

More than batteries included: NeuroDebian

Michael Hanke^{1,2,3} and Yaroslav O. Halchenko^{1,2}

¹*Center for Cognitive Neuroscience, Dartmouth College, Hanover, New Hampshire, USA*

²*Department of Psychological and Brain Sciences, Dartmouth College, Hanover, New Hampshire, USA*

³*Department of Experimental Psychology, University of Magdeburg, Magdeburg, Germany*

*NeuroDebian*¹ is a turnkey software platform for nearly all aspects of the neuroscientific research process. It helps researchers to cope with the increasing complexity of software systems in neuroscience research. Being embedded in the *Debian*² project, it provides a comprehensive suite of readily usable and fully integrated software through a robust deployment infrastructure. Improved system integration and interoperability of research tools frees researchers from the burden of tedious installation or upgrade procedures. That, in turn, positively affects their availability for actual research activities, as well as their motivation to test new analysis tools and stay connected with the latest methodological developments in the field.

Over the past six years, NeuroDebian developers have integrated neuroscience-related software into the Debian operating system – adding to the world’s largest archive of integrated free and open source software (FOSS). Debian, with its release record of almost two decades, well-known stability, a unique democratic and open development model, provides an ideal foundation for a reliable and versatile research platform. As a result, the latest release Debian 6.0 “squeeze” offers more out-of-the-box support for neuroscience research than any other operating system³.

Currently, NeuroDebian offers substantial coverage of MRI-related neuroimaging software, and is expanding its support for psychophysics, electrophysiology and computational neuroscience research. In addition to making software available in the Debian archive, NeuroDebian offers a ready-to-use repository with packages tailored and built for several recent Debian and Ubuntu releases – with repository mirrors in a number of countries. This service is used by hundreds of labs worldwide and serves as the basis of several live-cd and virtual environments, further tailored to various purposes.

This presentation introduces the services offered by the NeuroDebian project, such as backport facilities, package snapshots, communication channels, and virtual machine based neuroscience research environments, that help researchers deal with common day-to-day problems, as well as help improving transparency and reproducibility of research. It showcases how NeuroDebian can facilitate neuroscience software development and deployment – offering benefits for users and developers that reach far beyond the Debian operating system. This includes avoiding licensing problems that hinder adoption of software, identifying and preventing unnecessary dependencies on particular versions of software that make deployment difficult, and continuous integrating testing of whole analysis environments. Complementing the EuroSciPy talk “π’s in Debian or Scientific Debian: NumPy, SciPy and beyond”⁴ by Yaroslav Halchenko, this presentation provides an overview of the status of Python-based neuroscience software in NeuroDebian, and how it benefits from integration into a larger context of neuroscience research software.

¹<http://neuro.debian.net>

²<http://www.debian.org>

³<http://www.debian.org/releases/stable/i386/release-notes/ch-whats-new.en.html#id401109>

⁴<http://www.euroscipy.org/talk/4379>