Software Engineering – Report 3

**Peter Coetzee, Ismail Gunsaya, Chris Matthews,
Fred van den Driessche, Stephen Wray**

Unit Testing

Unit testing is a powerful means of verifying the functional aspects of code. It is particularly powerful when working as a team; frameworks such as JUnit (providing unit testing for Java) permit a developer to quickly see if modifications they have made have broken any sections of code that were previously functional.

As a result of these benefits, and more, it was decided early on that we would employ unit testing throughout the project for functional verification. This has proven an invaluable technique in isolating bugs in particular methods; by testing at the lowest possible functional units first, and then generalising to acceptance and integration tests later, we were able to minimise the amount of time spent re-assimilating code for bug-fixes. This was particularly useful in testing, for example, the behaviour of the Model, and the Controller in the Interaction Utilities written as the "glue" between the Model and the View (the SWT GUI). Furthermore, dividing large portions of the codebase into "Plugins" makes unit testing even more useful, as these various pieces of pluggable behaviour can be tested in isolation.

However, existing unit testing frameworks such as JUnit were not necessarily designed for the sort of testing required of some sections of this project. Testing isomorphism between graphs is a complex and difficult operation; thus some more complex tests needed to be verified by inspection - a less than ideal situation. Similarly, testing non-deterministic behaviour such as training an Artificial Neural Network is challenging; it is possible to validate that a particular network's error may have decreased, but the random nature of ANNs makes it very difficult to perform a particular numerical comparison.

Furthermore, unit testing is wholly inappropriate for validating a graphical interface, or testing the overall integration of the system. The group considered using a framework such as FitNesse (http://fitnesse.org/) for this, but eventually decided that other GUI Validation techniques would be better applied.

Validation of User Interface Design

We validated our user interface through demonstrating it to our project supervisor and also a researcher in the field of artificial intelligence. We requested suggestions and in accordance with the feedback revised its appearance as well as functional aspects. For example, our supervisor mentioned that circles should decorate the ends of synapses for inhibitory neurons so we implemented a system to permit a neuron to have pluggable custom decorations of any time. We also showed the GUI to members of the team working on other sections, discussing ideas and suggestions of how to improve the user interface in terms of usability and inuitiveness.

Manual Code Inspection

Manual code inspection was conducted throughout the project. Our group practised pair programming for much of the project, so a lot of the code was inspected as it was written. Individual group members' roles were also flexible, so sections of code were inspected as new developers started working on them. Regular code reviews took place as part of our team meetings, which helped uncover bugs and improved our understanding of the codebase as a whole.

Exertion of Software to Stress Testing

A key requirement of the tool is to model many thousands of neurons whilst maintaining a responsive and usable interface. The necessary testing with large amount of neurons aided us by revealing issues that weren't immediately apparent when testing with fewer nodes. We discovered that the Zest framework used to display the graphs does not scale very well beyond 100 nodes, and so revised the manner in which it renders sub-networks to reduce the number of nodes it has to deal with. We also stress tested zooming between levels in the network. Zooming in and out of many levels consecutively revealed a variety of problems which would not have been revealed through black- or even white-box testing.

Use of Profiling Agents

Profiling agents provide a useful way of identifying hotspots in a Java application's execution. Some of the performance critical portions of the system have been profiled extensively. This provided invaluable input into the streamlining both the memory usage and the temporal efficiency of the simulation of the neural network. It identified some critical performance issues in the Expression implementation, and led to a re-write of it and a significant increase in performance. By the same token, it was integral in showing that firing events for the statistical system to handle does not in fact slow down the simulation.

Grey-Box Testing on the GUIs of Software

We made extensive use of grey-box testing in our project. The event dispatching system and command architecture were highly integrated with the GUI; interacting with the user interface produces commands which are executed and added to the undo stack, and events are fired to the undo/redo buttons on the toolbar which are highlighted or disabled accordingly. Our knowledge of the internals of these systems was used to choose suitable test cases, which were carried out by a combination of clicking the undo/redo buttons, executing commands through the UI, and viewing the resulting state of the network and buttons.

Zooming into layered networks, and the persistence of internal networks being edited whilst zoomed in, were also tested in a grey-box manner. Zooming in, editing a network via the UI, zooming out and in again then checking that the changes persisted was a quick and simple way of testing this feature.

XML Validation and Test

The XML persistence module testing consisted mainly of validating that the output was firstly valid XML and secondly that it conformed to the NeuroML Network Layer 3 XML schema (http://dendrite.la.asu.edu/NeuroMLValidator/NeuroMLFiles/Schemata/v1.7.3/Level3/NetworkML_

v1.7.3.xsd). This was made considerably easier with the availability of a validator on the NeuroML website (http://neuroml.org/NeuroMLValidator/Validation.jsp) which can also check for the XML being well-formed.

The majority of the code for producing the XML is to with exporting the Java objects to mark-up, this includes outputting all the relevant variables that the objects contain using the *@Persistable* annotation. The only significant part of the code that could have lead to problems was the breadth-first search of the network to detect all the networks to be exported and all the network-bridges. This had the possibility of not halting if crafted incorrectly, and so was tested significantly with a number of networks in different configurations.

XML loading which is not yet a completed component will contribute to the testing of itself and the XML save feature, by creating a network in the GUI, exporting it to XML, validating the XML and then importing the XML again and checking that the two networks equal each other. This should provide a rigorous enough test for both XML save and load.

Finally, as NeuroML is an emerging specification for modelling Neural Networks at a number of different levels, a number of other applications have implemented NeuroML into their systems for persistence and modelling. Future testing will include taking the output from our application and loading it into another and then doing visual verification of the two networks to decide whether the two representations are equivalent. This will provide more semantic verification of our exporting utility.

As this feature is a key specification of the project, it is necessary to provide a number of tests and validations to confirm its correct operation.

Time Management Log

Stephen Wray, Fred van den Driessche, Peter Coetzee
Chris Matthews, Ismail Gunsaya

Meeting Documentation

As a group we quickly fell into a good regular meeting schedule which revolved around originally weekly meetings with our client and then biweekly meetings, which fitted with our course timetable. Stand-up meetings were held on Wednesdays before client meetings to bring everybody up to speed and discuss current problems and completed work. Group collaborations would have on the Thursdays, usually with a client meeting and provided a time when people could work together and questions could be answered quickly.

Date	Format	Attendees
10 / 10 / 2008	Initial Meeting	Fred, Stephen, Chris, Ismail, Peter
13 / 10 / 2008	Brainstorming	Fred, Stephen, Chris, Ismail, Peter
15 / 10 / 2008	Client Meeting	Fred, Stephen, Chris, Ismail, Peter, Murray Shanahan, Andreas Fidjeland
16 / 10 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail
22 / 10 / 2008	Stand-up / Progress Update	Fred, Chris, Ismail, Peter
23 / 10 / 2008	Client Meeting	Fred, Chris, Ismail, Peter, Murray Shanahan, Andreas Fidjeland
23 / 10 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail, Peter
29 / 10 / 2008	Stand-up / Progress Update	Fred, Stephen, Chris, Ismail, Peter
30 / 10 / 2008	Client Meeting	Fred, Stephen, Chris, Ismail, Peter, Murray Shanahan, Andreas Fidjeland
30 / 10 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail, Peter
05 / 11 / 2008	Stand-up / Progress Update	Chris, Ismail, Peter
06 / 11 / 2008	Client Meeting	Fred, Stephen, Chris, Ismail, Peter, Murray Shanahan, Andreas Fidjeland
06 / 11 / 2008	Group Collaboration	Fred, Stephen Ismail, Peter
10 / 11 / 2008	Emergency Meeting	Fred, Stephen, Chris, Ismail, Peter
12 / 11 / 2008	Stand-up / Progress Update	Fred, Stephen, Chris, Peter
13 / 11 / 2008	Group Collaboration	Fred, Chris, Ismail, Peter
19 / 11 / 2008	Stand-up / Progress Update	Fred, Stephen, Chris, Ismail, Peter
20 / 11 / 2008	Client Meeting	Fred, Stephen, Chris, Ismail, Peter, Murray Shanahan, Andreas Fidjeland
20 / 11 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail
26 / 11 / 2008	Stand-up / Progress Update	Fred, Stephen, Ismail, Peter
27 / 11 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail
03 / 12 / 2008	Stand-up / Progress Update	Fred, Stephen, Chris, Ismail, Peter
04 / 12 / 2008	Client Meeting	Fred, Stephen, Chris, Ismail, Murray Shanahan, Andreas Fidjeland
04 / 12 / 2008	Group Collaboration	Fred, Stephen, Chris, Ismail
10 / 12 / 2008	Stand-up / Progress Update	Fred, Stephen, Chris, Ismail, Peter
11 / 12 / 2008	Group Collaboration	Fred, Chris, Ismail

Time Sheet

Please see attached spread sheet for individuals time sheets.

