

# **Upgrading the Large Scale Neural Modeling Software**

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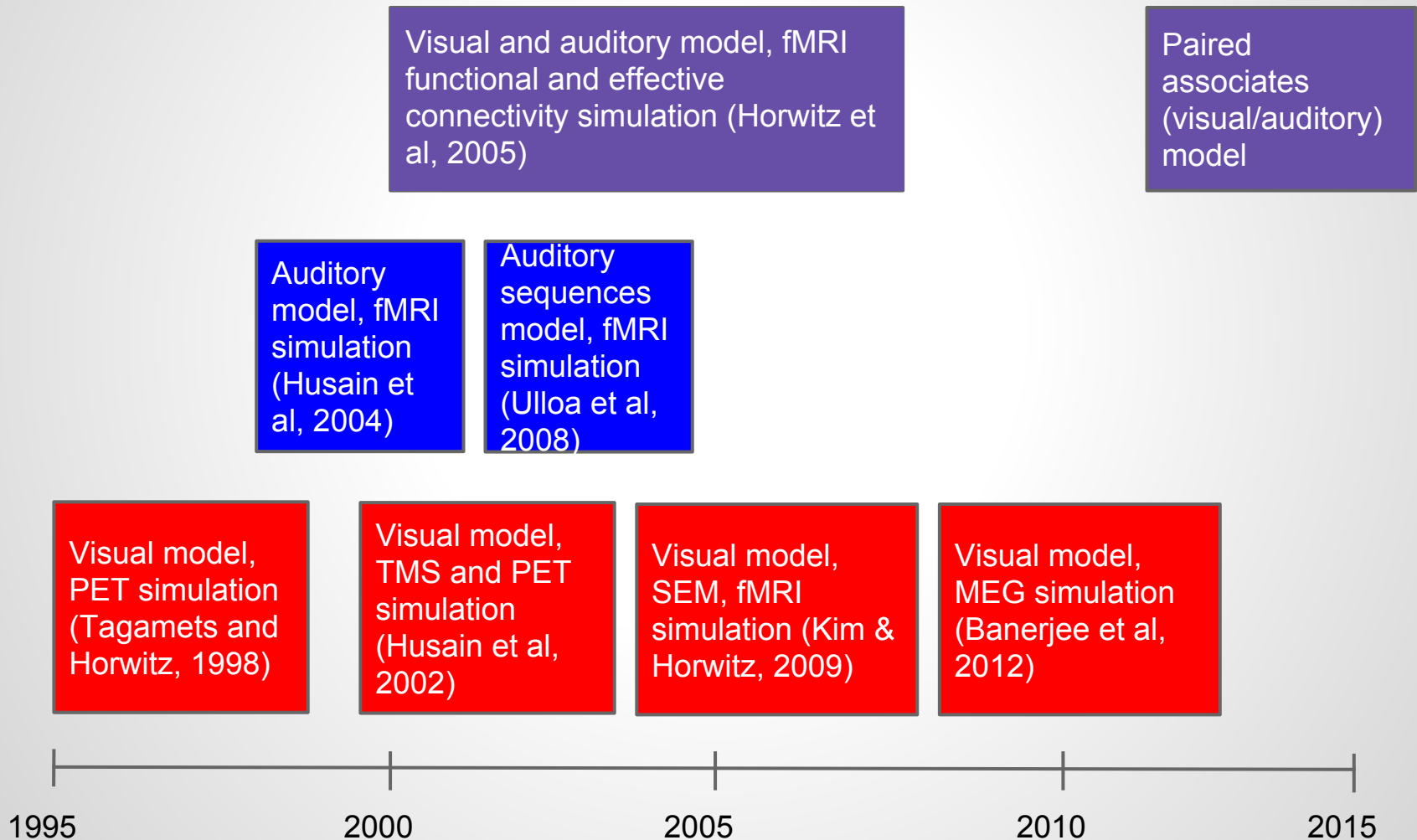
# Outline

