

## Yaroslav O. Halchenko

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### Education

*Ph.D. student. GPA 4.00*

**Computer Science Dept,**

**NJIT (NJ Institute of Technology)**

Transferred graduate Ph.D. program student. Defended PhD dissertation in March 2009.

**January 2003 – May 2009**

Newark NJ, USA

*MS student. GPA 4.00*

**Computer Science Dept,**

**UNM (University of New Mexico)**

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

**January 2000 – December 2003**

Albuquerque NM, USA

*Graduate student*

**Computer Systems Dept,**

**VSTU (Vinnytsia State Technical)**

Master's degree in Laser and Optoelectronic Engineering.

**1998 – 1999**

Vinnytsia, Ukraine

*Student*

**Computer Systems Dept, VSTU**

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

**1994 – 1998**

Vinnytsia, Ukraine

*High School Student*

**Physical and Mathematical Gymnasia No.17**

Graduated with honors.

**1992 – 1994**

Vinnytsia, Ukraine

*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**

Working with Dr. James V. Haxby. Projects: visual objects processing, multimodal and multivariate analysis for functional neural data.

**May 2009 – present**

Hanover NH, USA

*Research Assistant*

**Mind/Brain RUMBA Laboratory**

<http://www.rumba.rutgers.edu>

Projects of interest:

- Predictive decoding of the neural data from different imaging modalities (e.g. EEG, fMRI) to gain better

**August 2002 – May 2009**

Psych. Department, Rutgers-Newark NJ., USA

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*

**December 2005 – present**

**Open Source Community (Debian GNU/Linux)**

<http://people.debian.org/~yoh>

Maintenance of FOSS software within the Debian GNU/Linux OS. Participation in “Experimental Psychology” Debian project.

*GNU/Linux Cluster System Administrator*

**September 2005 – present**

**Rutgers-Newark** [http:](http://www.rumba.rutgers.edu/ravana.php)

Psych. Department, Rutgers-Newark NJ., USA

[//www.rumba.rutgers.edu/ravana.php](http://www.rumba.rutgers.edu/ravana.php)

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

*Research Assistant*

**June 2000 – July 2002**

**Brain and Computation Laboratory**

CS Dept., UNM Albuquerque NM, USA

<http://www-bcl.cs.unm.edu>

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*

**January 2000 – May 2000**

**CS Dept., UNM**

Albuquerque NM, USA

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

*Research Assistant*

**1993 – 1997**

**VSTU**

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*

**April 1996 – October 1997**

**Liana Company**

Vinnitsya, Ukraine

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

## Scholarship Awards

**1998-1999**

The International Scientific Fund Representatives in Ukrainian Studentship Award.

**1995-1996**

The International Soros Science Educational Program (ISSEP) Studentship Award.

## 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.

## Computer Skills

### Programming:

- More than 9 years of experience with software development under Linux OS: C/C++(g++), python, bash/awk/sed, CVS/SVN/git, gdb/pydb/bashdb, valgrind, ddd, gprof, etc
- One of the leading developers of PyMVPA project (<http://www.pymvpa.org>)
- Knowledge of logic and functional languages: prolog, SML, elisp
- Basic knowledge of Java programming: Java Swing, RMI, JDBC
- Software developer with over 6 years of experience on DOS, Windows 3.x and Windows 9x platforms (*Have written a number of small tools and a couple of projects. Refer to “Work Experience”*)
- Experienced with VBA (Visual Basic for Applications) and Inprise Delphi
- Database design. Past working experience with 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, 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
- Databases: postgresql, mysql
- Resource management and scheduling of HP/HA computing clusters: torque, maui
- Virtualized hosting: vserver
- Automated systems deployment: FAI (Fully Automated Install of Debian OS)
- 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:

- Web-designer skills: PHP with HTML, CSS
- Strong background in graphical design and desktop publishing: L<sup>A</sup>T<sub>E</sub>X , GIMP, Visio, OpenOffice.org, Microsoft Office etc
- Excellent knowledge of mathematics and numerical methods for computer aided design. Strong knowledge of MathLab and MathCad. Basic knowledge of S-Plus and R
- Working experience with Electronic Design Automation: PCAD and Visio

## OpenSource:

- Debian package maintainer (<http://people.debian.org/~yoh>) of more than 20 packages: fail2ban, lush, keynote, pyepl, pyode, etc
- Contributor to fail2ban, GTKPod, djvu, etc
- Cofounder of ExpPsy (Experimental Psychology) Debian packaging project
- Coauthor PyMVPA (Python Multivariate Pattern Analysis framework <http://www.pymvpa.org>)

## Selected Publications/Presentations

- *M. Hanke, Y.O. Halchenko, J.V. Haxby, and S. Pollmann.* “Statistical learning analysis in neuroscience: aiming for transparency” *Frontiers in Neuroscience*, accepted.
- *Y.O. Halchenko, M. Hanke.* “Advancing Neuroimaging Research with Predictive Multivariate Pattern Analysis (MVPA)” *The Neuromorphic Engineer*, in submission.
- *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. Pearlmutter.* “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. Pearlmutter, 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.

Other presentations of my projects have been presented to research visitors and at local conferences

### 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

**Languages**

Fluent in Russian, Ukrainian and English.

## References

Prof Barak A. Pearlmutter, Ph.D.  
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Additional references available upon request.