Time Sheet Charts

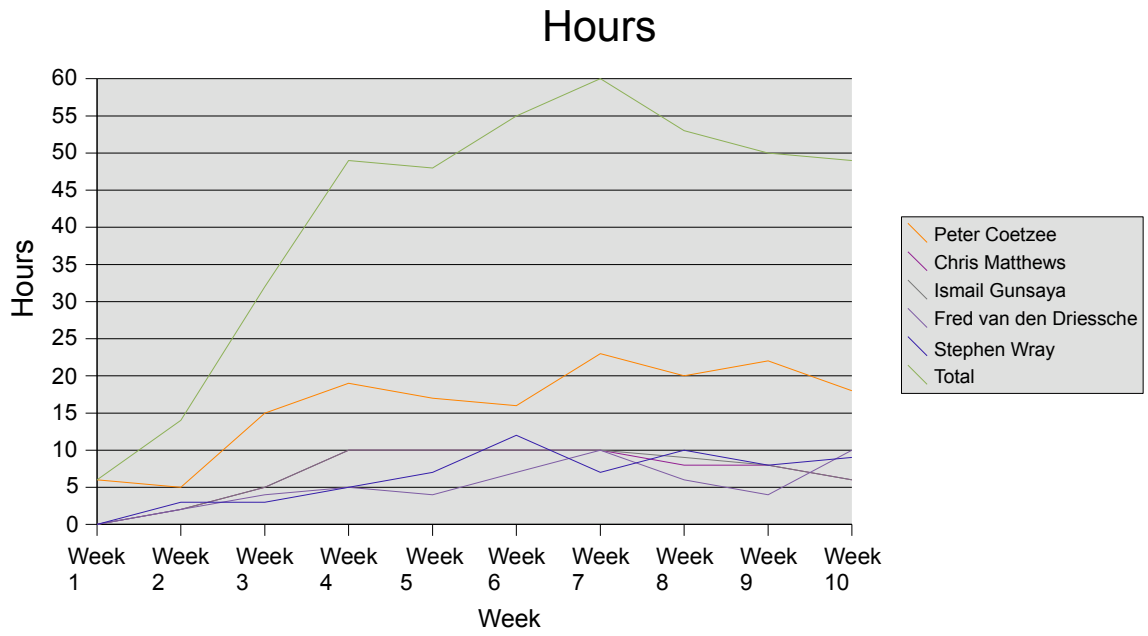

Chart 1: Hours per week per developer.

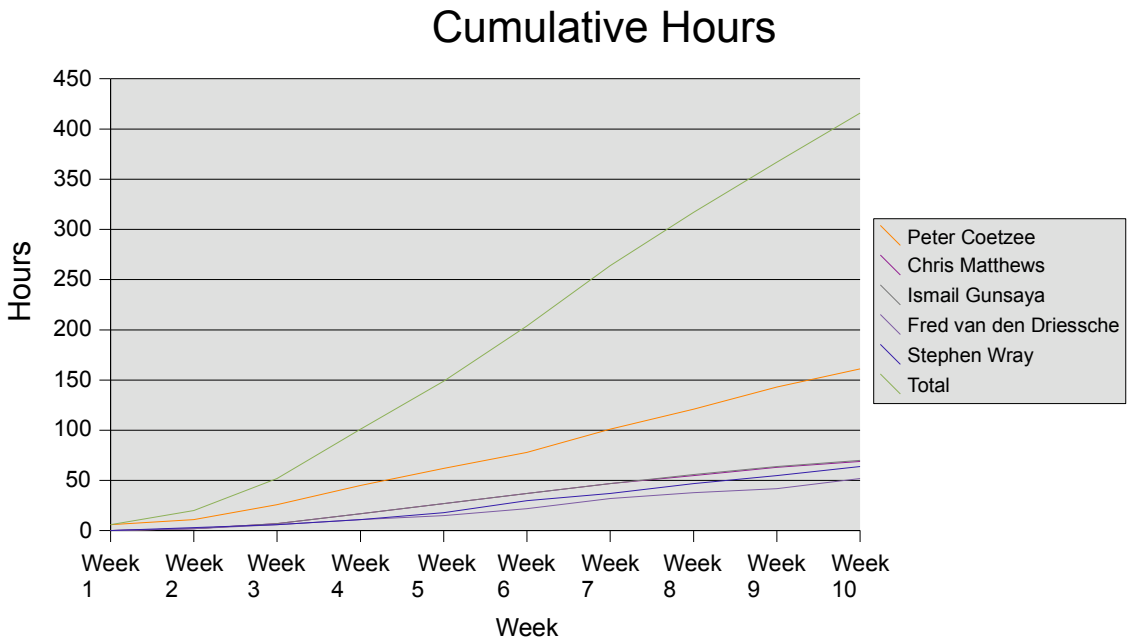

Chart 2: Cumulative hours per week per developer.

Group Time Sheet

Developer	Week Week Start	1 06/10/08	2 13/10/08	3 20/10/08
Peter Coetzee	Tasks	Research into GUI frameworks; Integrated Processing (http://www.processing.org/) into Java and visualised a basic network firing. Also tested JUNG2 (http://jung.sourceforge.net/)	Group Brainstorm meeting Continued GUI research	Initial implementation of model; Abstract Graph type Basic Neural network + Neurone + Synapse implementations Work on factories for edges, graphs, and nodes Implementation of metadata storage for nodes Utility classes such as RollupMatrix and PartitionableMatrix written for convenience in data handling
	Hours	6	5	15
	Cumulative Hours	6	11	26

Group Time Sheet

Developer	Week Week Start	1 06/10/08	2 13/10/08	3 20/10/08
Chris Matthews	Tasks	None	Mindmaps, Group meetings	GUI research - draw2d framework, layouts and so on
	Hours	0	2	5
	Cumulative Hours	0	2	7
Ismail Gunsaya	Tasks	None	Brainstorming/Group Meeting	Brainstorming on how GUI should be implemented
	Hours	0	2	5
	Cumulative Hours	0	2	7
Fred van den Driessche	Tasks	None	Brainstorming (mindmap) group meeting	Save service Framework research (GMF) with Pete
	Hours	0	2	4
	Cumulative Hours	0	2	6
Stephen Wray	Tasks	None	Brainstorming Group Meeting, initial research on Neural Networks	Research on XML and XML schemas for use as intermediate language. Such as PyNN and NeuroML.
	Hours	0	3	3
	Cumulative Hours	0	3	6
Total	Tasks	N/A	N/A	N/A
	Total Hours	6	14	32
	Total Cumulative Hours	6	20	52

Group Time Sheet

Developer	Week Week Start	4 27/10/08	5 03/11/08	6 10/11/08
Peter Coetzee	Tasks	Started work on porting Izhikevich Spiking Neurones to our object-model in Java (Excitatory completed, Inhibitory underway) Improved type-safety of the model using generics + wildcards Started making graph elements serializable for persistence Improved factories to be more flexible and capable of building more complicated networks. Also improvements to ensure network integrity Initial multi-threaded event driven StatisticsManager system - outputs to Matlab for graphing our neurones PluginManager implementation, ready to form basis of all pluggable behaviour.	Refactored StatisticsManager to use pluggable Statisticians New ConfigurationManager uses pluggable Configurators for setting up the system at launch. Work on chart plotting for statistical output - moves in real time with the chart data, is zoomable. Work on double-buffering the graphics and improving general efficiency to make it appear as smooth as possible. Had to be multi-threaded to ensure the UI updates properly. Genericised GraphFactory further Work on scrolling and dragging the GUI graph view	Added some reflection helper methods for Steve's NeuroML; permits a Java Reflection to access private methods and fields. Can also back-end a reflection Field object to extract data from a Method, thus permitting the use of the NeuroML toolkit. Developers can just use an @Persistable annotation to select methods / fields to persist Wrote GraphStreamer to facilitate streaming modification of a Neural Network, hopefully preventing the GUI / persistence frameworks from having to duplicate its structure entirely in memory Implementation of an InteractionUtils class to make writing the GUI simpler - move as much control as possible out of the "View". Essentially forms the primary functionality of our "Controller" Further work on complex interconnection of sub-networks
	Hours	19	17	16
	Cumulative Hours	45	62	78

Group Time Sheet

Developer	Week Week Start	4 27/10/08	5 03/11/08	6 10/11/08
Chris Matthews	Tasks	Implementing graph visualisation in draw2d	attempting to implement dragging and scrolling in draw2d	Porting graph visualisation to zest framework, implementing dragging and scrolling
	Hours	10	10	10
	Cumulative Hours	17	27	37
Ismail Gunsaya	Tasks	Implementing graphs with draw2d	attempting to implement dragging and scrolling in draw2d	Porting graph visualisation to zest framework, implementing dragging and scrolling
	Hours	10	10	10
	Cumulative Hours	17	27	37
Fred van den Driessche	Tasks	Integrated Log4J Integrated Plugin manager in to SaveManager	Save/Load serialization Persistence specification	Layout Save/Open dialogs Found Zest framework (maybe ismail went forward in time?)
	Hours	5	4	7
	Cumulative Hours	11	15	22
Stephen Wray	Tasks	Completed research into representations of the networks, coming to the decision that NeuroML is the right direction to take. In depth research into NeuroML and available Java tools.	Getting up to speed on implementation of neural network in the java and the persistence features that have been already implemented. Initial planning of XMLSave plugin.	Set back with NeuroML removing the NDK which was previously available, complete redesign of solution, now not using any tools for exporting and will be implementing SAX for reading in and parsing the XML. Research into new solution and SAX.
	Hours	5	7	12
	Cumulative Hours	11	18	30
Total	Tasks	N/A	N/A	N/A
	Total Hours	49	48	55
	Total Cumulative Hours	101	149	204

