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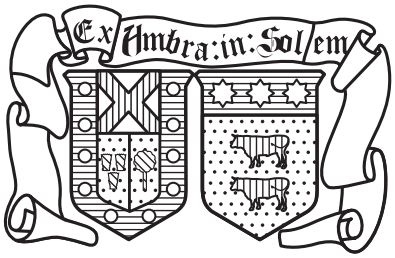

Neuronment v1.0

Reference Manual

Version 0.1

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Abstract

Glossary

N

nproc:

Abreviation for "Neuronment Procedure". File containing the list of instructions to implement, execute and/or train a Neuronment neural network
[1]

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Chapter 1

Introduction

The **Neuronment** project is a software intended for discreet simulation and training of complex neural networks for neuroscience studies. Its name comes from the words "Neurological" and "Environment" as the intention is to create a context where different neurological structures can be model, simulated and trained from a simple procedure description file, abstracting all the computational complexities required for the implementation.

1.1 How to read this document

This document is divided in self explanatory chapters divided in 2 groups. Chapters 1, 2 and 3 refer to the common application environment and the following chapters have the instructions and details for the different possible neurological simulations and training procedures.

1.2 Program execution

To execute this program it is required the program executable and a "Neuronment Procedure" file (nproc). To run it you must execute the following line on the shell:[1]

Chapter 2

Directives

The Neuronment project is a software intended for discreet simulation and training of complex neural networks for neuroscience studies. Its name comes from the words "Neurological" and "Environment" as the intention is to create a context where different neurological structures can be model, simulated and trained from a procedure description file.

Chapter 3

Messages

The following section includes all the possible interface messages and their description.

3.1 Reading Nproc File Issues

3.1.1 IN-001

- Interface Message:

  NProc directive not recognized

- Development Assertion: YES
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The directive (first word on the nproc command) trying to get interpreted is not on the list of possible directives. Please go to the Reference Manual chapter "Directives" to get a full list of valid directives.

3.1.2 IN-002

- Interface Message:

  Trying to report an undeclared variable

- Development Assertion: YES
- Implementation Assertion: NO
- Runtime Assertion: NO

- Message Description:

  The Simulator as well as the Simulation Environment has a list of predefined variables so store and retrieve information. The variable been addressed is not part of the list. The user is not allowed to create new variables.

3.1.3 IN-003

- Interface Message:

  Redefining a previously stored setting

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  A new value has overwritten the value of a previously declared variable.

3.1.4 IN-004

- Interface Message:

  Unidentified sub directive, ignoring line

- Development Assertion: YES
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The sub-directive (second word on the nproc command) trying to get interpreted is not on the list of possible directives. Please go to the Reference Manual chapter "Directives" to get a full list of valid directives.

3.1.5 IN-005

- Interface Message:

  Unidentified setting, ignoring line

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO

- Message Description:

  A value has tried to be written on an un-identified or un-available configuration variable. This nproc line will be ommited

3.1.6 IN-006

- Interface Message:

  Flag not found or without a value

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The command on execution requires the definition of a flag (a word that starts with "-" in the arguments) that isn't present or without a value (if a flag requires a value, the next word after it should be the string representing the value for the flag. This string must NOT start with a "-". If the value is a negative number put it between quotes).

3.1.7 IN-007

- Interface Message:

  A boolean argument has not been properly written. Will be interpreted as false

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  A string been read as boolean doen't match any of the possible true values (true, True, T, t, 1) neither false (false, False, F, f, 0). It will be interpreted and stored as false.

3.1.8 IN-010

- Interface Message:

  Incorrect amount of arguments for the command, ignoring line

- Development Assertion: NO

- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The number of arguments of the command doesn't match the minimum required. This line will be ignored.

3.2 Command Line Issues

3.2.1 UI-001

- Interface Message:

  Duplicated or contradictory flags on command call

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The Neuronment command-line call has a flag declared more than once or two flags that are different are trying to set a contradictory behaivior

3.2.2 UI-002

- Interface Message:

  Flag expected

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The Neuronment command-line call holds a value in a place where should be a flag (a tring starting with "-").

3.2.3 UI-003

- Interface Message:

  Flag not recognized, flag omitted

- Development Assertion: NO

- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The Neuronment command-line call has detected a flag that isn't on the list of possible flags. This flag will be ignored.

3.2.4 UI-004

- Interface Message:

  Label without content

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The Neuronment command-line call has a flag that requires a value, but the value hasn't been found. If you are trying to use a negative number put it between quotes.

