

Adam DeConinck

HPC Systems Engineer

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Summary Engineer with experience in scientific research, data analysis, high-performance computing and cloud computing.

Education

2007–2010 **M.S. Materials Science and Engineering**, *University of Illinois*, Urbana, IL.

2003–2007 **B.S. Physics**, *Michigan Technological University*, Houghton, MI.

Minors: Mathematics, Electronic Materials

Professional Experience

2010–present **Systems Applications Engineer**, *R Systems NA, Inc.*, Champaign, IL.

Sysadmin and developer at a provider of high performance computing “Infrastructure as a Service” and consulting. Role focused on optimizing customer applications, building customized compute clusters, and providing a high level of user support. ([link](#))

- Design/deploy/support HPC deployments on R Systems hardware, including
 - 2300-core cluster (RHEL 5.6, SLURM, 130 TB Lustre) for Formula One team
 - 1000-core Windows HPC cluster for global reinsurance company
 - Several 500-1000 core Linux deployments for meteorology, CFD and geophysics
 - Many smaller deployments with diverse configurations and applications
- Automation of compute cluster deployments, and of common domain configurations
- Front-line user support for running and developing on HPC clusters
- Analyze user applications and tune configuration for best performance
- Build web and command-line interfaces for better usability of HPC applications
- Monitor and coordinate with user communities and open-source projects

2007–2010 **Graduate Researcher**, *University of Illinois*, Urbana, IL.

Materials Science research with lab-bench and computational components in the Lewis Research Group ([link](#))

- Microfluidic fabrication and image analysis software for a novel genotyping technique
- Data analysis and image processing for 3D-printed microvascular network
- Fabrication, 3D imaging and analysis of dynamics and self-assembly of colloidal particles
- Awarded National Defense Science and Engineering Graduate Fellowship

2006–2007 **Physics Learning Coach**, *Michigan Technological University*, Houghton, MI.

On-demand and scheduled tutoring sessions in a University tutoring center

2006 **Contractor**, *Dow Corning Corporation*, Midland, MI.

Assembled and programmed an automated test station to perform electrical characterization and optical analysis of prototype OLED devices

2005 **Teaching Assistant**, *Michigan Technological University*, Houghton, MI.

Prepared, presented and graded two sections of an introductory mechanics lab

2005 **Undergraduate Researcher**, *Michigan State University*, East Lansing, MI.

NSF REU: Analysis of the atomic structure of colossal magnetoresistive materials

2004–2005 **Undergraduate Researcher**, *Michigan Technological University*, Houghton, MI.

Fabricated carbon nanotubes for field emission studies

Open Source

- Warewulf HPC provisioning and management system from Berkeley National Lab.
Built and maintain official project test cluster; Scripts for building and managing provisioning images; Plugins for API helper functions and HTTP API
- ImageJ Plugins Mathematical morphology plugins for the popular image-processing software.
Implemented dilate, erode, and derivatives; Otsu thresholding; Arbitrary structuring elements

Technologies and Skills

Programming Languages

- Python Scientific programming (NumPy/SciPy), webapps, system administration
- Perl System administration and web programming
- Java Image processing (ImageJ) and Hadoop
- Matlab Image processing and statistical analysis
- Fortran Scientific programming including finite-difference simulations (classroom experience)
- C Some parallel programming with MPI (classroom and HPC debugging at R Systems)

System Administration

- Support Front-line support for users with variable HPC background and unique needs
- Provisioning Linux: Perceus, Warewulf, Cobbler, Kickstart; Windows: HPC Pack, WDS
- Configuration Central configuration management with Puppet or Chef (Linux), or Group Policy (Windows)
- Deployment Build packages (rpm/deb/msi) for custom application deployment

High Performance Computing

- Management SLURM, Torque, Maui, PBS Professional, Grid Engine, Hadoop
- Storage BlueArc NAS; Custom NFS servers; Parallel filesystems including Lustre, HDFS, PVFS2
- Networking Deploy and manage Infiniband and Ethernet networks in clustered environments
- Cloud Deployment of HPC clusters on Amazon EC2, stand-alone and burst configurations

Selected Publications

- invited talk DeConinck and Scheel. "Introduction to High Performance Computing", *Society of Actuaries Life & Annuity Symposium* (2011)
- paper Zhang, DeConinck, Slimmer, Doyle, Lewis, and Nuzzo. "Genotyping by Alkaline Dehybridization Using Graphically Encoded Particles", *Chemistry: A European Journal* (2011) DOI: 10.1002/chem.201002848
- paper Wu, DeConinck, Lewis, and White. "Omnidirectional Printing of 3D Microvascular Networks Using Direct-Write Assembly", *Advanced Materials* (2011) DOI: 10.1002/adma.201004625
- paper Bozin, Schmidt, DeConinck, Paglia, Mitchell, Chatterji, Radaelli, Proffen and Billinge. "Understanding the Insulating Phase in Colossal Magnetoresistance Manganites", *Physical Review Letters* (2007) DOI: 10.1103/PhysRevLett.98.137203
- others *Full list at <http://www.ajdecon.org/pubs>*

Other Interests

- Security Have assisted in configuring secured HPC environments; Studying GSEC certification materials
- Fencing Épée and foil fencer since 2003, including President of MTU Fencing Club 2005–2007
- Trumpet Trumpeter (14+ years), focusing on small-group jazz and classical music