**Functional Magnetic Resonance Imaging Competition**

**Data:** the competition data includes structural and functional images of one subject in DICOM format. Sixteen runs of fMRI data were recorded; fifteen runs with corresponding stimulation paradigms are uploaded for the use of participants and one run remains for the final test. Each run of fMRI experiment contained two repetitions of five category blocks (faces, bodies, objects, scenes, and scrambled images). Twelve images were shown within a block (1000 ms each) with a blank in between (333.3 ms). Only one image was repeated randomly during each block. Each block lasted 16 seconds. There were 12-second blank (‘fixation only’) periods between category blocks and also at the beginning and end of each run. Each run lasted 292 seconds. In order to engage subject’s attention throughout the scan, they were asked to stare at a red fixation point at the center of screen, detect the repeated image, and report it by pressing a response key.

**Question:** we want participants to build a decoder which receives fMRI data and determines the category of stimulus images presented in each block of stimulation paradigm. Detecting brain activation, feature extraction and classification are three main phases. Participants are allowed to choose among conventional softwares/toolboxes like FSL, SPM, Freesurfer, … for activation detection. For feature extraction and classification, they should write a MATLAB function which receives the results of activation detection as inputs and determines the stimulus category in each block.

**Evaluation:** Participants should prepare a report of maximum 5 pages including descriptions of their data processing procedures and designed decoders. This report should be sent to NBML’s email address competition@nbml.ir with the subject of “fMRI Competition”. Referees will evaluate the reports and best participants will attend the final test at NBML. They should bring their laptops and all their required programs to process and decode fMRI data under the supervision of referees.

At the beginning, participants should handover a CD containing their function for feature extraction and classification to referees. Then a test data, with the same format as the previously uploaded ones will be distributed. There will be a two-hour period for activation detection phase. After referees’ confirmation, the result of activation detection phase will be passed to previously handed function to evaluate the decoders.

It should be mentioned that

* NBML have no responsibility for providing hardware or software facilities on test day.
* Any application of this data set requires acknowledgement of NBML.
* Participants could send their questions to NBML’s email address competition@nbml.ir with the subject of “fMRI Competition”.
* Further information on how to prepare reports and … are subsequently posted on the website.

Links for useful softwares:

<https://lcni.uoregon.edu/downloads/mriconvert/mriconvert-and-mcverter>

<https://fsl.fmrib.ox.ac.uk/fsl/fslwiki>

<http://www.fil.ion.ucl.ac.uk/spm/>

<https://surfer.nmr.mgh.harvard.edu/>