

# CNS\*2009 Workshop: Python in neuroscience

**When:** July 22nd-23rd, 2009

**Location:** Hotel Hilton at the Gendarmenmarkt, CNS\*2009 Workshop room #3

## Abstract

Python is rapidly becoming the de facto standard language for systems integration. Python has a large user and developer-base external to the neuroscience community, and a vast module library that facilitates rapid and maintainable development of complex and intricate systems.

In this workshop, we highlight efforts to develop Python modules for the domain of neuroscience software and neuroinformatics. Moreover, we seek to provide a representative overview of existing mature Python modules for neuroscience and neuroinformatics, to demonstrate a critical mass and show that Python is an appropriate choice of interpreter interface for future neuroscience software development.

There will be a tutorial+demo session where visitors with laptops can install and get introduced and acquainted with the various Python software.

Many of these efforts have been featured recently in a special issue of Frontiers in Neuroinformatics on "[Python in neuroscience](#)".

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## Program

### July 22nd, 2009

<b>9:00 – 9:15</b>	Opening remarks from the organizers	
<b>9:15 – 10:30</b>	<i>Low-latency virtual reality for neuroscience: realtime tracking and computer graphics using the Motmot and Vision Egg packages</i>	Andrew Straw (Bioengineering, Engineering and Applied Science, California Institute of Technology, USA)
	<i>Modular toolkit for Data Processing (MDP): a Python data processing framework</i>	Tiziano Zito (Bernstein Center for Computational Neuroscience, Germany)
	<i>Controlling neuroConstruct with Python for large scale simulation management and analysis</i>	Padraig Gleeson (UCL, UK)
<b>10:30 – 11:00</b>	<b>Coffee</b>	
<b>11:00 – 11:50</b>	<i>PyDSTool: an integrated simulation, modeling and analysis package for dynamical systems</i>	Robert Clewley (Georgia State University, USA)
	<i>Brian: a simulator for spiking neural networks in Python</i>	Romain Brette (ENS, Paris)
<b>11:50 – 12:20</b>	<b>Lightning talks</b>	
	<i>Topographica</i>	James Bednar

	<i>MIIND</i>	Marc de Kamps
	<i>FINDV1 - fitting individual neural data from V1</i>	Stephen Coombes
<b>12:20 – 2:00</b>	<b>Break for lunch</b>	
<b>2:00 – 2:50</b>	<i>NEURON+Python</i>	Michael Hines (Yale, USA)
	<i>PyNEST: a convenient interface to the NEST simulator</i>	Jochen Eppler (Honda Research Institute, Offenbach, Germany)
<b>2:50 – 3:20</b>	<b>Coffee + Tutorial &amp; Demo setup</b>	
<b>3:20 – 6:00</b>	<b>Parallel Tutorials &amp; Demos</b>	
	<i>Python+Scipy+Numpy+Matplotlib and Brian Tutorial</i>	Dan Goodman (ENS, Paris)

## July 23rd, 2009

<b>9:15 – 10:30</b>	<i>PyNN: a common interface for neuronal network simulators</i>	Andrew Davison (UNIC, CNRS, France)
	<i>NeuroTools</i>	Pierre Yger (UNIC, CNRS, France)
	<i>DataViewer3D: An open-source, cross-platform multi-modal neuroimaging data visualization tool built on Python</i>	Andre Gouws (University of York, UK)
<b>10:30 – 11:00</b>	<b>Coffee</b>	
<b>11:00 – 11:30</b>	<b>Lightning talks</b>	
	<i>BCI</i>	Bastian Venthur
	<i>BcPy2000</i>	Jeremy Hill
<b>11:30 – 12:30</b>	<b>Discussion:</b> "Where is Python convergence taking us?"	Moderation panel: <b>tba.</b>
<b>12:30 – 2:00</b>	<b>Break for lunch</b>	
<b>2:00 – 3:30</b>	<b>Parallel Tutorials &amp; Demos</b>	
	<i>VisionEgg</i>	Andrew Straw
	<i>NEURON+Python</i>	Michael Hines, Andrew Davison, Eilif Muller
	<i>PyDSTool</i>	Robert Clewley (Georgia State University, USA)
	<i>MDP</i>	Tiziano Zito
<b>3:30 – 4:00</b>	<b>Coffee Break</b>	
<b>4:00 – 6:00</b>	<b>Parallel Tutorials &amp; Demos</b>	
	<i>PyNN</i>	Andrew Davison
	<i>NeuroTools</i>	Pierre Yger, Jens Kremkow
	<i>PyNEST</i>	Jochen Eppler
	<i>DataViewer3D</i>	Andre Gouws

**Organizers:** Eilif Muller<sup>1</sup>, Jens Kremkow<sup>2,3</sup>, Andrew Davison<sup>4</sup>, Romain Brette<sup>5</sup>

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