
Curriculum Vitae
John C. Vernaleo, Ph.D.

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Employment

2014-Present | Senior Developer, Company 0, LLC

Company 0 is a security and open source focused company which continued several of the projects started by Conformal Systems and is the primary developer of the Decred cryptocurrency (<https://decred.org>).

- Build and release manager for Decred.
- Developer on Decred daemon, wallet, and test code in Golang.
- One of two developers on the Decred Web wallet in NodeJS.
- Developer on the Decred GPU mining software (in Golang and OpenCL).
- Coordinate infrastructure and work for initial public release of Decred code and blockchain.
- Developer on btcsuite alternative bitcoin client in Golang.
- Developer on several internal projects in Golang.
- Work on Docker images for Decred software testing and node setup.

2012-2014 | Senior Developer, Conformal Systems, LLC

Conformal Systems is a security and open source focused company primarily known for Cyphertite, a secure, cloud-based backup service and Coinvoice, a Bitcoin based payment processor.

- Developer for Bitcoin trading software in Golang, focusing on exchange APIs, test, and performance.
- Backend developer for Coinvoice payment processor (Golang) including rest API for external use.
- Frontend developer for Coinvoice (HTML and Javascript).
- Developer for Bitcoin exchange software focusing on a control language and interpreter (written on Golang).
- One of the original developers of btcsuite, an alternative bitcoin implementation in Golang, focused on the json-rpc protocol and the rpc server.
- Developer on Cyphertite (C) focusing on cross-platform compatibility issues.
- Developer on Xombrero, a small, fast web browser using the WebKit layout engine.

2012 | Senior Software Engineer (Analytics), kikin Inc.

kikin produces a touch-based contextual search API for iOS and Android.

- Build tools to help study user interaction with kikin's services.
- Build manager android OS integration work.
- Interim QA lead.
- Work on AWS infrastructure.
- Port code and AOSP to new devices provided by manufacturers for testing.

2011-2012 | Data Scientist, Octopart

Octopart is a specialized search engine for electronic parts and components.

- Web analytics for the Octopart web page.
- Build an analytics environment using Python, MongoDB, and MapReduce for Octopart's search engine.
- Work on AWS infrastructure.

2010-2011 | Research Associate, Ada Investment Management

Ada is a systematic trading firm focused on alternative products and novel data sources.

- Primary developer supporting and enhancing the internal software platform for financial modeling and trading (Python, Stata and R).
- Analyze and enhancing the financial models.
- Support and enhance the overall IT infrastructure.
- Manage the version control system for the firm (using git).

2008-2011 | Scientific Programmer at NASA/Goddard, working for Wyle IS

The Fermi/GLAST Science Support Center provides scientific support for NASA's Fermi Gamma Ray Space Telescope) as Goddard Space Flight Center.

From 2010-2011 I provided a low level of support for my previous projects on a part-time basis.

- Programmer on the Fermi ScienceTools (analysis tools for Fermi data in C++ and Python)
- Spacecraft pointing simulator and data binning tool.
- Code portability, code validation, and testing.
- Maintain and enhance the Fermi LAT dataserver. This is where the astronomical community can search and download the entire dataset for the main instrument on the Fermi telescope (<http://fermi.gsfc.nasa.gov/cgi-bin/ssc/LAT/LATDataQuery.cgi>).

Education

2001-2008 | Ph.D., Astronomy, University of Maryland, College Park; Advisor: Dr. Christopher Reynolds
Title: *Hydrodynamic Models of AGN Feedback in Cooling Core Clusters*

2001-2003 | M.S. Astronomy, University of Maryland, College Park

1996-2001 | B.S. Physics and Astronomy, University of Rochester, Cum Laude, with Distinction

1996-2001 | B.A. Philosophy, University of Rochester, Cum Laude, with High Distinction

Computer Experience

2013-Present | **Bitrig** <http://bitrig.org>. Bitrig is a fork of OpenBSD, focused on modernizing several aspects of the OS and development process. I mainly focus on the Bitrig ports system, overall system testing, and the ARM port.

2004-Present | **Webmaster for** <http://stallman.org> - personal page of the founder of the GNU project, Richard Stallman. Along with various technical parts, I manage the group of volunteers that handle the day to day updating of the webpage.

2007-Present | **Member W3C's HTML working group.**

Languages: Go, Python, PERL, C/C++, FORTRAN 77/95, MySQL, Postgres, MongoDB, JavaScript, NodeJS, OpenCL, IDL, C-shell scripting, Bash scripting, parallel programming with MPI, XML, JSON, Java, R, and Stata.