1. Background
2. New documentation system
3. New version control system
4. Simplified code
5. Conclusions and future work

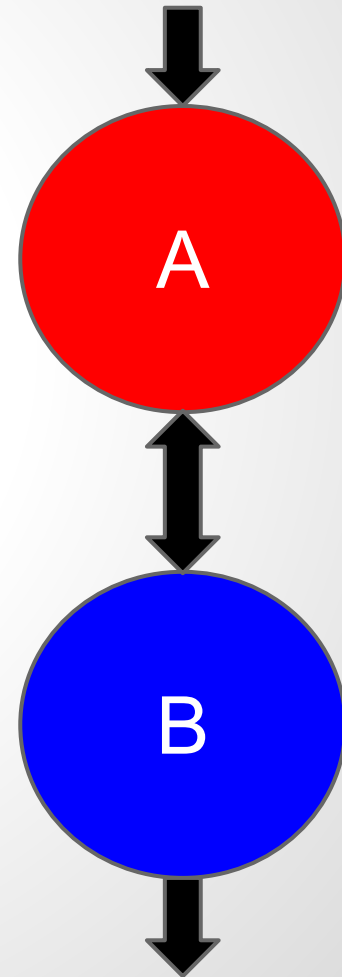
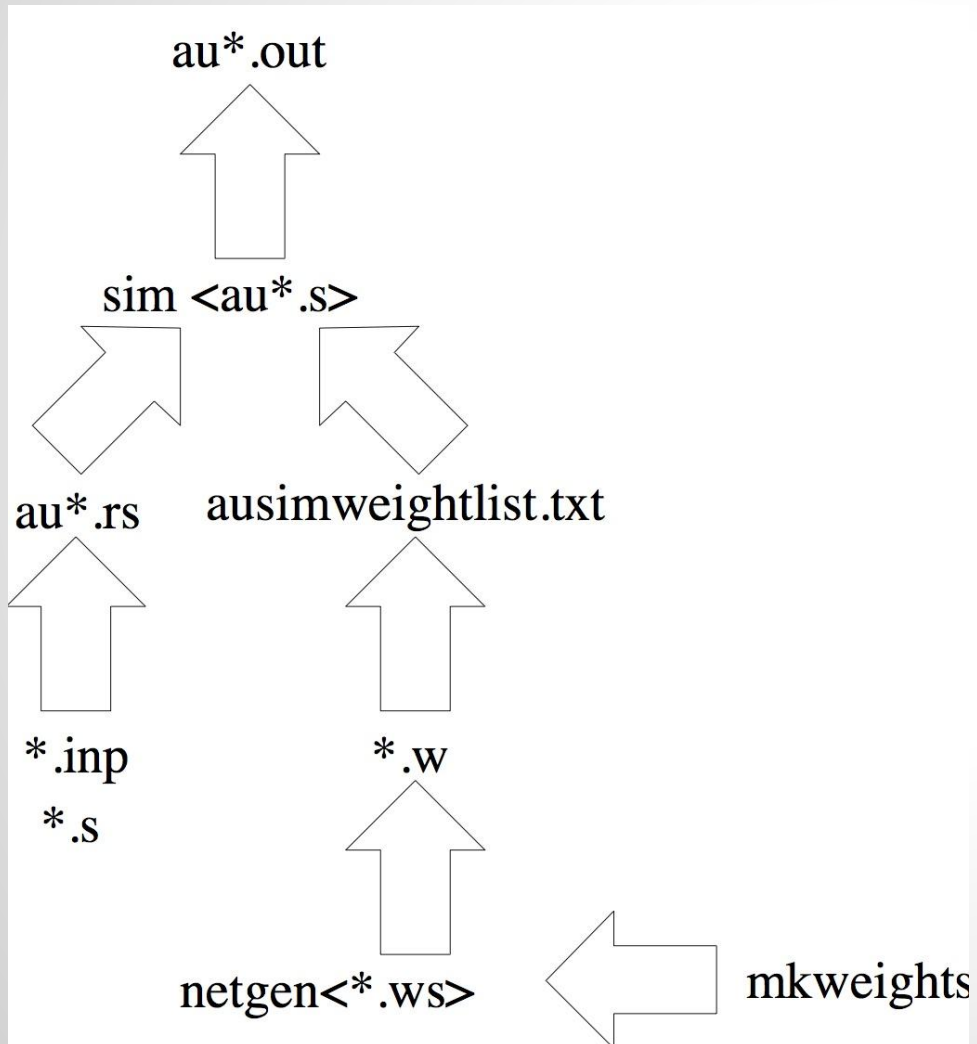
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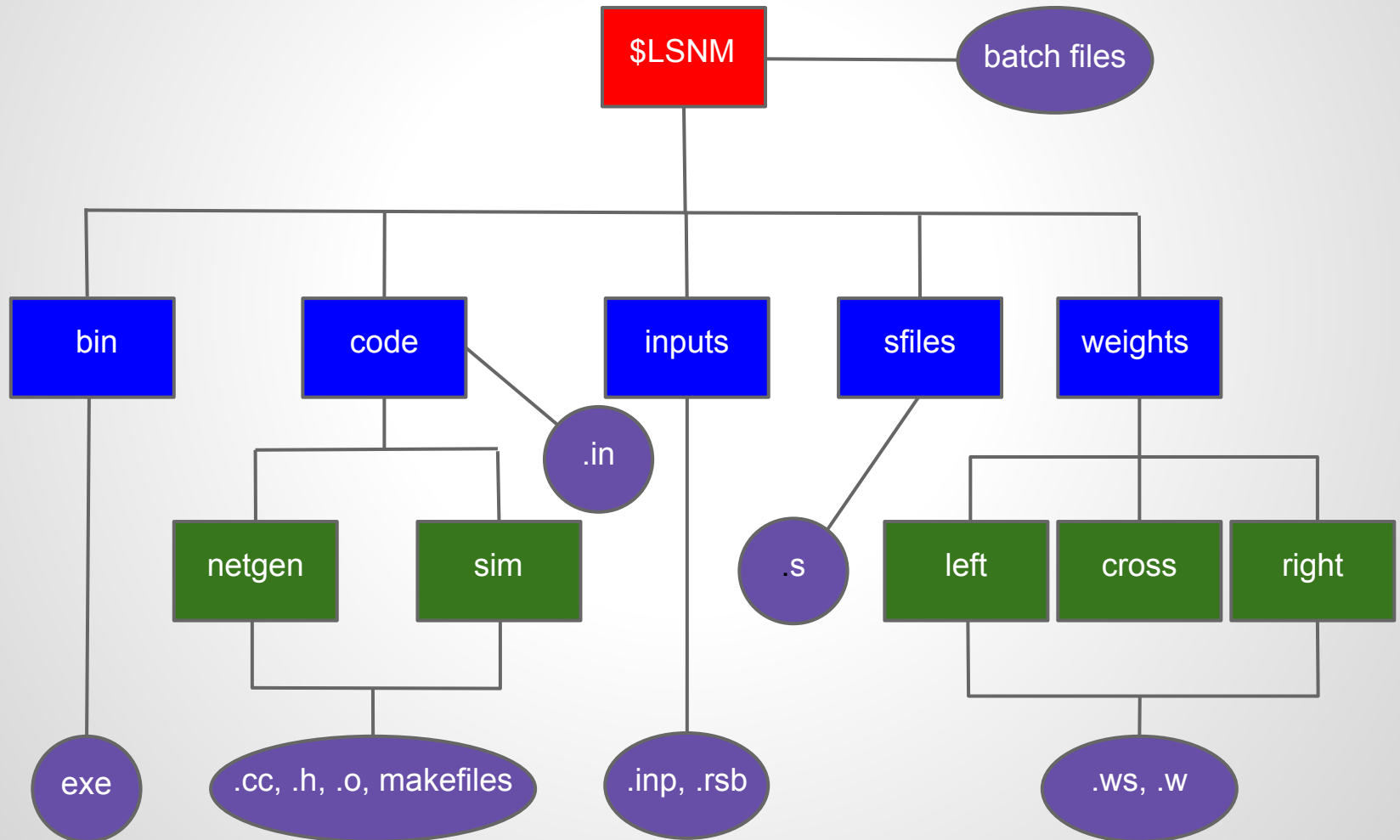
# 1. Background



