

Yaroslav O. Halchenko

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Education

Ph.D. student. GPA 4.00

**Computer Science Dept,
NJIT (NJ Institute of Technology)**

January 2003 – May 2009

Newark NJ, USA

PhD degree in Computer Science awarded in May 2009.

MS student. GPA 4.00

**Computer Science Dept,
UNM (University of New Mexico)**

January 2000 – December 2003

Albuquerque NM, USA

MS degree in Computer Science after successfully passing MS qualification examination in August 2003.

Graduate student

**Computer Systems Dept,
VSTU (Vinnitsia State Technical University)**

1998 – 1999

Vinnitsia, Ukraine

Master's degree in Laser and Optoelectronic Engineering.

Student

**Computer Systems Dept,
VSTU**

1994 – 1998

Vinnitsia, Ukraine

Bachelor's degree in Laser and Optoelectronic Engineering with honors.

High School Student

**Physical and Mathematical Gymnasia
No.17**

1992 – 1994

Vinnitsia, Ukraine

Graduated with honors.

High School Student

Physical and Mathematical Correspondence School

1991 – 1994

Moscow Physical Engineering Institute

High School Student

Aerospace Correspondence School "Soyuz"

1991 – 1992

Moscow Physical Engineering Institute

Work Experience

Postdoctoral Fellow

**Dept of Psychological and Brain Sciences,
Dartmouth College**

May 2009 – present

Hanover NH, USA

Working with Dr. James V. Haxby. Projects: visual objects processing, multimodal and multivariate analysis for functional neural data: <http://www.pymvpa.org>, software deployment and reproducibility in cognitive neuroscience: <http://neuro.debian.net>.

Research Assistant
Mind/Brain RUMBA Laboratory
<http://www.rumba.rutgers.edu>

August 2002 – May 2009
Psych. Department, Rutgers-Newark NJ., USA

Projects:

- Predictive decoding of the neural data from different imaging modalities (e.g. EEG, fMRI) to gain better understanding of perception (e.g. auditory) and cognitive (e.g. category specific processing) neuroscientific problems
- Graphical modeling of functional brain organization
- Fusion of multiple functional brain imaging modalities (fMRI/EEG) to gain better understanding and localization of underlying neural activity

Debian Developer
Open Source Community (Debian GNU/Linux)
<http://www.debian.org>

December 2005 – present

Packaging and maintenance of FOSS software within the Debian GNU/Linux OS.

GNU/Linux Cluster System Administrator
Rutgers-Newark

September 2005 – present
Psych. Department, Rutgers-Newark NJ., USA

Deployment and maintenance of 27 node high availability AMD Opteron based cluster.

Research Assistant
Brain and Computation Laboratory
<http://www-bcl.cs.unm.edu>

June 2000 – July 2002
CS Dept., UNM Albuquerque NM, USA

Have been working on deploying ICA (Independent Component Analysis) techniques in processing of MEG (Magnetoencephalography) data which are part of the DreamMon project.

Teaching Assistant
CS Dept., UNM

January 2000 – May 2000
Albuquerque NM, USA

Teaching Assistant for “Intermediate Programming” (CS251) class with Prof. David Ackley (CS Department, UNM).

Research Assistant
VSTU

1993 – 1997
Vinnitsya, Ukraine

Part-time designer and software developer of the system for diagnostics of mobile segments in vertebral column, which later was utilized in national hospitals of Ukraine.

Software Developer
Liana Company

April 1996 – October 1997
Vinnitsya, Ukraine

Part-time software developer of automated system in Planned-Economic Department of Vinnytsia Chemical Plant (Himprom).

Scholarship Awards

- The International Scientific Fund Representatives in Ukrainian Studentship Award. **1998-1999**
- The International Soros Science Educational Program (ISSEP) Studentship Award. **1995-1996**

Main Awards and Honors

- Ukraine** **1996**
The Academy of Sciences of Ukraine **awarded the work** “Information-Measuring System With Optical Transformation Biomedical Information”.
- Bucharest, Romania** **October 1995**
6th place in ACM South-Eastern European Regional Programming Contest. **1st place** at VSTU.
- Kharkiv, Ukraine** **April 1995**
4th place in Physics Olympiad among Colleges and Universities of Ukraine. **1st place** at VSTU.
- Vinnitsya, Ukraine** **1994**
1st place in the Regional Contest for Programming.
- Ukraine** **1994**
1st place in Competition among teenagers for the best computer program. Became a **Member of the Ukraine Small Academy of Sciences**.
- Vinnitsya, Ukraine** **1993**
1st place for the best solution of physical and mathematical problems in the competition organized by Moscow Physical Engineering Institute.
- Vinnitsya, Ukraine** **1993**
3rd place in the Regional Physics Olympiad.

