

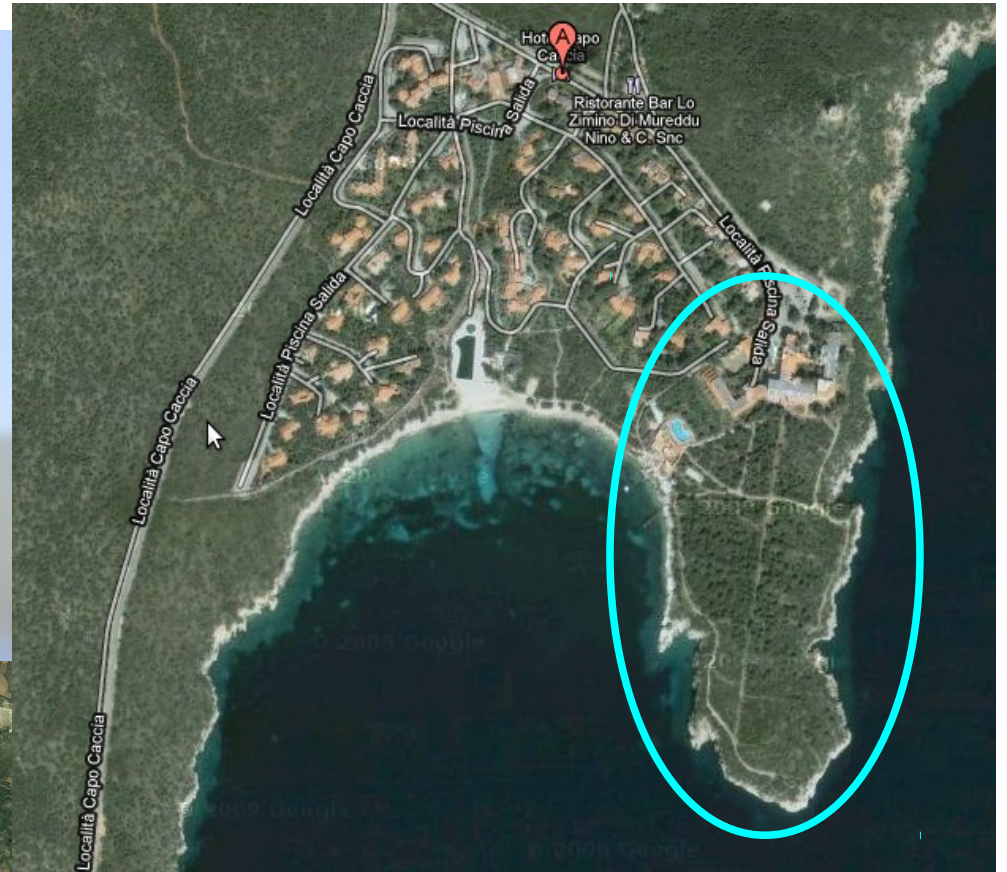
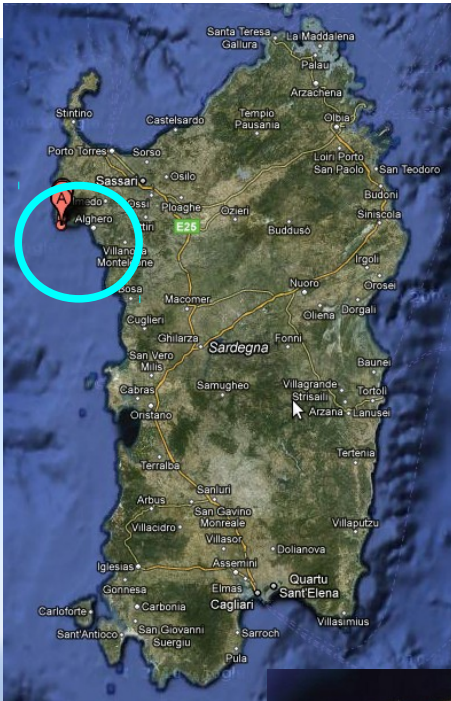


