

# mtp-repack

## 1 Introduction

**mtp-repack** is a program for filling in “missing” time points in a functional volume. This has been a problem with the GE LX system which could not reconstruct images fast enough and so would drop them. This program fills in the missing time points by interpolating between the two adjacent time points. Missing time points may be obtained by running **aws\_plot\_times** (only on SunOS). **mtp-repack** will run on any unix platform with matlab 5.2 or higher installed. Note that the missing time points must be accounted for in any statistical analysis (even with interpolation).

## 2 Questions, Comments, and Bug Reports

Send questions, comments, and bug reports to [analysis-bugsnmr.mgh.harvard.edu](mailto:analysis-bugsnmr.mgh.harvard.edu). Make sure to include sufficient information so that the question can be answered or the problem can be solved. If possible, include the log file that is created by **mtp-repack**.

## 3 Usage

Typing **mtp-repack** at the command-line without any options will give the following message:

```
USAGE: mtp-repack  repack data with missing timepoints
Options:
  -i instem      : stem of input volume
  -o outstem     : stem of output volume
  -mtp filename  : name of file with missing timepoints
  -TR TR        : TR in seconds
  -tpx filename  : name of tp exclude file (outstem.tpexclude)
  -umask umask   : set unix file permission mask
  -monly mfile   : do not run, just create a matlab file
  -version      : print version and exit
```

## 4 Command-line Arguments

**-i instem**: stem of the input functional volume for a single run. This is the data with missing time points.

**-o outstem**: stem of the output functional volume with the missing time points inserted.

**-mtp filename**: name of file in which information about the missing time points is stored. See Section 5.

**-TR TR**: the TR in seconds.

**-tpx filename:** time point exclusion file in a format usable by **selxavg**. The default is *outstem.tpxexclude*

**-monly:** only generate the matlab file which would accomplish the analysis but do not actually execute it. This is mainly good for debugging purposes.

## 5 The Missing Time Point (MTP) File

The information about which time points are missing is stored in the *MTP File* which is passed to **mtp-repack** using the -mtp flag. The MTP file is a text file with a list of indices. The indices can have spaces, tabs, or new lines between them. Each index indicates the time point in the input data set before which a missing image should be inserted (where the first time point is 1, not 0). For example, if the MTP file stored the number “20”, this would indicate that the an image should be inserted between the 19th and 20th images. The inserted image would become the 20th image in the new volume. The 20th image in the old volume would become the 21st image in the new volume, etc.

This way of coding the missing time points is consistent with the program **aws-plot-times**. This program will produce a plot in which spikes indicate missing time points. If this program is used, then one simply needs to create an MTP file and enter the indices corresponding to these spikes. A sample of the output from **aws-plot-times** is given below. One can see that the value in the second column is usually around 2400. However, at indices 20 and 38, the value spikes up to 4864 indicating that an image was dropped. One would then create an MTP file with the values “20” and “38” in them.

```
2 2432.000000 007/I.041
3 2432.000000 007/I.061
4 2432.000000 007/I.081
5 2432.000000 007/I.101
6 2432.000000 007/I.121
7 2432.000000 007/I.141
8 2432.000000 007/I.161
9 2432.000000 007/I.181
10 2432.000000 007/I.201
11 2432.000000 007/I.221
12 2432.000000 007/I.241
13 2432.000000 007/I.261
14 2560.000000 007/I.281
15 2304.000000 007/I.301
16 2560.000000 007/I.321
17 2432.000000 007/I.341
18 2432.000000 007/I.361
19 2432.000000 007/I.381
20 4864.000000 007/I.401
21 2432.000000 007/I.421
22 2432.000000 007/I.441
23 2432.000000 007/I.461
24 2432.000000 007/I.481
25 2432.000000 007/I.501
```

26 2432.000000 007/I.521  
27 2432.000000 007/I.541  
28 2432.000000 007/I.561  
29 2432.000000 007/I.581  
30 2432.000000 007/I.601  
31 2432.000000 007/I.621  
32 2432.000000 007/I.641  
33 2432.000000 007/I.661  
34 2432.000000 007/I.681  
35 2432.000000 007/I.701  
36 2432.000000 007/I.721  
37 2432.000000 007/I.741  
38 4864.000000 007/I.761  
39 2432.000000 007/I.781  
40 2432.000000 007/I.801