Group Time Sheet

Developer	Week Week Start	7 17/11/08	8 24/11/08	9 01/12/08
Peter Coetzee	Tasks	Work on GUI Mouse interaction - loads mouse interaction plugins at startup. Also improved display of network elements (particularly sub-networks) Work on Chart UI Started work on sidebar components - using pluggable Network Modifiers. Added UI components to run / pause a network thread. Added logging to the UI, takes all logging input from INFO/WARNING/ERROR in Log4J and appends it to the scrolling text box. First implementation of custom (pluggable) Input and Output nodes for a network (reading from disk, and outputting to screen respectively) SWT threading-related bug fixes. Used ANTLR to create an expression parser for configuring Neurone parameters - supports most mathematical functions, including trig, hyperbolic, random, gaussian random, constants (e / pi) etc.	Implemented support for variables in Expressions, using an @BindVariable annotation in code to define which variables are available in an expression, and how often to rebind the value. Rewrote expression parsing to parse into an AST to prevent re-parsing; permits using an Expression as an efficient flyweight. Also performs some simple static optimisation of expressions during the parse. Caused significant performance improvement in constructing and running networks. Started work on general-purpose Training framework. Implemented random trainers (not particularly useful, but OK as a proof-of-concept!) Added support for building layered networks in the factories. Started work on BackPropagation training.	Added some convenience methods for printing out networks for debugging Continued work on BackPropagation Improvements to Configurator for Neurone types GUI integration for training Made Input and Output nodes instances of NeuralNetwork, to allow them to be embedded as a "sub-network" Wired persistence API into GUI menus written by Fred Made StatisticsManager capable of recreating invalidated Statisticians. It will also fire events to handlers registered for a super-class as well. Fire Events to indicate construction of nodes and edges. Use this to update the GUI progress bar for long operations Improved Zest efficiency by reducing the number of nodes in memory at any one time (sub-networks are no longer rendered until zooming
	Hours	23	20	22
	Cumulative Hours	101	121	143

Group Time Sheet

Developer	Week Week Start	7 17/11/08	8 24/11/08	9 01/12/08
Chris Matthews	Tasks	Implemented zooming in/out, added layered network support to GUI	Finished off zooming, added toolbar to GUI	Implemented command system, added undo & redo functionality, refactored existing code to use this system
	Hours	10	8	8
	Cumulative Hours	47	55	63
Ismail Gunsaya	Tasks	Implemented zooming in/out, added layered network support to GUI	Finished off Zooming/Implementing toolbar	Implemented command system, added undo & redo functionality, refactored existing code to use this system
	Hours	10	9	8
	Cumulative Hours	47	56	64
Fred van den Driessche	Tasks	sidebar resizable revised layout to remove sashes added import/export menus redesigned addnodes/layout modifiers	recfactored interface mock refactored addnodes to threadify insertion	changed node figures added charge overlay added icons revised layout of addnodes
	Hours	10	6	4
	Cumulative Hours	32	38	42
Stephen Wray	Tasks	Majority of exporting to XML completed and initial testing, comparison to NeuroML schema and making use of NeuroML validation tool. Continued research into the schema and network representation.	Finalising NeuroML exporting, testing and integeration into the GUI. Starting on reading in the NeuroML from file and creating the neural network. Research into other existing tools that use NeuroML for future testing of our output.	XML Load control flow and initial object generation. Finalised XMLSave and completed testing and validation using the NeuroML validation tool. Demo'd succesfully to the client.
	Hours	7	10	8
	Cumulative Hours	37	47	55
Total	Tasks	N/A	N/A	N/A
	Total Hours	60	53	50
	Total Cumulative Hours	264	317	367

Group Time Sheet

Developer	Week Week Start	10 08/12/08
Peter Coetzee	Tasks	GUI node selection bug fixes Added Edge Decoration parameter to the Neurone Type config, based on the name of an EdgeDecoration plugin (e.g. Arrow, Circle etc) Improved PluginManager's ClassLoader to be more exception-resilient Refactored StatisticsManager to be a general-purpose EventManager; Statisticians are considered EventHandlers now. Framework useful for much more than just statistical events. Further work on training networks.
	Hours	18
	Cumulative Hours	161

Group Time Sheet

Developer	Week Week Start	10 08/12/08
Chris Matthews	Tasks	Added intelligent toolbar button highlighting using custom event handlers, in a way that allows concurrency
	Hours	6
	Cumulative Hours	69
Ismail Gunsaya	Tasks	Added intelligent toolbar button highlighting using custom event handlers, in a way that allows concurrency
	Hours	6
	Cumulative Hours	70
Fred van den Driessche	Tasks	sidebar minimization debugging/reviewing back prop correcting edge decorations for neurone type fixing edge/node highlighting
	Hours	10
	Cumulative Hours	52
Stephen Wray	Tasks	Report 3 writing and formalising time management systems, meeting records and CO-OP exported as log book.
	Hours	9
	Cumulative Hours	64
Total	Tasks	N/A
	Total Hours	49
	Total Cumulative Hours	416

Log Book – Co-Op Transcripts

Stephen Wray, Fred van den Driessche, Peter Coetzee
Chris Matthews, Ismail Gunsaya

Preface

Instead of each keeping a separate log book, we collectively made use of a online tool called Co-Op (http://coopapp.com) which provides space for a group of people to collaborate on a project or number of projects, sharing thoughts, asking for help and updating other group members of progress that been made. The advantage to this is the it increases the group communication significantly, providing an RSS feed which can be subscribed to, allowing for fast any easy updates and integration with other applications. Co-Op is like a mailing list but doesn't support threads like a mailing list, but does provide a record of all messages. It also provides a rough estimate of what people are working, when and for how long as this can be got from the message content and time stamp.

Co-Op allowed us to share ideas and information quickly without the need to write more formal emails when not present and not disrupt people when they are working like talking to them in person. Overall Co-Op received a good reception from all of the groups members and has heavily be used over the course of the project and will continue to be until the completion. Particular areas of interest are days which have a high volume of messages, as this emphasises days when peoples work intersected with others more, perhaps bringing once separate components of the project together.

As a group we highly recommend that future project groups make use of Co-Op to increase their communication as well as keeping a centralised record of communication.

Contents

Archive: Tuesday, Oct 21
Total: 11 entries

Chris Matthews 07:43pm
http://www.doc.ic.ac.uk/~ctm06/t... redirects to our Trac environment now! I'm trying to make http://www.doc.ic.ac.uk/project/... do the same but the web server's being really ky :(

Fred van den Driessche 04:58pm
it's seems GMF could definitely be the way forward

Stephen Wray 04:54pm
waving across the lecture theatre

Fred van den Driessche 03:15pm
http://www-128.ibm.com/developer... basic GMF guide

Stephen Wray 02:14pm
Emailed everyone with Meeting notes and points.

Fred van den Driessche 01:56pm
reading up on GMF

Fred van den Driessche 01:47pm
Meeting with mspha 23/11/08 @ 11 in his office

Chris Matthews 01:43pm
installing trac

Peter Coetzee 01:41pm
Revising content of Report One to reflect meeting with mpsha

Stephen Wray 01:37pm
frustrated

Ismail Gunsaya 01:26pm
brainstorming about GUI

Archive: Wednesday, Oct 22
Total: 7 entries

Peter Coetzee 03:45pm
Hokay, so roll-up matrix works great, and will dynamically resize one roll-up level based on SWT shell size. Still some distance to go until it's zoomable though.

Peter Coetzee 02:31pm
Should've said Matrix-of-T to Matrix-of-Matrix-of-T

Peter Coetzee 02:31pm
Grrr, co-op mangled my input.

Peter Coetzee 02:30pm
Has written a RollUpMatrix class, which will roll itself up from an NxM Matrix to an N'xM' Matrix>, to hopefully handle the zooming....

Stephen Wray 11:41am
good work on trac chris, also do people feel we want weekly meetings with the client (like SE III suggested) or perhaps bi

Peter Coetzee 10:04am
Seems that SWT's programming model is very similar to Swing - just different widget names. Definitely worth looking into...

Peter Coetzee 09:38am
Looking into clustering nodes based on zoom levels with SWT

Archive: Thursday, Oct 23
Total: 7 entries

Fred van den Driessche 10:54pm
I can already think of some interesting issues with saving and loading. This could be fun.

Peter Coetzee 08:09pm
Suggestion to all: Take a look at the Google Doc, and see what needs changing before tomorrow's deadline, so that we can get it fixed up!

Peter Coetzee 06:26pm
Early preview of model code in http://www.doc.ic.ac.uk/~ctm06/t...

Peter Coetzee 05:18pm
More topically, what happens when we connect a Neurone to a NeuralNetwork? Present implementation just divides the charge between all nodes in the target network, we may wish to rethink this later though.....

Peter Coetzee 05:17pm
Getting there with the neural network model - apparently, a NeuralNetwork is an instance of Graph and Node....who'd-a-thunk-it?

Peter Coetzee 01:42pm
Two others can work on the graph rendering and basic UI stuff (nothing too shiny needed) Hopefully that way we can get some good pair-programming work done and see what we all come out with soon.