CapoCaccia

Cognitive Neuromorphic Engineering Workshop

April / May 2010

THE AREA



THE AREA



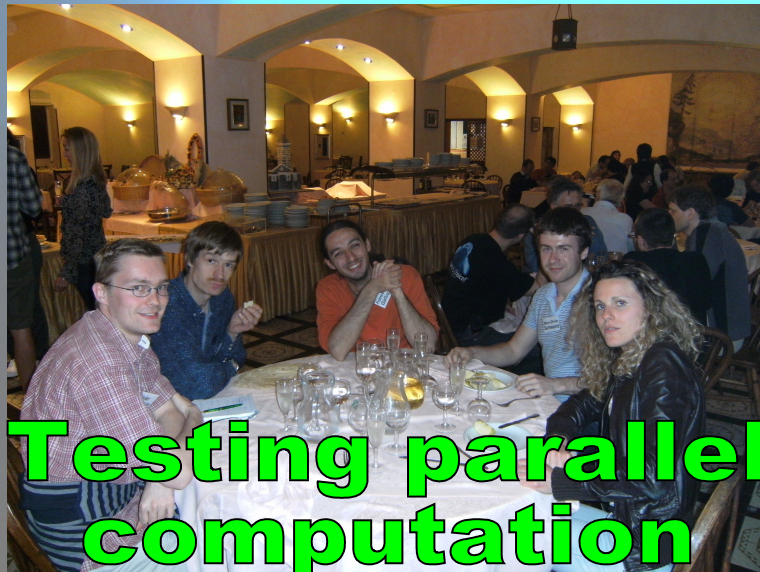
MAIN ACTIVITIES (1/2)



Rescuing data



Exploring new possibilities



Testing parallel computation



Workarounding bugs

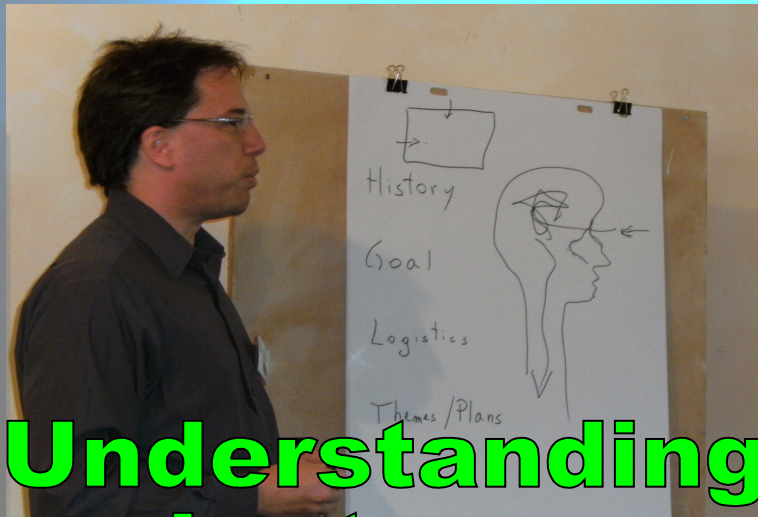
MAIN ACTIVITIES (2/2)



**Celebrating
achievements**



**Attending
meetings**



**Understanding
lectures**



**Managing
headaches**

Schedule of the usual day (24h - based)

07:30 – 08:30 Breakfast

09:00 – 10:00 Discussion session on specific topics (different every day)

10:00 – 10:30 Coffee break

10:30 – 12:00 Discussion session on specific topic (again, different every day)

12:30 – 14:00 Lunch

14:00 – 15:45 Introduction and discussion on specific projects

15:45 – 16:15 Coffee break

16:15 – 19:30 Introduction and discussion on specific projects

19:30 – 21:15 Dinner

21:15 – 07:30 Working on projects

First introduction to SpiNNaker world



The first introduction to the SpiNNaker project was “sold out” for the chairs available in the room. The presentation gave an overview on these topics:

- Hardware;
- Inter-chip communication features;
- Communication with the outside world;
- Software;
- Description of the steps needed to run a simulation;
- Models available for the software;
- Possibility to write new modules for specific simulation;

Second in-depth presentation



The topics discussed in this session were the same as the first session, but much more in depth, and with all the details needed for a complete explanation.

Number of people attending: ~15

Third exploratory technical presentation



Exploring the development flow, demonstrating and discussing the neuron and synaptic models.

Number of people attending: ~20

Timing margin: 10 sec.

Fourth workgroup session



Investigating the use and implementation of genetic algorithms on SpiNNaker for the self-development of large scale models.

Discussed integration with CX3D genetic development environment for neural networks.

