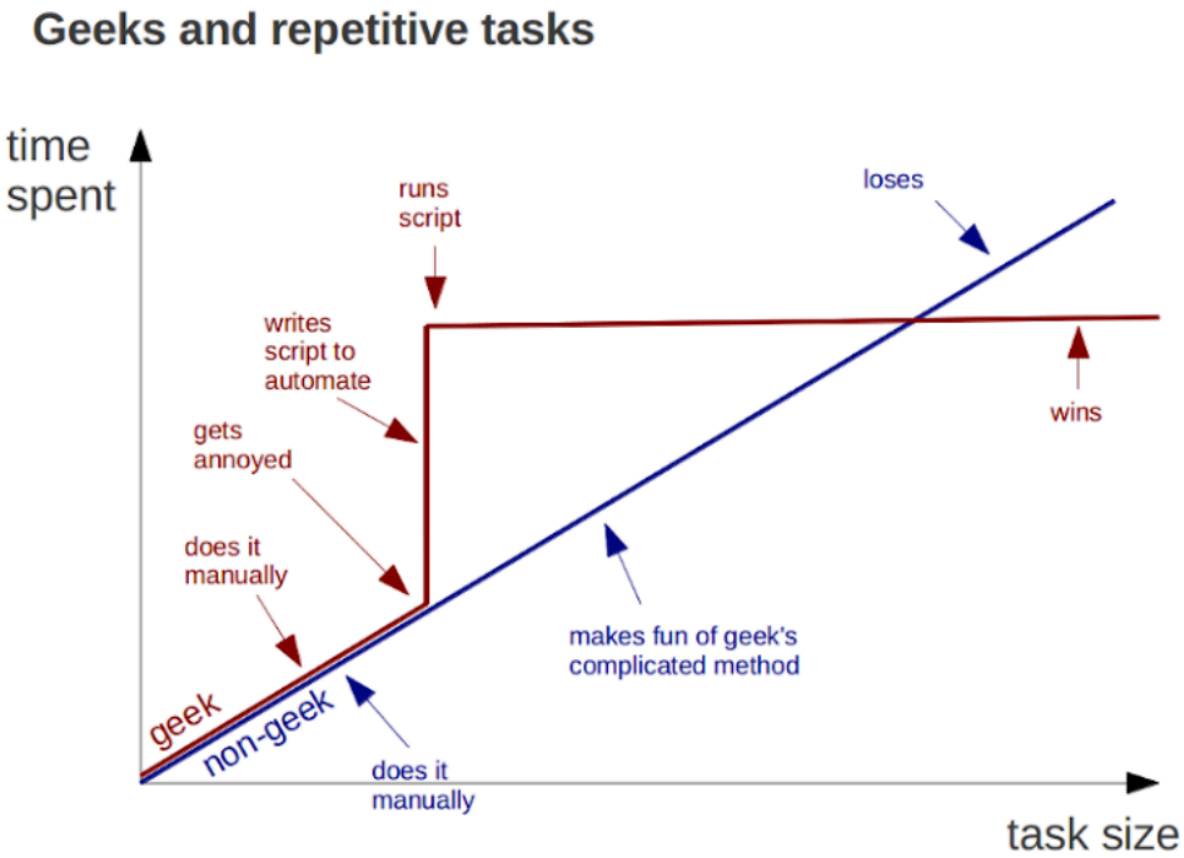
NeuroDebian - a computing platform for neuro- (and open) science

March 2, 2017, 1.30 - 2.00 pm

Speaker: Jessica Oschwald

PhD student University Research Priority Program (URPP) Dynamics of Healthy Aging

Let's be geeks!



http://neuro.debian.net/_files/Halchenko_OpenIsNotEnough_UCAR2013.pdf

Common problems with research software

- Too many different platforms
- Small developer workforce
- Insufficient quality assurance
- 'Death by PhD' phenomeon

Solution: Consolidate efforts in one open platform that ensures easy access, installation and maintenance

NeuroDebian

Integrated, community-driven computing platform for neuroscience

- In accordance with Free and Open-Source Software (FOSS) standards
- Originally small project to provide software for neuroscientists
- Today includes packages for many disciplines: e.g. electrophysiology, neural modeling, psychophysics, distributed computing
- Uses Debian operating system (OS)

➢ **Strategy:** help scientists and developers integrate their software into Debian OS and make use of its advantages!

Debian: a flavor of Linux

Advantages of the Debian operating system

Open, accessible and reproducible

- Free and open to anyone (‚do-ocracy')
- Easy and fast installing/upgrading (takes only minutes!)
- Strict open standards
- Largest software archive (>29'000 pieces)
- Works on any major operating system (→ Virtual Machine)
- Standardization of binary and source distributions → reproducibility

NeuroDebian developers

Yaroslav Halchenko, Center for Cognitive Neuroscience, Dartmouth

Michael Hanke, University of Magdeburg, Germany

Their vision

"Together we can create an integrated computing platform that we all freely share, to exchange data and ideas, implemented as software, that we all maintain collaboratively" (Halchenko & Hanke, 2012, p. 3)

Find all the details here....

frontiers in NEUROINFORMATICS

OPINION ARTICLE
published: 29 June 2012
doi: 10.3389/fninf.2012.00022

Open is not enough. Let's take the next step: an integrated, community-driven computing platform for neuroscience