Peter Coetzee 01:39pm
Looks like three main points we need to work on for the prototype: I'll take a look at the network behaviour, training, modelling neurones (simple initial view only!) Fred + one other will take a look at the intermediate language (XMLish stuff) Two others

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Archive: Friday, Oct 24
Total: 7 entries

Fred van den Driessche 11:50pm
going to have a proper crack at the saving side of network persistence.

Peter Coetzee 02:58pm
Trac's up again, but can't save pages to the wiki...any ideas?

Peter Coetzee 02:54pm
Working out how to record and handle statistics. Looks like they should be a good vehicle for handling real-time visualisation.

Peter Coetzee 02:34pm
Trac seems to be down - tried to make notes on implementing spiking neurones, wasn't having any of it :(

Peter Coetzee 01:36pm
Clawing my way through Izhikevich paper's matlab code.

Peter Coetzee 10:56am
Added metadata capability to Nodes

Peter Coetzee 09:28am
Wondering if people want a meeting this lunch...

Archive: Saturday, Oct 25
Total: 3 entries

Fred van den Driessche 01:07pm
Chriiiiiiissss!!!! \/ \/ \/

Peter Coetzee 11:55am
I'm guessing we need user accounts before we can do that.....

Fred van den Driessche 11:06am
how can I raise an issue on trac?

Archive: Sunday, Oct 26
Total: 3 entries

Chris Matthews 12:07pm
As a quick fix to fred's problem, I edited trac permissions so anonymous users can create/edit support tickets. I'll revert this change once I sort out user authentication, obviously

Chris Matthews 11:43am
Working on adding user accounts anyway - apparently it's tied into the way that the webserver handles authentication

Chris Matthews 11:43am
Trying to figure out the problem with Trac - I just created a new wiki page without logging in and it worked first time. It takes a while to update changes, but that's a side-effect of CSG making us use it via CGI.

Archive: Monday, Oct 27
Total: 4 entries

Fred van den Driessche 09:50pm
Just tried to serialise a net from NeuralNetwork n = (NeuralNetwork)GraphFactory.get().makeGraph(10, 1); told me Synapse isn't serializable.

Peter Coetzee 03:34pm
WHY?!

Peter Coetzee 07:50am
Thought on SVN structure; worth sub-packaging tests.package_name? e.g. my neural implementations might go in ....tests.graph.neural, matrix test cases in tests.matrix etc. Sound smart?

Peter Coetzee 07:46am
Forgot to mention over the weekend; Wiki pages up with notes on http://www.doc.ic.ac.uk/~ctm06/t... and http://www.doc.ic.ac.uk/~ctm06/t... - once I've done the former, I'll look into the latter.

Archive: Tuesday, Oct 28
Total: 1 entry

Peter Coetzee 02:15pm
Hah, you're right - I gave EdgeBase a serialVersionUID, but didn't make Edge extend Serialisable. Fixed @r19

Archive: Wednesday, Oct 29
Total: 5 entries

Peter Coetzee 07:09pm
Looks like YCB neurones never let u get above 0; ours seems to be the source of the 10^16V spikes.....

Fred van den Driessche 06:42pm
um, yeah, check the wiki...

Fred van den Driessche 06:39pm
you should now be able to integrate log4j in to the project. there's a new lib and conf directory on the same level as the src directory in the trunk. have a look at SerialisationService to see how to integrate it into a class, and SaveTest also for confi

Peter Coetzee 01:34pm
Spiking neurones no longer charge to INFINITY in 30ms :)

Peter Coetzee 12:34pm
Made hashCode()s and equals() methods for graph elements.

Archive: Monday, Nov 03
Total: 10 entries

Fred van den Driessche 09:14pm
haven't looked into it yet.

Peter Coetzee 08:48pm
Any news on why serialising the hashset of edges recurses to infinity (and beyond....?) yet?

Fred van den Driessche 08:21pm
SaveTest currently fails on seeking for LoadService/Serialiser which is a bit irksome.

Fred van den Driessche 08:18pm
added persistence specifications, LoadSpecification and SaveSpecification. These are currently identical but i'll leave it till later to see if a merge would be beneficial. Also added FileSpecification which implements the two above.

Peter Coetzee 10:21am
Oh, and http://www.doc.ic.ac.uk/~ctm06/t...

Peter Coetzee 09:50am
Made the wiki homepage a list of the recent changes - saves creating a ToC for now...probably more useful in the short term. We can work later on a better layout, when we come to finally document the system

Peter Coetzee 09:34am
http://www.doc.ic.ac.uk/~ctm06/t... and http://www.doc.ic.ac.uk/~ctm06/t...

Peter Coetzee 09:13am
Added new ConfigurationManager, uses pluggable Configurators to set up the environment before the app loads. Just call ConfigurationManager.configure(); to run it.

Peter Coetzee 09:12am
Refactored StatisticsManager to be event driven, and to use the new PluginManager

Peter Coetzee 09:11am
Neurones spike properly

Archive: Tuesday, Nov 04
Total: 1 entry

Fred van den Driessche 03:24pm
more details on the PersistenceFramework on the wiki

Archive: Wednesday, Nov 05
Total: 2 entries

Peter Coetzee 06:25pm
Basic scrolling of the graph area occurs in real time. Need to consider UI implications in more detail.

Peter Coetzee 04:00pm
Created a Real-Time graphing statistician. Writes frames (via lots of concurrency and double buffering related shenanigans) to a JPanel as events occur in the graph.

Archive: Thursday, Nov 06
Total: 6 entries

Peter Coetzee 06:39pm
Presently ~160MB heap required for 1,000 nodes and 1,000,000 edges.

Peter Coetzee 06:13pm
Context: Trying to think of ways of reducing our memory usage :)

Peter Coetzee 06:12pm
....Following on from that, should the persistence take that into account? Or is that a good time to say "make it concrete"

Peter Coetzee 06:12pm
Having thoughts about "abstract" and "concrete" nodes - would it be beneficial (to memory usage) to not make a hetergenous clump of nodes "concrete" until they're required (e.g. viewed, trained, or manipulated)?

Peter Coetzee 05:11pm
Sped up the chart rendering pipeline. Added basic keyboard navigation for panning and zooming.

Stephen Wray 10:36am
Looking into NeuroML java libraries for input/output of xml.

Archive: Friday, Nov 07
Total: 5 entries

Peter Coetzee 02:57pm
I guess that means that the GUI creator could be pluggable, which would solve that issue. I prefer that solution - thoughts?

Peter Coetzee 02:57pm
Made GraphFactory more useful; now takes a graph specification to define the graph, and its edge construction. Should think about making it pluggable - might need another configurator? Perhaps this doesn't matter, as it is going to need GUI specialisation

Fred van den Driessche 11:11am
LayoutStrategy's have been factored out of the GUIManager. Currently there's only CircleStrategy but I'm working on another, which should be a breadth first search if I can stop this while loop ever...

Fred van den Driessche 10:57am
GUINodes move under the mouse when dragged.

Stephen Wray 12:10am
Wondering why XML output is just randomly stopping? dge #: 111919 of 390625 | neuroml.model.network.Projection@6194d9 Completed! Edge #: 111920 of 390625 | neuroml.model.network.Projection@733b79 Completed! Edge #: 111921 of 390625

Archive: Monday, Nov 10
Total: 5 entries

Stephen Wray 07:39pm
Excellent, bring me to up to speed soon pete.

Peter Coetzee 07:08pm
Oh, baby. I can *read and write* private fields from any class, as well as load values from Methods in such a way that the reflection package thinks they're Fields. This should alleviate the need to integrate NeuroML so tightly - more news to come.

Peter Coetzee 05:56pm
Trying to break the JVM into letting me reflect Methods that look like Fields.... Yeah, I know.....

Peter Coetzee 04:05pm
@Steve: Doesn't that result in _really_ nasty hard-linking of the dependency in places it shouldn't be? Can't it be done with a visitor / iterator that just instantiates an object briefly and hands it through to the XML writer?

Stephen Wray 03:54pm
Solved XML problem, uk.ac.ic.doc.neuralnets.graph will extend parts of the NeuralML library for exporting to XML. We will no longer need to create a 'second' network to export out and just hand current network to parser.

Archive: Tuesday, Nov 11
Total: 6 entries

Peter Coetzee 07:12pm
@Fred - You've not actually committed your zest stuff to repo yet :) Be good to see that when you have a mo to do so!

Peter Coetzee 07:12pm
Possibly just fallen in love with Zest.

Stephen Wray 05:20pm
Fred is now offering his 'services' for money to pay for a 64-bit laptop! Great offers available!

Fred van den Driessche 03:51pm
my laptop seems not be able to run java 1.6.

Peter Coetzee 02:28pm
I'm guessing for reading in NeuroML we may have to subclass the NeuroMLParser, which converts from JDOM to objects...

Peter Coetzee 02:27pm
Code to do the reflection and annotation side of persistence is in repo for Steve. I'm going to leave it there - I'm guessing serialisation should be pretty doable now (check the svn log for info, contact me if you want more details)

Archive: Wednesday, Nov 12
Total: 2 entries

Peter Coetzee 01:32pm
http://www.doc.ic.ac.uk/~ctm06/t...