Number of people attending: ~6

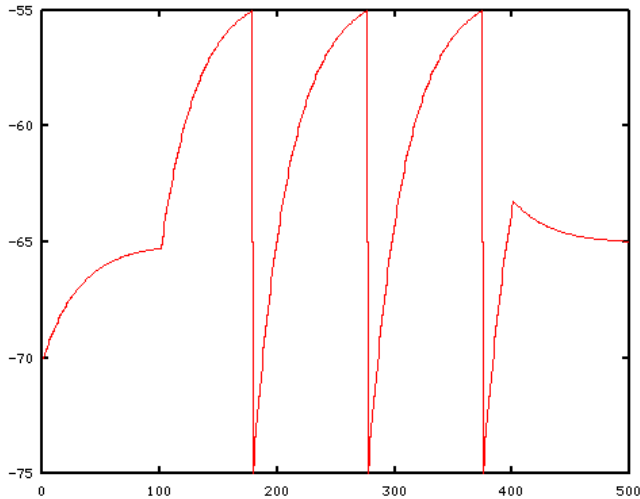
Final presentation and demo



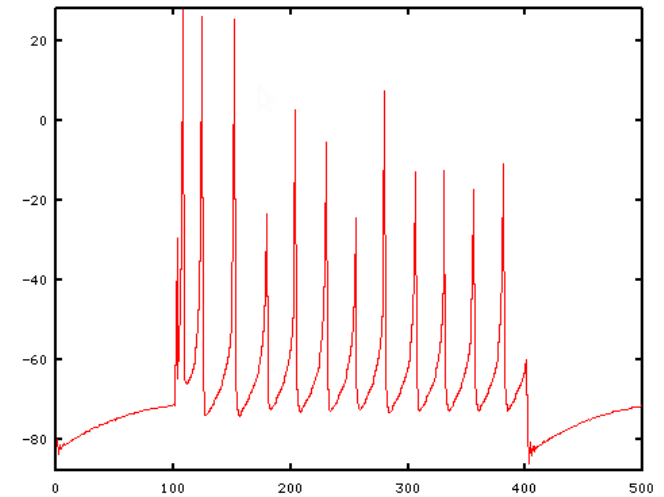
Demonstrating two WORKING! models (Izhikevich and LIF) in three networks – from PyNN to plots in two clicks.

Number of people attending: Sold out

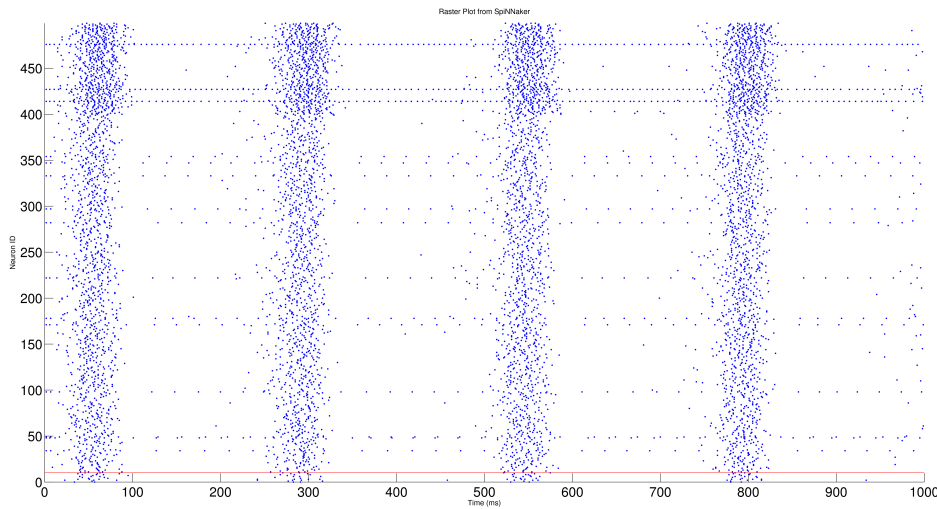
Technical casuistries & other pedantic details (1/2)