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# 2. New documentation system

backstage ↩

LSNM 2.0 Documentation Large Scale Neural Modelling at the Brain Imaging and Modeling Section, VSLB/NIDCD/NIH

Introduction

Setting the path for  
LSNM

Programs

Commands

<netgen> code files

<sim> code files

Definition of a Network

Running a simulation

Example: Extended  
auditory model

Version Control (VCS)

Useful Linux  
commands

Transferring files  
to/from Helix

Running Matlab  
remotely

Introduction

Antonio Ulloa, 22 May 2014 (created 22 May 2014)

LSNM (Large Scale Neural Modeling) is a set of programs written in C and Matlab to simulate auditory and visual working memory experiments. The code was originally developed by Malle Tagamets and Barry Horwitz around 1997 to simulate a visual working memory experiment (see [Tagamets and Horwitz, 1998](#)) and later adapted/modified by Fatima Husain around 2000 to simulate an auditory working memory experiment (see [Husain et al. 2004](#)). The system was significantly expanded around 2003 by Theresa Long and Barry Horwitz by adding batch processing and by Brent Warner and Barry Horwitz by adding functional connectivity simulations (see [Horwitz et al. 2005](#)). Although the code was originally developed for simulating electrical neuronal activity and PET (Tagamets and Horwitz), extensions were added to the code to simulate fMRI (husain and Horwitz) and MEG (Feng Rong and Horwitz). The code to build a neuronal network and synaptic weights are written in C++ and the code to simulate (and display) PET, fMRI and MEG are written in Matlab.

close

close others

edit

more

no tags

Definition of a Network

Antonio Ulloa, 25 June 2014 (created 25 June 2014)

In addition to the code described above, there were other branches of the code made over the years, such as the simulations of Transcranial Magnetic Stimulation (TMS) around 2001 (see [Husain et al. 2002](#)), the simulation of perceptual grouping around 2002 (see [Husain et al. 2005](#)), the simulations of long-duration auditory stimuli around 2003 (see [Ulloa et al. 2008](#)), and the simulation of a decision module around 2004 (see [Wen et al. 2008](#)).

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close others

edit

more

no tags

COMMANDS

The following commands are available to design experimental trials:

SET

Creates a new network module.

#INCLUDE

Reads specifications from external file.

RUN

Runs simulation for a specific number of iterations.

search

close all

permaview

new tiddler

new journal

save changes

options »

Timeline

All

Tags

More

3 July 2014

MainMenu

Setting the path for LSNM

30 June 2014

Useful Linux commands

Transferring files to/from Helix

Version Control (VCS)

List of programs that generate BATCH files, by Theresa Long, last updated May 2000

Matlab README file by Brent Warner, Summer 2003

25 June 2014

Running Matlab remotely

Example: Extended auditory model

Running a simulation

Definition of a Network

Programs

<sim> code files

29 May 2014

<netgen> code files

Commands

27 May 2014

Outline of Matlab Programs by Brent Warner, Summer 2003

22 May 2014

Introduction

Overview of LSNM by



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# 3. New version control system

The screenshot shows the gitk: LSNM window, which displays the commit history of a repository. The window is divided into three main sections: a commit log on the left, a commit list in the middle, and a commit details pane on the right.

