have successfully learned to escape.

We provided the calcium imaging data and behavior data (Supplementary Table 1).

**Contents**

*Raw calcium imaging data*: multi-TIFF format consisting of calcium imaging data performed on 3-plane imaging. Each file indicates the data of one session or adaptation period.

*Behavior data*: The results of each trial (10 seconds) and the inter-trial-interval before it (15 seconds) correspond to one text file.

The information in each column is as follows.

First column: The position of the fish in the virtual space (The position will be -560 when the trial starts and will decrease as the fish swims. The goal is -660), 4th column: Time from the onset of trial, 5th column: Distance to goal (fixed to 100), 6th column: Total traveled distance, 7th column: Task type (GO task for 0.6, NOGO task for 0.4), 8th column: Calculated tail frequency, 9th column: tail bend angle, 10th column: Baseline of tail position (This value is subtracted from 9th column and the subtracted value was used for tail frequency calculation), 11th column: The frame number of calcium imaging data (This value was used to match imaging data with behavior.), 12th column: Gain (This value was used to calculate the traveled distance by multiplying with calculated tail frequency.), 13th column: Threshold (When the tail bend angle is smaller than this, the tail bend is not used for the calculation), 14th column: The number of trials in that session (0 in interval), 15th column: The number of trials in that session, 16th column: The number of trials in that fish (0 at intervals), 17th column: The number of trials in that fish. The other columns were not used in the analysis.