Projects and Contributions

- Cofounder and core developer of NeuroDebian project: <http://neuro.debian.net>
- Cofounder and core developer of PyMVPA (Python Multivariate Pattern Analysis): <http://www.pymvpa.org>
- Contributor to various FOSS projects: <http://www.ohloh.net/accounts/yarikoptic>
- Debian developer overseeing more than 20 packages: fail2ban, impressive, pyepl, scikits-learn, etc.

Skills

Programming:

- More than 10 years of experience with software development under Linux OS: C/C++(g++), Python, bash/awk/sed, CVS/SVN/git, gdb/pydb/bashdb/ddd, valgrind, gprof, etc.

- Past (1992-2000) working experience in software development on MS DOS, Windows 3.x and Windows 9x platforms: Turbo Pascal, VBA (Visual Basic for Applications), and Inprise Delphi
- Past (2000-2002) experience with Java (Java Swing, RMI, JDBC, Exemplar project: <http://apsp.onerussian.com>), logic and functional languages: prolog, SML, elisp
- Past (2000-2004) working experience in database design: DBE, ODBC, Postgresql, MySQL APIs
- Strong background in object-oriented programming methods and Design Patterns
- Experienced writer of high quality code. Coding practice includes thorough code reviews, detecting defects, careful debugging of own code and code of others, profiling, versioning, unit-, doc- and regression testing, and other techniques

Administration:

- Centralized systems configuration: cfengine2
- Linux-based (GNU Debian) network communication and monitoring: TCP/IP, SNMP, IPTables (shorewall), DNS (bind), NAT, NFS, SSH, SMTP (exim v4), Ganglia, NTop, etc.
- Web-server administration: apache/apache2
- Resource management and scheduling of HP/HA computing clusters: torque, maui, SGE
- Virtualized (vserver, VirtualBox) and automated (FAI) deployment solutions
- Hardware: hardware and software RAIDs, network adapters and switches (interface bonding), APCs, desktop or rack-mounted servers; benchmarking, configuration optimization, maintenance and troubleshooting

Web Design and Others:

- Basic web-designer skills: HTML, CSS, PHP
- Strong background in graphical design and desktop publishing: \LaTeX , Inkscape, GIMP, OpenOffice.org
- Excellent knowledge of mathematics and numerical methods.

Selected Publications

- *M. Hanke, Y.O. Halchenko, J.V. Haxby, S. Pollmann.* “Statistical learning analysis in neuroscience: aiming for transparency” *Frontiers in Neuroscience*, 4, 2010.
- *Y.O. Halchenko, M. Hanke.* “Advancing Neuroimaging Research with Predictive Multivariate Pattern Analysis (MVPA)” *The Neuromorphic Engineer*, May 2010.
- *J. Ramsey, S.J. Hanson, C. Hanson, Y.O. Halchenko, R.A. Poldrack, C. Glymour.* “Six Problems for Causal Inference from fMRI” *Neuroimage*, 49(2), 2010.
- *R.A. Poldrack, Y.O. Halchenko, S.J. Hanson.* “Decoding the large-scale structure of brain function by classifying mental states across individuals” *Psychological Science*, 2009.
- *M. Hanke, Y.O. Halchenko, P.B. Sederberg, M. Hughes.* “The PyMVPA Manual” Available online at <http://www.pymvpa.org/PyMVPA-Manual.pdf>.
- *M. Hanke, Y.O. Halchenko, P.B. Sederberg, E. Olivetti, I. Frund, J.W. Rieger, C.S. Herrmann, S.J. Hanson, S. Pollmann.* “PyMVPA: a unifying approach to the analysis of neuroscientific data” *Frontiers in Neuroinformatics*, 3(3), 2009.