Peter Coetzee 10:53am
Written a GraphStreamer, which streams nodes and edges through a transformer so that you don't have to hold the whole thing in memory.

Archive: Friday, Nov 14
Total: 2 entries

Fred van den Driessche 08:44pm
The below is from the wiki. Hunting on the GEF mailing list for Zest (which is about the extent of documentation) seems to show that manipulating the graph won't be too easy. However i think GEF is far too heavyweight. It seems we're aiming at a(n awkward

Fred van den Driessche 05:55pm
From the GEF wiki: Draw2d is used for rendering and layout. If all you want is to display data, all you need is Draw2d. If, on the other hand, you want to be able to manipulate that data, you should use GEF.

Archive: Saturday, Nov 15
Total: 4 entries

Fred van den Driessche 07:57pm
Just noticed SWT has a ToolBar and, wait for it, a 'CoolBar'. That's almost as bad my naming pattern.

Peter Coetzee 04:25pm
Network bifurcation now implemented through InteractionUtils

Peter Coetzee 02:11pm
NetworkBridge implementation fleshed out, connect() methods in InteractionUtils upgraded accordingly. Can now connect networks with it, and it will create NetworkBridges automagically when you connect neurones in different networks.

Fred van den Driessche 12:36pm
These could be relevant: http://dev.eclipse.org/newslists... , http://dev.eclipse.org/newslists...

Archive: Tuesday, Nov 18
Total: 8 entries

Stephen Wray 07:51pm
Now that is a mouthful. :-p

Peter Coetzee 04:38pm
UI can layout the graph using the algorithm selected by the user. Yay :)

Peter Coetzee 03:40pm
Sidebar 'modify' tab layout in svn - works off NetworkModifier plugins. Feel free to add some more!

Peter Coetzee 02:33pm
Working on the GUISidebar now - see if I can get some interactivity in network modification, hopefully...

Peter Coetzee 02:18pm
....as well as making it easy for the user to go back and forth between views while navigating. Thoughts?

Peter Coetzee 02:17pm
Liking the stack approach for zooming - was thinking, back and forward buttons would be a nice-to-have. Perhaps a stack for each? That way we solve the interaction side of "how do I zoom out" without resorting to magic mouse wheel....as well as making it

Peter Coetzee 02:05pm
Having lost more than enough hours to it, going to put my vote in for "let's just accept that edges in Zest are straight, end-of" I can paint arcs on the canvas as WELL as straight edges - but that involves reflection-hacking zest....

Peter Coetzee 12:51pm
Steve 'Rear-Admiral Runtime' Wray

Archive: Wednesday, Nov 19
Total: 5 entries

Peter Coetzee 10:48pm
Implemented artificial Input and Output nodes, pluggable, with some abstract help implementation that might be enough for most applications. Not yet integrated with GUI, just tested stand-alone.

Peter Coetzee 10:38pm
So, apparently SWT isn't even slightly thread-safe. Just, you know, FYI.

Peter Coetzee 04:04pm
Perhaps later should change to a colour co-ordinated styledtext box or something? RED for warn / error?

Peter Coetzee 04:03pm
Logging >= info goes into GUI bottom bar also

Peter Coetzee 04:03pm
Network running and pausing works from the GUI now

Archive: Thursday, Nov 20
Total: 12 entries

Peter Coetzee 07:17pm
Implemented a mathematical expression parser using ANTLR, to use to describe the input parameters for Neurones. Wewt.

Stephen Wray 06:52pm
anyone care to explain also why my tests now hang after this: 2008-11-20 18:51:44.452 java[1393:10b] [Java CocoaComponent compatibility mode]: Setting timeout for SWT to 0.100000

Stephen Wray 05:49pm
also, can't run the gui, 64-bit JVM: Exception in thread "main" java.lang.UnsatisfiedLinkError: Cannot load 32-bit SWT libraries on 64-bit JVM

Stephen Wray 05:30pm
log4j:ERROR Could not parse file [conf/log-conf.xml]. gnu.xml.dom.DomEx: The operation violates XML Namespaces.

Stephen Wray 05:28pm
wants to know why log4j (or at least he thinks this is the problem) is not working and he can't run his code

Peter Coetzee 05:08pm
Nice one Chrismail - time for a CoolBar?

Chris Matthews 04:04pm
Zooming stuff merged into the standard GUIManager, and we'll add some pretty buttons to the GUIMock. Haven't checked whether or not it plays nicely with InteractionUtils yet, will do soon

Peter Coetzee 09:14am
...that was List of Boolean, List of Double.....

Peter Coetzee 09:14am
Training requires that any output nodes understand how to test data against the expected values - must add this. Something like "public List compare(List targets)" ?

Peter Coetzee 09:12am
Or, of course, maybe nothing at all..... Could lose the IContainer stuff altogether. Or is it a useful UI twiddle for zooming? Click the arrow and the graph zooms, leaving that nn's border / title at the top with a click arrow to collapse it again. Ideas?

Peter Coetzee 09:11am
Maybe statistics, like "X neurones and Y edges", or "A neurones of type BLAH, B neurones of type NGAH, C neurones of type ECKITYBOOO, with a connectedness of 25%"

Peter Coetzee 09:10am
Thinking we really need to change how graphs are rendered - we just can't afford to have too many nodes in zest at once.....perhaps think about only generating nodes for the currently visible graph, not its children. What to put in the IContainer for a sub-network?

Archive: Friday, Nov 21
Total: 4 entries

Stephen Wray 12:53pm
yeah i'll look into that, ndk has just complete disappeared from neuroml website, there is something similar but no where nearly finished

Peter Coetzee 12:51pm
(sax is event driven, so it just streams XML parsing events into your event handler for creating neurones etc.)

Peter Coetzee 12:50pm
@Steve shame....shouldn't be too much of it though, surely? Perhaps use something like sax so that it streams nicely?

Stephen Wray 12:11pm
haha, screwed on NeuroML, ndk doesn't seem to exist any more, i may end up doing all of it after all

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Archive: Saturday, Nov 22
Total: 11 entries

Fred van den Driessche 09:04pm
Added Import and Export menus created using LoadService/SaveService plugins. It even creates some inner classes using reflection, crazy.

Peter Coetzee 07:43pm
Java errors ftw: "Exception in thread "main" java.lang.ClassCastException:
uk.ac.ic.doc.neuralnets.util.configuration.NeuroneTypeConfig cannot be cast to
uk.ac.ic.doc.neuralnets.util.configuration.NeuroneTypeConfig"

Peter Coetzee 06:40pm
All fixed. Ready to proceed with NodeSpecification GUI panel!

Peter Coetzee 06:09pm
Spiking Neurones ain't no spiking no more :(I'll see you guys in another month!!

Peter Coetzee 05:06pm
Kay, broken code is fixed.

Peter Coetzee 04:58pm
Fixed in SVN. Seem to have committed some code which breaks NodeFactory; am working on rewriting that section of code anyway, so it'll be fixed when it's finished!

Peter Coetzee 04:42pm
Fred - also makes it nigh impossible to add 100X and 50 Y :) Stupid oversight on my part!

Peter Coetzee 04:31pm
Fred: You're quite right, they should've been Lists. Will change soon.

Fred van den Driessche 02:39pm
I've committed my revisions of the Add Nodes and Graph layout. give them a try and let me know what you think. How intuitive is the add nodes? How could it be improved?

Fred van den Driessche 01:53pm
there's a slight problem with HomogenousNetworkSpecification in that it takes a set of integers for the node counts. Which makes it difficult to add 100 X nodes and 100 Y nodes.

Stephen Wray 12:47pm
please remove the NeuroML jar from your class path, its no longer in use.

Archive: Sunday, Nov 23
Total: 14 entries

Stephen Wray 11:10pm
is beginning to think that NeuroML is really really horrible for describing synapses

Stephen Wray 09:35pm
should 'RecognitionException' be 'ExpressionException'?

Stephen Wray 09:34pm
whats with the: Unhandled exception type ExpressionException at various places? have I missed loading something or setting a plugin? on second through doesn't look like it as eclipse refuses to compile InhibitoryNodeSpecification.java/SpikingNodeSpecification.java atm because of it

Stephen Wray 06:01pm
I shall implement them both as I agree.

Peter Coetzee 05:54pm
Yeah, I think 1 makes sense personally. 2 is optional, more of a "personal sensibilities suggest" than "really should be done"

Stephen Wray 05:05pm
@Pete - I'm happy moving it up another level to what you suggest in (1) if you want, it perhaps makes a little more sense and may actually make my life easier a little. If a user rights an extension then its going to extend one of those four classes only isn't it? Position of the package I'm not really bothered about, if you want it in util. then i'll move it.

Peter Coetzee 04:48pm
Yeah, I guessed that might be the answer. No problem then, I guess. Two thoughts then are: 1) Do we want to just use the more specific "NeuralNetwork" / "Neurone" / "Synapse" / "NetworkBridge" classes in the Visitor, as we're doing it for "neural" reasons anyway? 2) Should the package be in util or perhaps even graph.neural?

Stephen Wray 04:41pm
if it is NodeBase/EdgeBase/Graph, then NeuralNetwork extends Graph and implements Node so I won't have any problem detecting Graphs then, if i change to Node/Edge then Graphs could be funky to visit. Also, NodeBase/EdgeBase/Graph are all classes, so it made a little more sense to me doing it to them, as they seem to me to be the fundamental building blocks of the neural implementation of the graph. Any other comments? Happy to change it if there's a better idea.