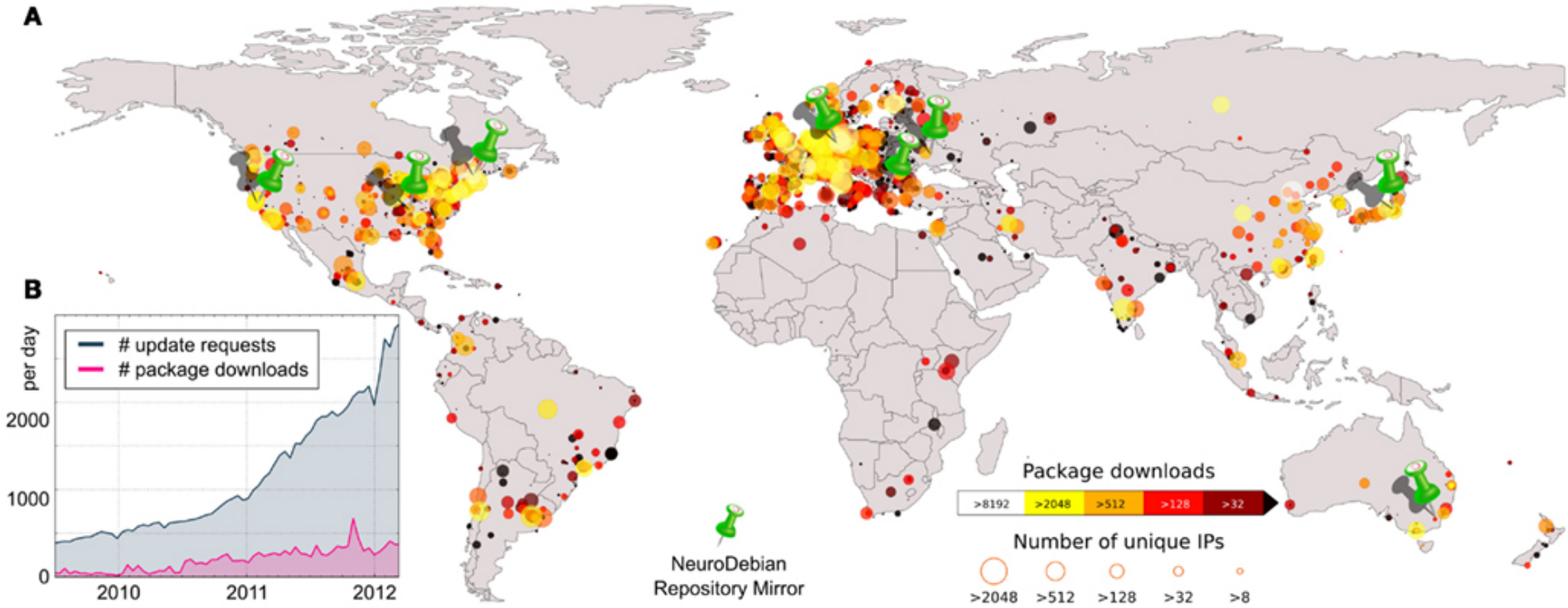
Yaroslav O. Halchenko[1,2,3]*† and Michael Hanke[4,5,3]*†

[1] *Center for Cognitive Neuroscience, Dartmouth College, Hanover, NH, USA*
[2] *Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH, USA*
[3] *Debian Project, http://www.debian.org*
[4] *Department of Experimental Psychology, Otto-von-Guericke University, Magdeburg, Germany*
[5] *Center for Behavioral Brain Sciences, Magdeburg, Germany*
**Correspondence: yaroslav.o.halchenko@onerussian.com; michael.hanke@gmail.com*

Edited by:
Andrew P. Davison, Centre National de la Recherche Scientifique, France
†Yaroslav O. Halchenko and Michael Hanke have contributed equally to this work.

http://journal.frontiersin.org/article/10.3389/fninf.2012.00022/full

NeuroDebian users worldwide



http://journal.frontiersin.org/article/10.3389/fninf.2012.00022/full

NeuroDebian packages

By field

- *Packages for Distributed Computing*
- *Packages for Electrophysiology*
- *Packages for Magnetic Reasonance Imaging*
- *Packages for Modeling of neural systems*
- *Packages for Neuroscience Datasets*
- *Packages for Neuroscience Education*
- *Packages for Psychophysics*

e.g. AFNI, FSL, PyMVPA, nipype

➢ Besides individual packages: NeuroDebian offers a complete Virtual Machine (VM) that can be used on any major operating system

How can you benefit from NeuroDebian?

- Free ✓
- Install it on any hardware ✓
- Save your time ✓
- Platform for teaching ('take away environment') ✓
- Efficient collaboration ✓
- Multi-modal / multidisciplinary projects ✓
- Longitudinal studies ✓
- Contribute to open science and reproducibility ✓

Practical demonstration

Install NeuroDebian http://neuro.debian.net

Update the whole system

```
sudo apt-get update && apt-get upgrade
```

Install Packages

FSL `sudo apt-get install fsl-complete`

PyMVPA `sudo apt-get install python-mvpa2`

Get support

`neurodebian-users@lists.alioth.debian.org`

References

Halchenko, Y. O., & Hanke, M. (2012). Open is not enough. Let's take the next step: an integrated, community-driven computing platform for neuroscience. *Frontiers in Neuroinformatics*, *6*, 1–4. doi: 10.3389/fninf.2012.00022

http://neuro.debian.net

https://wiki.debian.org/NeuroDebian