- *M. Hanke, Y.O. Halchenko, P.B. Sederberg, S.J. Hanson, J.V. Haxby, S. Pollmann.* “PyMVPA: A Python toolbox for multivariate pattern analysis of fMRI data” *Neuroinformatics*, 7(1):37-53, March 2009.
- *S.J. Hanson, Y.O. Halchenko.* “Brain reading using full brain Support Vector Machines for object recognition: There is no face identification area” *Neural Computation*, 20(2):486-503, February 2008.
- *S.J. Hanson, C. Hanson, Y.O. Halchenko, T. Matsuka, A. Zaimi.* “Bottom-up and top-down brain functional connectivity underlying comprehension of everyday visual action” *Brain Structure and Function*, 212(3-4):231-44, 2007.
- *S.J. Hanson, D. Rebbecki, C. Hanson, Y.O. Halchenko.* “Dense mode clustering in brain maps” *Magnetic Resonance Imaging*, 25(9):1249-1262, 2007.
- *Y.O. Halchenko, S.J. Hanson, B.A. Pearlmuter.* “Multimodal Integration: fMRI, MRI, EEG, MEG (Chapter 8)” *Advanced Image Processing in Magnetic Resonance Imaging*, Dekker, book series on Signal Processing and Communications, p. 223-265 ISBN 0824725425, 2005.
- *Y.O. Halchenko, B.A. Pearlmuter, S.J. Hanson, A. Zaimi.* “Fusion of Functional Brain Imaging Modalities via Linear Programming” Presented at NFSI-2003. Chieti Italy September 2003.
- *L.I. Timchenko, Y.F. Kutaev, A.A. Gertsy, Y.O. Halchenko.* “Method for image coordinate definition on extended laser paths” *Optoelectronic and Hybrid Optical/Digital Systems for Image and Signal Processing*, Published June 2000, Volume 4148-19.
- *L.I. Timchenko, Y.F. Kutaev, A.A. Gertsy, Y.O. Halchenko, M.A. Grudin.* “Approach to parallel-hierarchical network learning for real-time image sequence recognition” *The International Symposium on Intelligent Systems and Advanced Manufacturing*, 19-22 September 1999, Massachusetts USA. Volume 3836-09.
- *L.I. Timchenko, Y. Kutaev, A. Gertsy, L. Zagoruiko, Y.O. Halchenko.* “Pre-processing of extended laser path images” *Industrial Lasers and Inspection*, EOS/SPIE International Symposium. Munich, 14-18 June 1999. Volume 3827-26.
- *L.I. Tymchenko, J. Scorukova, S. Markov, Y.O. Halchenko.* “Image Segmentation on the basis of spatial connected features” *Visnyk VSTU*, No. 4, pp. 39-43, Ukraine, in Ukrainian, 1998.
- *T.B. Martynyuk, A.V. Kogemiako, Y.O. Halchenko.* “The model of associative processor for numerical data sorting” *Visnyk VSTU*. No. 2, pp. 19-23, Ukraine, in Ukrainian, 1997.
- *L.I. Tymchenko, J. Scorukova, J. Kutaev, S. Markov, T. Martynyuk, Y.O. Halchenko.* “Method Spatial Connected Segmentation of Images” *The Third All-Ukrainian International Conference Ukrobraz*, Kijiv, Ukraine, November 26-30, 1996.

Recent Talks

- *M. Hanke and Y.O. Halchenko.* “Debian: The ultimate platform for neuroimaging research.” *Deb-Conf10*, New York, USA 2010, http://penta.debconf.org/dc10_schedule/events/571.en.html.
- *M. Hanke, Y.O. Halchenko.* “PyMVPA: A Python toolbox for machine-learning-based fMRI data analysis” *PyMVPA Workshop*, Dartmouth College, February 2010.
- *Y.O. Halchenko, M. Hanke.* “An ecosystem of neuroimaging, statistical learning, and open-source software to make research more efficient, more open, and more fun” *Dartmouth College*, November 2009.

- *Y.O. Halchenko, M. Hanke.* “Reliable Decoding of Neural Data” Berkeley, March 2009.
- *Y.O. Halchenko, M. Hanke.* “PyMVPA: Fathom Brain Function through Multivariate Pattern Analysis” University of Hawaii at Manoa, March 2009.

Recent Poster Presentations

- *S.S. Ghosh, C.D. Burns, D. Clark, K. Gorgolewski, Y.O. Halchenko, C. Madison, R.F. Tungaraza, K.J. Millman.* “Nipype: Opensource platform for unified and replicable interaction with existing neuroimaging tools” Annual Meeting of the Organization for Human Brain Mapping, June 2010.
- *Y.O. Halchenko, M. Hanke, J.V. Haxby, S.J. Hanson, S. Pollmann.* “Neural activity localization by predictive mapping between imaging modalities” Cognitive Neuroscience Society Annual Meeting, March 2010.
- *M. Hanke, Y.O. Halchenko, J.V. Haxby, S.J. Hanson, S. Pollmann.* “Improving efficiency in cognitive neuroscience research with NeuroDebian” Cognitive Neuroscience Society Annual Meeting, March 2010.

Professional Activities

- Active reviewer for IEEE Transactions on Signal Processing, Neural Computation, and Neurocomputing
- Active reviewed under supervision of the advisor for Neuroreport, Neuroimage, NIPS, etc.
- Active mentor for new Debian contributors

Languages

Fluent in Russian, Ukrainian and English.

References

Prof. Barak A. Pearlmutter
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 National University of Ireland, Maynooth
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