Fred van den Driessche 04:27pm
On Thursday/Friday we were talking about making a list of what was left to do. We might as well use the trac ticket system for this. So if you have any ideas put them on trac and we can sort out priorities etc. from there.

Peter Coetzee 03:51pm
Steve: Why NodeBase / EdgeBase rather than the abstract types, and what happens if something is a Node and a Graph (e.g. NeuralNetwork)

Stephen Wray 03:03pm
EdgeBase, NodeBase and Graph now implement the Visitor Design Pattern! :D

Fred van den Driessche 02:38pm
Revised the GUIMock so the width of the Sidebar is independent of the width of the rootShell. Still resizeable with dragging though. At some point we need to extract out non layout code from it and have getters for Menu, Toolbar, Sidebar, GraphContainer and Bottombar.

Peter Coetzee 02:17pm
CustomNodeCreator panel needs some work on how it resizes if it's to be used - really just a test bed for me at the moment. Don't envisage it being there in the final product.

Peter Coetzee 10:50am
http://www.doc.ic.ac.uk/~ctm06/t... - WIP.

Archive: Monday, Nov 24
Total: 8 entries

Stephen Wray 11:00pm
all network information is now output in the xml, its a tad simplified at the moment but its working and its valid. Next I'll work on xml import and get that working.

Fred van den Driessche 07:34pm
Is there a way that we could integrate some progress reporting with creating node groups and persistence in an abstract way? It would be nice for progress bars: http://dev.eclipse.org/viewcvs/i...

Ismail Gunsaya 05:59pm
Added the Coolbar and 2 button for zooming. The zoom in works but crashes the program if you try and click a node. Can't figure out why! If you zoom in and zoom out via the code, it works fine so its not the actual zooming functions, just the buttons. Chris can you have a look at this.

Stephen Wray 05:33pm
@Pete, should import uk.ac.ic.doc.neuralnets.expressions.ExpressionASTLexer; not be import uk.ac.ic.doc.neuralnets.expressions.ast.ExpressionASTLexer; in ASTExpression.java and is ExpressionASTLexer.java not confused about where it should be?

Peter Coetzee 04:33pm
Expressions are now parsed into an AST rather than evaluated by the parser. The AST self-optimises if no variables expressions exist. Going to try slotting it into the NodeSpecification now and see if it speeds up execution (it should do, given that it's no longer parsed every evaluation!)

Stephen Wray 02:35pm
XML output is now outputing valid NeuroML XML, still lots to do but its doing something and that something seems to be vaguely correct :p putting it in the repo

Peter Coetzee 12:49pm
There we go, variable support in Expressions now. Just add an @BindVariable("varName") annotation to the methods to invoke to get values (must return Double, must not take any parameters or explosions will occur!)

Peter Coetzee 12:14pm
Steve: My oversight, missed changing the name in a couple of places. Will re-committ soon...

Archive: Tuesday, Nov 25
Total: 14 entries

Ismail Gunsaya 10:38pm
Has someone forgot to add GranularRandomTrainer? Or am I getting silly errors.

Stephen Wray 06:01pm
Forgot to commit EdgeBase, sorry, I'll playing around with this at the moment, NeuroML specifies at lot of crap which we don't always have.

Peter Coetzee 05:02pm
Thinking it probably needs a rewrite, to facilitate this. Perhaps InputNodes should report their training data input, and OutputNodes report their current values. In this way we can tell the InputNodes to cycle their input to the next row, and our value tests can cycle accordingly. Maybe?

Peter Coetzee 05:00pm
Training is kinda-like there in principle, but has a couple of significant issues. It currently doesn't have the ability to change the input to a particular network, if you have more than one row of input data for example.

Fred van den Driessche 04:32pm
Another interesting feature: GUIMain starts with a small network. Add a new group. Maybe delete a couple/all of the old nodes. Zoom in on the group. Zoom back out. The old network seems to be there.

Peter Coetzee 04:31pm
Fred: Layout much better now than it was, nicely done.

Fred van den Driessche 03:01pm
Redone AddNodes layout to look nice on lab machines. It seems the container it's in thinks it's bigger than it really is. Can't work out why.

Peter Coetzee 02:49pm
Fred: Yeah, there's a System.exit(0) at the end of it. Strictly, a bad feature, not a bug :p It isn't necessary, but we should put some control in to stop the update threads if it's going to be removed. I have my head all over training atm, but can look at it another time.

Fred van den Driessche 02:32pm
Slight bug - if you close the Real Time Plot window, it crashes/closes the whole application.

Peter Coetzee 01:48pm
Hmmm, no idea why that ever compiled. It never gave me trouble, so I didn't notice it. Fixed now at least.

Fred van den Driessche 01:09pm
In repo at the moment ExpressionASTLexer has the wrong package declaration (it claims not to be in ast when it is) which is confusing ASTLexer, as it's trying to import it from a place where it isn't.

Peter Coetzee 11:30am
Steve: Synapses don't have an ID at the moment....do they need them? XMLSave.java@88 asks for Synapse.getID()....

Peter Coetzee 11:27am
Fred: It should be doable with the StatisticsManager, I think.... Fire an event when a node / edge is built. D'you want to do that while you're writing the UI stuff?

Peter Coetzee 11:11am
Steve: I don't see the code you're referring to....am I missing something? There're no imports for the AST parser and lexer in ASTExpression, since they're all in the expressions.ast sub-package.

Archive: Wednesday, Nov 26
Total: 20 entries

Stephen Wray 10:56pm
ok, sleep on it

Peter Coetzee 10:52pm
Hmmm, I can vote +1 to losing the setter. Need to think more about private access - it's not just "can't set this", but also "this is internal implementation that is subject to change and cannot bee relied upon"

Stephen Wray 10:49pm
So shall we get rid of the setter stuff then from MethodPseudoAccessor?

Stephen Wray 10:46pm
Well thats why I was thinking make the getMethod() @Persistable, then its still has the protection of being private, but obviously allowed to be read for serialisation or other services. Anyway, rules are there to be bent!

Peter Coetzee 10:27pm
I do wonder about the wiseness of getting private variables if we don't absolutely have to. The java private modifier is there for a reason - I'm wondering if we should respect that.....?

Peter Coetzee 10:25pm
Steve: That's a mistake on my part. Apparently the setter stuff wasn't tested ;) It only logs a WARN level though, because it's not actually a requirement; it's only there in case someone tries to set a field value through something which isn't a field. It could, in fact, be lost entirely (make MethodPseudoAccessor read-only, effectively)

Stephen Wray 10:00pm
Right, see previous message for context, i change it to "set = c.getMethod("set" + f, get.getReturnType());" and it now doesn't through any warnings when running and has the desired outcome, however, for this code to work all variables must have a set method as well to be able to be made @Persistable, is this desirable as then any extension must have get and set methods available, or do we not want this to be the case.

Stephen Wray 09:52pm
Question to anybody who can answer this (probably looking at pete or fred): in MethodPseudoAccessor with the method with the same name, why does it try to "set = c.getMethod("set" + f, c);" where c is the class, surely there isn't going to be many setXXX methods where they take the class which it is in, surely this should be of type returned by the getmethod with same name? I'm asking because i'm trying to use @Persistable on a couple of get methods to allow the xml serialiser to read the values (so not every variable needs to be made public then) and i keep getting warnings for "21:44:42,630 DEBUG MethodPseudoAccessor : No method for setting Charge java.lang.NoSuchMethodException: uk.ac.ic.doc.neuralnets.graph.neural.SpikingNeurone.setCharge(uk.ac.ic.doc.neuralnets.graph.neural.SpikingNeurone)" as an example. Ta

Stephen Wray 02:57pm
Synapses are now correctly and completely output by the XML serializer. All Synapse information is output in the correct place, future extensions of Synapse which include more fields are output in a block within the synapse properties tag, these fields must be annotated with @Persistable, only currently works with public fields, private fields to come hopefully courteous of pete's code. Neurones to do but that is more of the same.

Stephen Wray 02:50pm
annotations are slow it seems

Fred van den Driessche 02:09pm
Zooming seems pretty awesome now. Good work guys.

Chris Matthews 01:41pm
Clicking on a Neural network in the graph highlights it, but it is no longer selected properly. However, dragging over it still selects the network. I'm assuming this is the side-effect of one of the example plugins - perhaps edgebuilder?

Chris Matthews 01:39pm
Zooming no longer crashes. I am an idiot.

Stephen Wray 12:51pm
has found a nice way of representing synapses in NeuroML!!! is very happy, now a projection hold all the synapses for it either a network or a network bridge, those with the same source and target in projections are contained with in a network, those with different source and target are network bridges, then each individual connection has a pre and post cell id which is the specific neurone it is connected to

Peter Coetzee 12:17pm
Kay, no problem. Just wondered! Glad to hear it's in hand :)

Chris Matthews 12:08pm
Me and ismail are working on making zooming break less. No progress on making connections to sibling networks visible yet though :(

Peter Coetzee 11:41am
Also, what's new on the "showing graph connections to sibling networks" front? I've got a nice layered network, for example, but I don't see any synapses because they're all to/from another network....