LIF neuron model



Izhikevich neuron model

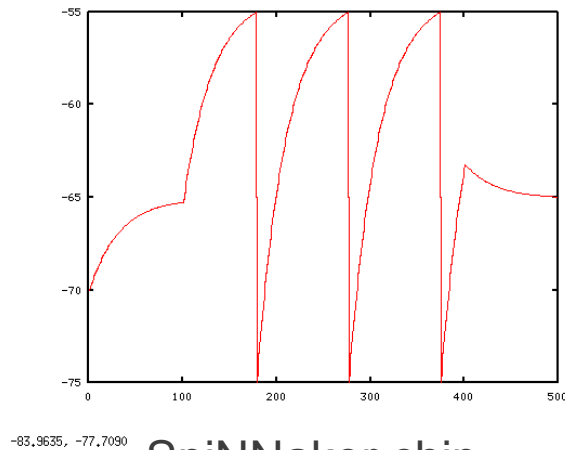


Raster plot of a 500 neuron randomly generated network

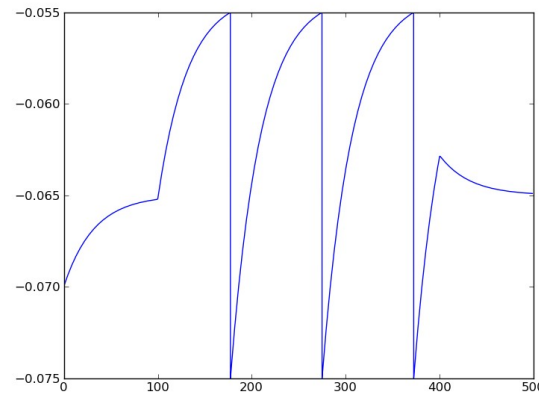
172.495, 277.9723

Technical casuistries & other pedantic details (2/2)

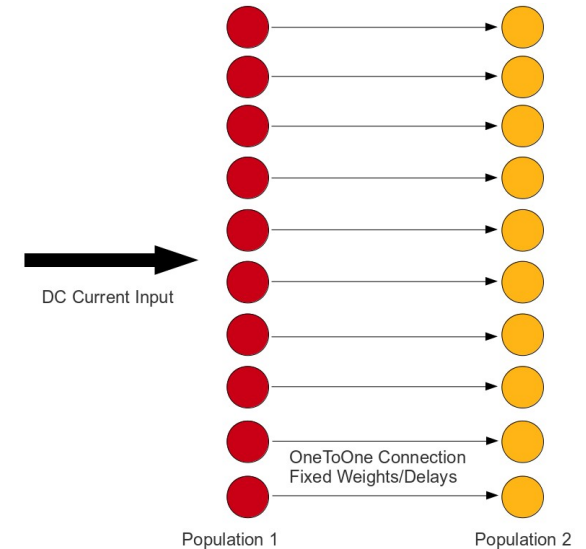
Example 1 – PyNN escription of a LIF neuron network.
Two simulations:



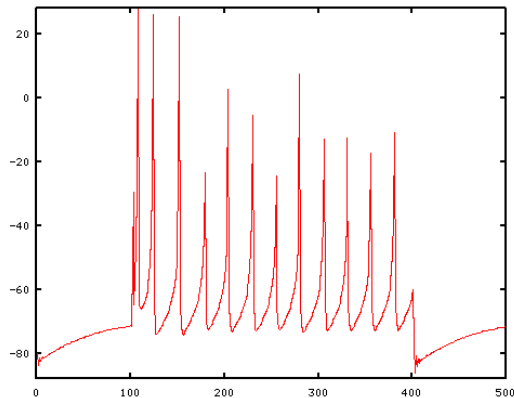
SpiNNaker chip



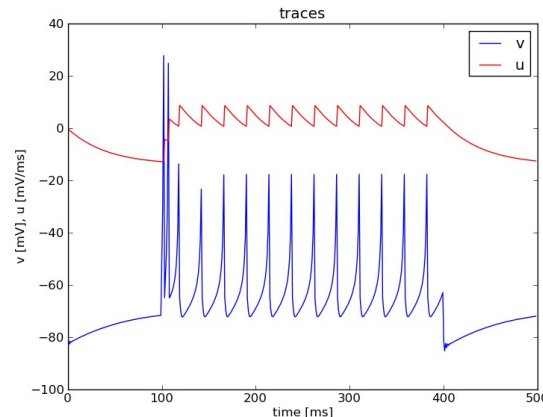
Brian simulator



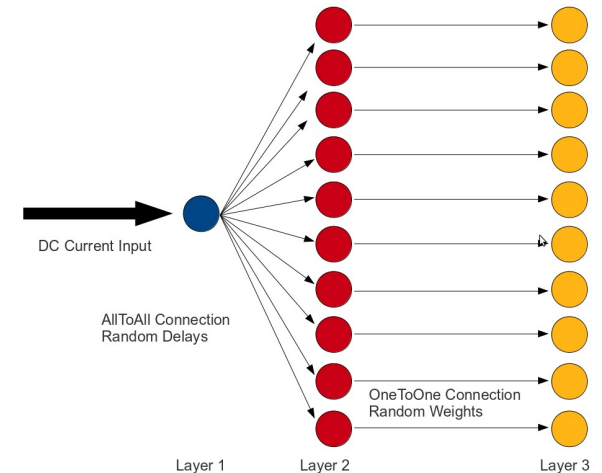
Example 2 – PyNN Description of an Izhikevich neuron network.
Two simulations:



SpiNNaker chip



Brian simulator



THANK YOU!!!



For more information, visit:

<http://capocaccia.ethz.ch/capo/wiki/2010/spinn10>