3.2.5 UI-006

- Interface Message:

  Empty NProc name

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The call to Neuronment requires a mandatory nproc file to be processed.

3.3 File IO Issues

3.3.1 ER-001

- Interface Message:

  Development Assetion

- Development Assertion: NO

- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The program arrived to an unexpected set of conditions.

3.3.2 ER-002

- Interface Message:

  Runtime Assertion

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  Something went wrong running the program. Terminating

3.3.3 ER-003

- Interface Message:

  File couldn't be opened

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The nproc required for execution file couldn't be oppened

3.3.4 ER-004

- Interface Message:

  File couldn't be properly closed

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO

- Message Description:

  The nproc file previously executed didn't returned a propper closed status from the OS.

3.3.5 ER-005

- Interface Message:

  Trying to get a new line from a non ready file

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  This happens when for some reason the interpreter is trying to get a new line from a file that hasn't been properly oppened

3.3.6 ER-006

- Interface Message:

  Trying to get a new line from a file already at the end

- Development Assertion: YES
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  This happens when for some reason the interpreter is trying to get a new line from a file already at the EOF

3.3.7 ER-007

- Interface Message:

  Fail on getting a new line from nproc file

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

- Message Description:

  This happens when for some reason the file stream under interpretation isn't able to retreive a new line from the nproc file, even if it is not at the EOF.

3.3.8 ER-008

- Interface Message:

  Implementation Assertion

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  There is a problem or an incompete implementation of a required feature

3.3.9 ER-009

- Interface Message:

  Trying to close an unopened file

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO
- Message Description:

  The interpreter is trying to close a file that hasn't been oppened

3.3.10 ER-010

- Interface Message:

  Required file is empty

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES
- Message Description:

  The interpreter requires a file for execution. In this case the file name is empty.

3.4 Implementation Issues

3.4.1 DV-001

- Interface Message:

  Missing implementation

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.2 DV-002

- Interface Message:

  Trying to declare a previously declared setting

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.3 DV-003

- Interface Message:

  Trying to load a setting of an unsupported type

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.4 DV-005

- Interface Message:

  Trying to use an unsupported setting

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.5 DV-006

- Interface Message:

  Trying to read an incorrect data type for the setting

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.6 DV-007

- Interface Message:

  The setting count is different than the declared setting count on the HashEntry

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.7 DV-012

- Interface Message:

  Trying a quick access of incorrect type

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.8 DV-013

- Interface Message:

  Hash Table Full

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.9 DV-015

- Interface Message:

  Setting declared but hasn't been initialized

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.10 DV-017

- Interface Message:

  Discrepancy on neuron type on assignment

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.11 DV-018

- Interface Message:

  Trying to quick retrieve un-existent value

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.12 SD-030

- Interface Message:

  Internal simulation pointer corruption

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.13 SD-031

- Interface Message:

  Trying to compare 2 identical MT cells

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.4.14 SD-032

- Interface Message:

  Empty pointer to function entry

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.5 Reporting Issues

3.5.1 RP-001

- Interface Message:

  Trying to open an already opened stream

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.5.2 RP-002

- Interface Message:

  Trying to close a non opened stream

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.5.3 RP-003

- Interface Message:

  Stream didn't oppened correctly

- Development Assertion: NO
- Implementation Assertion: YES
- Runtime Assertion: NO

3.6 Simulator Interface Issues

3.6.1 SD-001

- Interface Message:

  Simple Simulator Not Initialized

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.2 SD-015

- Interface Message:

  No V1_Neuron created

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.3 SD-016

- Interface Message:

  No MT_Neuron created

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.4 SD-021

- Interface Message:

  Invalid timing for eternal excitation

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.5 SD-025

- Interface Message:

  Unordered external excitation phase insertion attempt

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.6 SD-027

- Interface Message:

  First diffusion phase should be always zero

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.7 SD-028

- Interface Message:

  The number of steps for simulate needs to be at least 1

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.8 SD-033

- Interface Message:

  Trying to access an invalid activation TimeStep

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.9 SD-036

- Interface Message:

  Setting not recognized

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.6.10 SD-037

- Interface Message:

  Setting required

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: YES

3.7 Warnings

3.7.1 WN-006

- Interface Message:

  There are undocumented calculations in use

- Development Assertion: NO
- Implementation Assertion: NO
- Runtime Assertion: NO

Bibliography

[1] PhD Dummy. *Dummy for Dummies*. The Dummy Institution, Dummytopia, 1234.

Appendix A

First Appendix