Peter Coetzee 11:40am
Hmmm. What's the state on the GUI at the moment? Zooming seems to break....lots. Sometimes it collapses the whole of SWT with it. Not spent any time looking into why, in case it's known and "being-worked-on" behaviour!

Peter Coetzee 10:28am
Yuhuh, that'd be my fault. Sorry guys.

Stephen Wray 08:22am
Same here, I'm guessing Pete.....

Archive: Thursday, Nov 27
Total: 2 entries

Peter Coetzee 03:50pm
Fred: Why not see if we can re-jig it to mark the unserializable stuff as transient, and re-create them if they're null.....what d'you think?

Fred van den Driessche 02:29pm
Serialization is broken due to the fact that java.lang.Method is not serializable. :/ I'm not sure this really matters since the XML is pretty much almost there, right?

Archive: Friday, Nov 28
Total: 1 entry

Fred van den Driessche 11:04am
How can i find out if a neurone is spiking or inhibitory or any type in general? I'm in a GUIEdge and I need to know the type of the start neurone.

Archive: Saturday, Nov 29
Total: 1 entry

Peter Coetzee 04:24pm
Fred: Perhaps we should subclass SpikingNeurone into Excitatory and Inhibitory, so you can do an instanceof test. Maybe the NodeConfig stuff should then have default values for each of these, so you don't have to type the expressions in if you don't want to change them..... What d'you think?

Archive: Sunday, Nov 30
Total: 15 entries

Peter Coetzee 10:43pm
Nice work Steve! Great to hear progress is coming thick and fast :)

Stephen Wray 10:42pm
Its been a little time coming, but XMLSave is complete, it outputs all information needed, and is NeuroML valid. All extra information is output as meta data, and the format for that is that if you would like your extensions to have this data exported then add @Persistable to the get method for that variable, it'll do the rest. I've also added xyz values to the neurone class, as NeuroML requires this info, obviously at the moment it is stored in the GUI, i have created a setXYZ method which so the gui can pass that information down when someone wishes to export their network, because the network is converted to XML. XMLLoad is next and current timeline is to be done by Thursday so that it can be demoed to the client!

Ismail Gunsaya 05:58pm
Ok I see your point about the inverses. That makes sense now I have an example. I guess we should not let inverses undo. Maybe pop-up a warning if you try and apply an un-undoable command asking "are you sure you want to proceed, changes cannot be undone"

Stephen Wray 05:26pm
I was just trying to think how it could be kept out of the GUIManager, only advantages i can see now is to keep up with the more modular and plugable feel so that its not estential. The only limited example for a function without an inverse would be some kind of mathematical formula to be applied to neurones which has no inverse, then if you wanted to undo that command then you would need a copy of the state before the command stored somewhere. Can't think of anything better.

Ismail Gunsaya 05:02pm
I don't understand what kind of GUI actions will have no inverse. All the ones I think of can be undone. Example please?

Peter Coetzee 04:53pm
I'm thinking the stack-in-GUIManager in some form makes sense (or a QueueManager in GUIManager, either way; but that seems like logical encapsulation to me) Actions with no inverse are feasible; they just can't be undone. Leaves the open question as to what to do with the stack then. Clear it, since undoing would cause undefined results?

Ismail Gunsaya 04:38pm
By commands I guess you mean actions. Shouldn't the stack be in the GUIManager (or another new queueManager) where we can easily implement it with the GUI.

Stephen Wray 04:25pm
I'm sure I joked about assigning you the undo/redo part, anyway, not all functions have an inverse, can't think of any applicable atm. Surely the stack will be in the command structure as it will be a stack of commands, then just execute them on object passed to it?

Ismail Gunsaya 04:21pm
onto a stack. Not sure how or where though.

Ismail Gunsaya 04:21pm
Really? I wasn't aware that we talked about any undo/redo related. If you did, I probably wasn't listening, sorry. There will have to be an inverse for everything. Example of one that doesn't need an inverse?So Pete, thats what I was thinking. We will have to push all the "actions"

Stephen Wray 04:17pm
Wasn't this what I suggested to you on friday Ismail? What about actions that have no inverse, or must everything have an inverse for this case?

Peter Coetzee 04:05pm
To the more concrete question of how stuff's done at the moment..... I'm guessing it'd require some kind of rewrite. Perhaps we push all graph modifications through a single queue (in the GUIManager?), which can execute then push onto a (bounded) undo stack?

Peter Coetzee 04:03pm
The devil's advocate in me wonders if it might be feasible (MUCH later on, but perhaps designed-to-be-feasible) to stack these, so that you can encapsulate a series of actions as one (Chain of Command pattern) ..... Macros, anyone?

Peter Coetzee 04:02pm
Ismail: More or less bang on, as far as my knee-jerk reaction goes :) Of course, "rexecute" is just the same as "execute" in the first place ;)

Ismail Gunsaya 03:54pm
Thinking about how to implement undo/redo. Just researching on how. From what I've gathered a Command Design Pattern could be used to objectify the actions we run from the GUI so that we can add new "actions" easily.We would implement "unexecute" (undo) & "rexecute"(redo) in each action. I don't know how this affects how we do stuff in the GUI at the moment (Fred?) so let me know if the idea sucks.

Archive: Monday, Dec 01
Total: 32 entries

Stephen Wray 10:54pm
I'm sure it'll be clear in the morning... :p

Peter Coetzee 10:45pm
That's good..... But I'm not certain there's an easy fix for the problem. That's my "non-trivial" comment; I'm not sure how on earth to make the problem go away :) It's VERY non-trivial!

Stephen Wray 10:29pm
I can comment out either or at the moment so its not too bad, I can carry on working which is the main thing.

Peter Coetzee 10:19pm
Oh yeah, and I forgot to say; there would be a stack trace there if that's what's happening. I don't get why eclipse seems to swallow those so much.....

Peter Coetzee 08:41pm
Steve: Yeah, Fred's memory is right. I'm not sure how to fix this at the moment, it's a non-trivial problem. Can explain in greater detail in person. For now the best bet is to make sure classes aren't plugin loaded twice as different names. Subclassing one as `public Class2 extends TheRealClass {}` should suffice - bit of a hack though. Failing that, just factor out saving and loading into two different classes :) Not necessarily a bad thing for maintenance :)

Stephen Wray 06:25pm
Thanks fred, that makes perfect sense, I commented out the saving (where it loads it first) and then it works fine, this probably needs to be looked at an fixed.

Fred van den Driessche 06:21pm
iirc, the problems may be to do with the ClassLoader trying to load a class that's already been loaded, though my memory is a little faint.

Stephen Wray 06:05pm
I think the problem is the class loader is hanging some where when trying to load the loading class.

Stephen Wray 05:20pm
So did you never get it to load the serialised network when you were able to serialise the network, or did you manage to resolve the problem. My code is layed out the same as yours for the serialisation

Fred van den Driessche 05:18pm
I think this happened to serialisation too...

Stephen Wray 05:14pm
Anyone have a guess at why my XML test hangs when trying to load the load xml service, i get to "17:13:24,324 DEBUG PluginManager : Loading LoadService :: XMLService 17:13:24,325 DEBUG PluginLoader : LoadService.XMLService 17:13:24,325 DEBUG PluginLoader : Seeking for /Users/Stephen/Documents/Workspace/NeuralNets/plugins/LoadService/XMLService.class" can't seem to find where it stops in the actual code, everything is in the right places, and the xml save works!

Fred van den Driessche 05:13pm
It just warns you that Collection should be parameterised, any attempt at this seems to cause more errors.

Stephen Wray 05:12pm
Casting to a collection removes the error, just leaving a warning "Multiple markers at this line - Collection is a raw type. References to generic type Collection should be parameterized - Type safety: The expression of type Collection needs unchecked conversion to conform to Collection<?,? >>"

Peter Coetzee 05:07pm
What happens if you cast the getBundle() call to Collection? It should stop javac from doing generic inferencing - really frustrating though, since Edge from anything to anything should be fine to take an Edge from SomeNodeType to SomeNodeType..... Sometimes generics just piss me off! Especially when different compilers accept different inputs.....

Peter Coetzee 05:06pm
ahh, I see - Co-Op loses the "Edge" from the middle

Peter Coetzee 05:06pm
That's really weird. I'm guessing it should say Collection<?,?>> etc.

Stephen Wray 05:03pm
@Pete, "The method trainEdges(Collection<?,?>>) in the type GranularRandomTrainer is not applicable for the arguments (Collection<? extends Node,? extends Node>>)"

Peter Coetzee 05:01pm
Steve: I have no idea what's wrong with them....they compile fine under NetBeans. What's your error?!

Fred van den Driessche 04:45pm
The add nodes, zoom in, zoom out, disappearing act seems to have reappeared.

