Modeling (re)consolidation using EMERGENT

This ReadMe file will walk you through creating EMERGENT input files and analyzing EMERGENT outputs using custom MATLAB files provided on the Computational and Experimental Neuroscience Laboratory website.

**Creating Object-Context Inputs**

* In MATLAB run *objective.m* by typing objective.
* At the prompt type in the desired overlap percent in the input files you are creating.
* Keep pressing 0 to reroll objective until the object set with the desired overlap is created.
* Once the object input is made, type in 1 and follow prompts to name inputs of sets 1 and 2 and intermediate sets. Inputs must be named with a .dat extension.

**Training and Testing in EMERGENT**

* Load input files in EMERGENT without headers.
* Change ApplyInputs and EpochTrain inputs to created input.
* Train model by first Initializing and Running until reaching desired error level.
* Test model by placing input in TrialTest, Initialize and Run.
* Export test results found in TrailTestOutput into a .csv file.

**Analyzing EMERGENT Outputs**

* In MATLAB open *metric.m* and place the input file(s) you wish to compare outputs to in lines 6-8 for the variable names file1, file2, and file3.
* In MATLAB run *metric.m* by typing metric.
* At the prompt type in the EMERGENT output file.

**Creating Noise Input for Sleep Simulations**

* In MATLAB run *big\_noise\_input.m* by typing big\_noise\_input.
* At the prompt select if you would like to add an odor to the noise input.
* Name the file with the .dat extension.

**Simulating Sleep in EMERGENT**

* Load sleep input file in EMERGENT without headers.
* Train EMERGENT on previously made object-context pair.
* Test model on ‘sleep’ noise input.
* Save output with .csv extension.

**Turning Spontaneous Memory Replays into Inputs**

* Compare replay output with original object-context input using *metric.m* as described above.
* To create EMERGENT input from replay output run *big\_metricer.m* in MATLAB by typing big\_metricer.
* At the prompt type on the output filename.
* At the prompt type in a name for the created input file.

**Running Sleep Simulations**

* Load input file created using *big\_metricer* into EMERGENT.
* Train the previously trained network on the new input for 3 epochs.