**Commit Log (Left):** A list of commits with their SHA1 IDs and descriptions. The commits are ordered chronologically, with the most recent at the top. The descriptions include:

- trying to make thhe PATH variable to work
- executed batch files and output files came
- introduced at PATH variable
- added diagrams to documentation
- added a bunch of documentation
- updated documentation
- Documentation updated
- Documentation updated
- Transferred reference docs from Helix
- transferred reference docs from Helix
- updated documentation
- updated documentation
- added 2 PDFs to DOCS folder and updated documentation
- updated LSNM wiki
- copied a new documentation template
- copied a new documentation template
- moved documentation up to main area
- updated wiki again
- updated wiki
- created a wiki for LSNM documentation
- Testing local git commands
- Made a few insignificant changes to test local git
- initial project version

**Commit List (Middle):** A table showing the commit details, including the commit message, the author, the date, and the time. The table is sorted by date and time, with the most recent commit at the top.

Commit Message	Author	Date	Time
trying to make thhe PATH variable to work	Antonio Ulloa Perez <ulloapereza@helix.nih.gov>	2014-07-05	18:37:39
executed batch files and output files came	Antonio Ulloa <antonio.ulloa@aol.c>	2014-07-03	19:01:01
introduced at PATH variable	Antonio Ulloa <antonio.ulloa@aol.c>	2014-07-03	18:56:41
added diagrams to documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-06-30	15:16:12
added a bunch of documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-06-30	15:14:15
updated documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-30	13:03:55
Documentation updated	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-30	12:59:38
Documentation updated	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-30	12:38:55
Transferred reference docs from Helix	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-29	13:09:58
transferred reference docs from Helix	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-29	12:55:51
updated documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-27	13:38:20
updated documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-27	13:33:54
added 2 PDFs to DOCS folder and updated documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-22	12:35:18
updated LSNM wiki	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	12:35:29
copied a new documentation template	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	11:18:06
copied a new documentation template	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	10:49:37
moved documentation up to main area	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	10:04:41
updated wiki again	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	09:57:31
updated wiki	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-21	09:32:26
created a wiki for LSNM documentation	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-20	11:51:12
Testing local git commands	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-20	11:49:13
Made a few insignificant changes to test local git	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-20	11:36:49
initial project version	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-20	11:11:03
	Antonio Ulloa <antonio.ulloa@aol.c>	2014-05-20	11:05:27
	Antonio Ulloa <antonio.ulloapereza@helix.nih.gov>	2014-05-20	10:06:30

**Commit Details (Right):** A pane showing the details of the selected commit (SHA1 ID: 0e066440a5795702bfb1ce8eda297d4d88f5415). The details include the commit message, the author, the date, the time, the parent commit, the branch, and the files changed.

SHA1 ID: 0e066440a5795702bfb1ce8eda297d4d88f5415

Find: next prev commit containing: Exact All fields

Search: [Search box]

Diff Old version New version Lines of context: 3 Ignore spa

Author: Antonio Ulloa Perez <ulloapereza@helix.nih.gov> 2014-07-05

Committer: Antonio Ulloa Perez <ulloapereza@helix.nih.gov> 2014-07-05

Parent: 95b673f01df43165d5aefff2028c65671bed0b84 (executed batch files)

Branch: master

Follows:

Precedes:

Patch Tree

Comments

- pearce\_test/auditory/auseq1.s
- pearce\_test/auditory/auseq2.s
- pearce\_test/auditory/auseq3.s
- pearce\_test/auditory/batchb\_au
- pearce\_test/auditory/bin/mkbatchb\_au
- pearce\_test/auditory/code/mkbatchb\_au.cc

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## 4. Simplified code

- Introduced a unix environment variable called LSM, which indicates the location of the code.
- Substituted all the occurrences of hardcoded directory names by the variable LSM.
- Recompiled all code

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## 5. Conclusions and future work

- Simplify netgen
- Cleanup directories
- Unify auditory and visual directories into a single directory: After all, the simulation code does not care if it is simulating auditory, visual, or any other sensory modality.