# Program usage

Iprobe is used to convert .sig, .mix and .spike files to Matlab .mat files.

## Usage:

Iprobe.exe [Path to .sig files] [-t Record time index] [-o output directory] [-i] [-n] [-br read buffer size] [-bw write buffer size] [-l size limit]

The program has only one mandatory parameter – path to the input files (.sig, .mix and .spike) and can be used e.g.

iprobe C:/iPROBE/cycle\_001/2016-12-02

The program is going to search C:/iPROBE/cycle\_001/2016-12-02/ for files named

Rec\_XXXXXX\_000.sig, Rec\_XXXXXX\_001.sig, Rec\_XXXXXX\_002.sig,

Rec\_XXXXXX\_000.mix, Rec\_XXXXXX\_001.mix, Rec\_XXXXXX\_002.mix,

Rec\_XXXXXX\_000.spike, Rec\_XXXXXX\_001.spike, Rec\_XXXXXX\_002.spike,

etc…

and will create Matlab data files named

spike\_ch0.mat, spike\_ch1.mat, spike\_ch2.mat, etc…

raw\_ch0.mat, raw\_ch1.mat, raw\_ch2.mat, etc…

each containing the following:

* **sr** (uint32) – sampling rate
* **lsb** (float) – size of LSB in Volts
* **rw<ch>** (uint16 array)- Raw data (only raw\_ch.mat)
* **sk<ch>** (2\*uint32 array) – Timestamp:Template (only spike\_ch.mat)

Optional parameters

* **–br** and **–bw** specify size of a read and write buffer respectively to be used while copying the data. The number is given in bytes
* **-t** specifies the required time index
  + E.g. iprobe C:/iPROBE/cycle\_001/2016-12-02 –t 143141 will only look for Rec\_143141\_000.sig etc..
* **-o** specifies the output directory. By default all output files are created in mat directory inside the input directory.
* **-i** enables an integrity check on the input files
* **-l** limits the program to only copy a specific amount of seconds
  + E.g. iprobe C:/iPROBE/cycle\_001/2016-12-02 –l 100 will only copy the first 100 seconds. Please note that the time is only a rough estimate for .mix files and will not work for .spike files

The best run time I was able to achieve with 1 hour and 38 minutes (about 6 GB) of data was 96 s. This is mostly limited by the speed of the hard drive. My computer doesn’t have an SSD and I think the program should run faster on an SSD.

# Matlab data file creation

Iprobe\_mat.c and iprobe\_mat.h implement generation of a binary Matlab file on the fly (not supported by library provided by Matlab). This might be reusable in the future in other projects.

# plot\_iprobe.m

plot\_iprobe Matlab function accesses directory structure created by iprobe.exe and creates a combined plot of both raw data and spikes.

e.g. **plot\_iprobe('C:/output',0)** will plot channel 0 from data contained in folder C:/output