Stephen Wray 04:39pm
@Pete, "trainEdges(((NetworkBridge)e).getBundle());" (line 40,GranularRandomTrainer.java) and "trainEdges(old, ((NetworkBridge)e).getBundle());" (line 44,RandomTrainer.java) don't current compile in Eclipse using Java 1.5. Any chance you can look at this, those error warnings are starting to annoy me! :-p

Peter Coetzee 04:06pm
Thanks for the answers Steve. Generally all what we wanted to hear I think; nothing needs to change as far as I can see! Didn't expect NeuroML to be *so* good at modelling our networks ;)

Stephen Wray 03:52pm
Right sorry for the wait, food shopping was required. NeuroML requires XYZ positions, the XML isn't valid without it. At the moment Neurones have default 0,0,0 values which are printed out. As for what they are relative to, the GUI boys can decide that. If it helps, NeuroML supports groups of neurones, so at the moment, each network is a group of neurones so the network is not exported flat and all networks can be reassembled. Each network then has a group of synapses, which source is that network and target is the same network, so they are internal to only that network, then each synapse has a source and target neurone. Finally their are groups of synapses which have different source and target networks, these are the network bridges, then these have synapses with source and target neurones in relative networks. So the network doesn't need flattening and I think that it would be silly to flatten it. As for subnetworks, well it shouldn't be too hard to determine if a network is a subnetwork of another network if it only has network bridges going to "parent" network. Alternatively, or to re-iterate, you could use the Z position for the 'network' height in the greater picture. And yes pete, NeuroML supports 3D networks. Hope this answers the questions, I'll be working on XMLLoad soon.

Ismail Gunsaya 02:55pm
I checked the Graph/NeuralNetwork classes and I can't see how to remove nodes. This makes it impossible to implement an undo method for AddNodesConfig. Is there a way to delete nodes that I haven't noticed?

Peter Coetzee 12:54pm
Hmmmm, so in theory another statistician which receives some other event (like "Neurone trained" or something) could fire a "ReColour(Neurone n, Colour c)" event which would be grabbed by a ZestRendererStatistician maybe?

Ismail Gunsaya 12:53pm
Could you get on IM please so we can discuss stuff about undo/redo?

Fred van den Driessche 12:50pm
The Statistics package is essentially a publish/subscribe system, no? Could make the GUIManager a Statistician and it can push down events to nodes/edges/networks as necessary?

Peter Coetzee 12:39pm
well.....what does NeuroML say if a Neurone doesn't have XYZ values (what's Z anyway? for 3D layouts? That would be cool :P)? Do NeuralNetworks have XYZ values? These are all questions borne of ignorance :)

Fred van den Driessche 12:34pm
If we do flatten the entire network then we have issues when trying to save at a zoomed level because not all the network is laid out, which will definitely be an issue for new nets. At the top level we'd need reserve some space for the subnets and then recurse into it, or something like that? I'm probably over complicating.

Peter Coetzee 12:21pm
Wondering also if there's some abstract way we should push GUI updates through to Zest. We have a StatisticsManager which can be the coupling I guess - do we want the "Statisticians" (bad name, I know) to have to be fully Zest-customised, or should they ask something "Make this Neurone BLUE please" etc?

Peter Coetzee 12:20pm
To that question, does NeuroML handle sub-networks? Or should we flatten the network into one large one (presumably not too hard, since we just discard the NeuralNetwork instances, and all the NetworkBridges. All the correct Synapses and Neurones are still there). Worth asking Andreas about on Thursday maybe?

Fred van den Driessche 12:08pm
How does persistence of location handle subnetworks? Should the location of a node be relative to 0,0 when zoomed into the level of its subnet. I think it would be easier this way, but maybe wronger too.

Fred van den Driessche 11:08am
Just committed GUINode with addChargeOverlay and updateChargeOverlay, which take the charge from the underlying Neurone and create a rounded rectangle on top of the base shape with height proportional to the charge.

Archive: Tuesday, Dec 02
Total: 11 entries

Ismail Gunsaya 11:17pm
Yep should be pretty much the same. Shouldn't be much trouble.

Stephen Wray 10:23pm
Got most of the control flow in for the XMLLoad, next stop, object generation.

Fred van den Driessche 06:13pm
Just a thought for Chrismail: once you undo/redo enabling works won't doing the same for zoom buttons be fairly similar?

Peter Coetzee 04:23pm
I think that's probably the path of least resistance...

Stephen Wray 04:18pm
Lets just separate the classes then.

Fred van den Driessche 02:19pm
You could avoid the double load problem at startup by having a flat plugin hierarchy and sorting the classes by pluggable interface.

Peter Coetzee 12:40pm
Hmmmm. Two thoughts to that..... First of all, while we were designing the plugin stuff we went to some length to put it together in such a way that it *didn't* load all classes until they were used; it's one of the "good things" about Java that it loads only when needed. Good for memory, good for startup time. It was non-trivial to achieve this :) Second.....why? :) Loading them all at startup wouldn't solve the problem with reloading classes, that would remain. All that it'd do would be to make the reloading-classes problem manifest itself at load up, rather than when using a broken plugin (i.e. whole app breaks, rather than just one part)

Stephen Wray 12:28pm
I think we should load all plugins a start up.

Peter Coetzee 11:49am
Just in case, from my bookmarks: http://sixrevisions.com/resource...

Peter Coetzee 11:09am
ALLLLL that being said, I've looked at PluginLoader, and it DOES have some code which *attempts* to recover from this situation. You may recall I went away and tried to fix this bug for you before. It, unfortunately, relies on parsing the lexical form of the LinkageError's message to extract the class it thinks is being redefined, and returning that from cache. It's non-trivial, and may not be working. I thought I tested it. Can you make sure you have the latest version of the code from plugins/, and pleaseplease get a stack trace. Without it I can't help. Something in eclipse is just eating them. Try a really minimal bit of code, with no threading, and see what happens.

Peter Coetzee 11:07am
Right, so the problem in full: Java won't load the same class twice; it complains that you're trying to re-define it, and that's Not Allowed(TM). To prevent this in a normal ClassLoader, it has a cache which it checks to say "when I'm asked to load class X, have I already loaded it? If so, returned the cached class". This cache is implemented outside of the JVM, and cannot be accessed (some methods in ClassLoader are 'native'). I've half worked around this by having my OWN cache of classes, so that when you ask for "NetworkModifier.AddNodes", it won't read it from disk twice. All well and good so far. If, however, you ask me for "SaveService.XMLSaveService" (really an instance of x.y.z.XML), and it loads it and caches it, it will be cached as that name. It won't be found when you ask for "LoadService.XMLLoadService", for example. We re-read it from disk, pass it off to the JVM to JIT for us, and the JVM looks at the bytestream and says "I've already got a definition of x.y.z.XML, I'm going to explode". This is less than totally helpful. It's also all internal JVM implementation (i.e. "Out of Pete's Grasp"), so there's not a lot we can do about it.

Archive: Wednesday, Dec 03
Total: 1 entry

Stephen Wray 06:05pm
Fixed XMLSave now, corrected my assumptions about the network that is produced by the tool. It should now be ready for demonstration at tomorrows client meeting. XMLLoad is progressing.

Archive: Thursday, Dec 04
Total: 1 entry

Stephen Wray 03:18pm
Demo went well, client seems to be happy still, :D Next meeting is Dec 17th at 1:30pm.

Archive: Friday, Dec 05
Total: 2 entries

Stephen Wray 11:32am
Fred and I have done some research on the code and have decided that our does not Halt! We need something to destroy the JRE.

Fred van den Driessche 10:46am
Suggestion: make persistence services take an object which implements an interface (e.g Saveable, which could extend Serializable) rather than just a NeuralNetwork. Means we could save things other than just the net using the Save/Load Managers.

Archive: Sunday, Dec 07
Total: 1 entry

Peter Coetzee 10:35pm
Just for those of us not in the conversation on Fri: Code doesn't halt because various threads are created. I think most of these are by the StatisticsManager (It does some clever multi-threading) It will kill its threads upon completion if you ask it to flushAll() - note that it is not safe to expect events to be handled after this, it IS a teardown method!

Archive: Monday, Dec 08
Total: 3 entries

Fred van den Driessche 06:03pm
You should be able to minimise the sidebar now.

Peter Coetzee 05:27pm
Made NeuralNetworks not display entire sub-network, thus speeding up rendering and zest performance significantly. Just outputs some basic statistics (node / edge count) instead at the moment. We can make the node smaller by making it not-a-container and losing this data altogether if it isn't useful. Thoughts? Also, fixed click-selection in UI; just add the ClickSelectionListener to your plugins.cfg and Bob's your Auntie.

Peter Coetzee 03:04pm
AddNodesConfig progress bar now updates in line with node and edge creation :) Note that all (I hope) edge creating methods (new neural network, or connect existing nets) will fire the EdgeCreatedEvent, so we can add progress bars more easily to other GUI panels.

Archive: Tuesday, Dec 09
Total: 1 entry

Peter Coetzee 09:22pm
Reminder to the conscientious amongst us: http://www.doc.ic.ac.uk/lab/soft... No, I've no idea who I'm referring to ;o)

Archive: Wednesday, Dec 10
Total: 2 entries

Fred van den Driessche about 3 hours ago
Hurrah, nodes now highlight when selected again.

Peter Coetzee about 10 hours ago
Thinking about Undo / Redo architecture. Lots of actions are the inverse of some *other* UI action - "add nodes" is the functional inverse of "delete nodes" command etc. Should the undo method return a Command perhaps, so that we don't end up writing "add" and "delete" lots of times? Or should we just factor out all functionality into e.g. InteractionUtils so that commands are no more than 1-5 lines for exec / undo?