README

These files are an R implementation of BEAST-GB, a model for the prediction of the aggregate choice rate of humans in binary choice under risk and uncertainty. See https://arxiv.org/abs/1904.06866 and https://doi.org/10.17605/OSF.IO/VW2SU for further details of the model and for code to reproduce the results in the paper.

To run the code please first get from CRAN the publicly available library xgboost by Chen et al., 2024 (the code was last run using xgboost v. 1.7.7.1).

The files assume that the choice tasks are defined as in CPC18, similarly to the sample data file provided. The SM in the paper provides details on the definition of the tasks' parameters. Note that the very common task of one-shot binary choice under risk with up to 2 outcomes in each option can be easily defined using the same structure as in CPC18. To do so, set (a) LotShapeA and LotShapeB to "-", (b) LotNumA and LotNumB to 1, and (c) Amb and Corr to 0. In addition, change the call for get_PF_Features in the main file (BEAST_GB.R) so that nBlocks=1 and nTrials = 1.

The provided code performs the full process of feature extraction, preprocessing, training, and prediction of BEAST-GB on CPC18's data. It outputs the MSE of the predictions of BEAST-GB on the test set. On a regular desktop computer, it should take less than 20 mins to run in full (most of this time is due to feature extraction, specifically the prediction of the model BEAST, hence after initial feature extraction, running times for training can be quite short).