AutoDISC User Manual

Citations

If you use AutoDISC for a publication, please cite https://doi.org/10.1101/2021.02.07.430124 which describes the theory behind AutoDISC.

System Pre-Requisites

AutoDISC is written entirely in MATLAB and does not require external installation. The Statistics and Machine Learning Toolbox is required.

Running AutoDISC

AutoDISC is an extension of DISC (https://doi.org/10.7554/elife.53357). The software implementation of AutoDISC is available at https://github.com/marcel-goldschen-ohm/AutoDISC. The software is built on top of DISCO, DISC's original MATLAB user interface (https://github.com/ChandaLab/DISC), although it is not necessary to download the original as it is included in the AutoDISC repository. For general use of DISCO (loading data, understanding outputs, storing results), see the previous user manual (https://github.com/ChandaLab/DISC/blob/master/docs/Manual.pdf).

1. Load a time series or set of time series into the UI (see DISCO user manual linked above). Sample data is available at https://github.com/marcel-goldschen-ohm/AutoDISC/blob/master/sample_data_AutoDISC/sample_data_AutoDISC.mat.
2. Click the "Analyze" button near the top of the GUI to idealize the current trace or the "Analyze All" button to idealize all traces in the dataset **(Figure 1)**.
3. After clicking "Analyze" a dialog box will open with optional parameters **(Figure 2)**. The right side of this box includes a check box indicating whether AutoDISC will be implemented (if unchecked, DISC will run without any automated criterion selection). If checked, the AutoDISC workflow will run and automatically select between criterions BIC_{RSS} and AIC_{GMM} as described in https://doi.org/10.1101/2021.02.07.430124. You also have the option of using a custom linear boundary.
4. To export your results from the UI, see the DISCO user manual linked above.

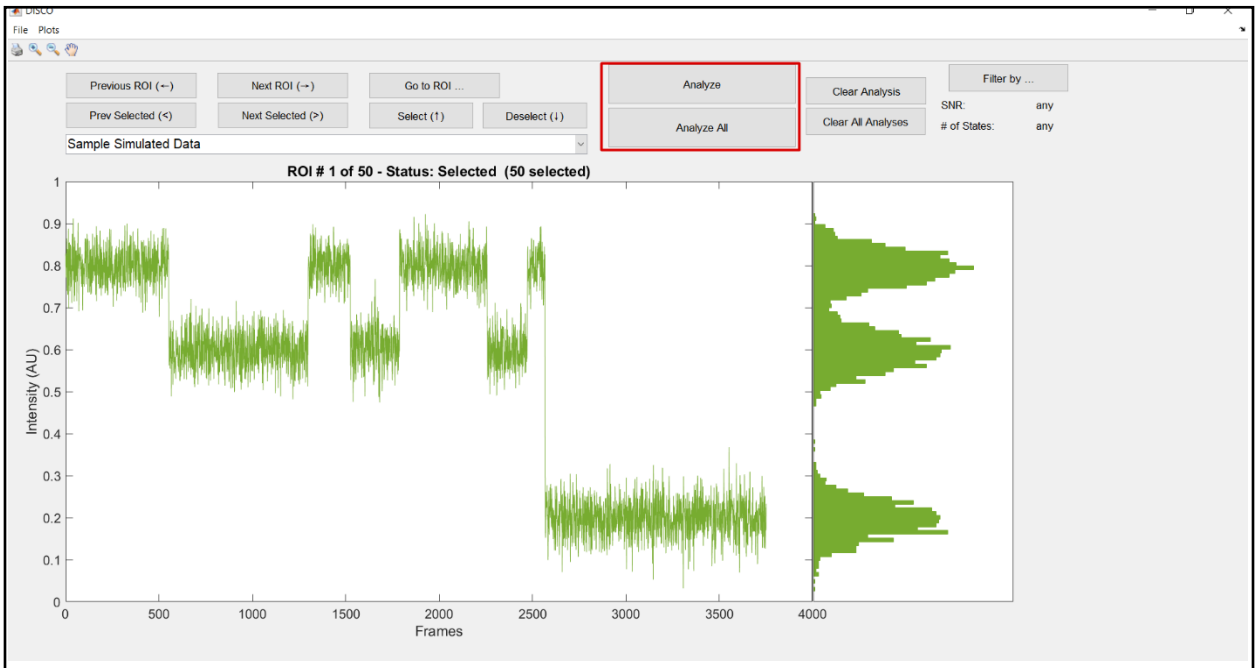

Figure 1: Data loaded into DISCO with analysis buttons outlined.

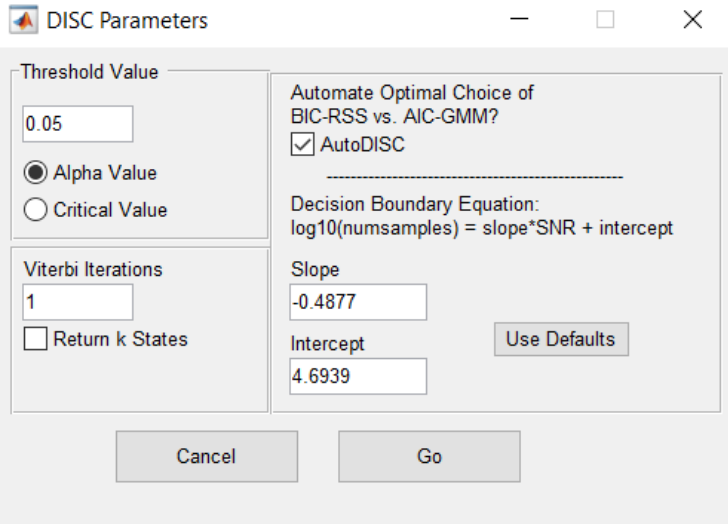

Figure 2: Parameter input dialog box with option to implement AutoDISC.