Systems: UNIX: GNU/Linux (esp. Ubuntu/Debian, Redhat/Fedora, Mandrake/Mandriva, and Gentoo), OpenBSD/Bitrig, Mac OS X, Windows using Cygwin, and Solaris.

Virtualization and containers: VirtualBox, Qemu, Docker, AWS, Digital Ocean, and Arpnetworks in both production and test environments.

Miscellaneous: Hydrodynamic modeling; Setup and use of the condor batch processing system and BEOWULF cluster setup; Modifying and creating styles and classes for the \LaTeX typesetting system; 3D visualization tools; Setup and maintenance of various wikis; Data formats such as HDF4/5 and FITS; Web applications with and without frameworks; Version control with cvs, subversion, and git. Experience with CMMI. MarketQA and Bloomberg for downloading and processing financial datasets. Modifying and building Android and Android CTS. Secure coding on UNIX systems. Macports (I maintain several small ports). Bitcoin and other Cryptocurrencies.

Experience consuming, developing, and designing REST APIs.

Professional Interests

- ARM and similar computer platforms
- BSD UNIX and Linux development
- High-Performance and Numerical Computing
- Data Handling, Analysis, and Visualization

- Hydrodynamics and Magneto-Hydrodynamics
- Cryptocurrencies

Research Experience

2002-2008 | Graduate Research Assistant, Department of Astronomy, University of Maryland, College Park

1999-2001 | Undergraduate Research Assistant, Department of Physics and Astronomy Near Infrared Astronomy Lab, University of Rochester

1998-1999 | Undergraduate Research Assistant, Department of Physics and Astronomy, University of Rochester

Teaching Experience

2004-2007 | Guest Lecture (Advanced UNIX) for Graduate Introduction to Research (Astro 695), University of Maryland, College Park

2003 | Teaching Assistant, Introduction to Astronomy for Non-Majors (Astro 100), University of Maryland, College Park

2001-2002 | Teaching Assistant, Observational Astronomy (Astro 310), University of Maryland, College Park

2001-2003 | Teaching Assistant, Introduction to Astrophysics I and II (Astro 120 and 121), University of Maryland, College Park

Honors and Awards

2010 | NASA/Goddard Astrophysics Science Division Peer Award

2000 | Sigma Pi Sigma, National Physics Honors Society

1996-2001 | Dean's List, University of Rochester

Misc. Professional Activities

2009-2010 | Answer questions for Goddard's *Ask an Astrophysicist* website.

2006-2008 | Graduate Student Representative on UMD Astronomy Department Computer Committee.

2005-2006 | Organized weekly UMD astronomy theory group lunchtime talks.

Publications

Invited and Public Talks

1. *Bitrig ports: BSD ports, packages, and Uncommon Operating Systems*, AsiaBSDCon, March 2016

2. *Bitrig - NYC*BUG Meeting*, presentation on the Bitrig operating system at the NYC BSD User Group Meeting, May 2015
3. *btcd - BitDevs Meetup*, presentation on btcd software at BitDevs Meetup, April, 2014
4. *bsdtalk238 - Voices from NYCBSDCon 2014*, guest on BSD talk podcast, February, 2014
5. *Looking Back to the Future*, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, December 16, 2009
6. *Astronomical Data's Long Road Home*, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, June 30, 2009
7. *Hydrodynamic Models of AGN Feedback on Cooling Cluster Gas*, Galaxy and Black Hole Evolution: Towards a Unified View November 30, 2007, Tucson, Arizona
8. *Hydro Simulations: How We Can Model Fluids to Understand Astronomy.*, University of Maryland Observatory Open House, October 5, 2007

Publications in Refereed Journals

9. *Energetic impact of jet inflated cocoons in relaxed galaxy clusters*, **J. C. Vernaleo**, C. S. Reynolds, 2007, ApJ, 671, 171
10. *AGN Feedback and Cooling Flows: The Failure of Simple Hydrodynamical Models*, **J. C. Vernaleo**, C. S. Reynolds, 2006, ApJ, 645, 83
11. *Buoyant radio lobes in a viscous intracluster medium*, C. S. Reynolds, B. McKernan, A. C. Fabian, J. M. Stone, **J. C. Vernaleo**, 2005, MNRAS, 357, 242

Conference Abstracts and Proceedings

12. *Bitrig ports: BSD ports, packages, and Uncommon Operating Systems*, **J. C. Vernaleo** AsiaBSDCon, 2016
13. *The Fermi Science Support Center*, **J. C. Vernaleo**, Fermi Science Support Center, 2009, AAS Meeting 213, #468.04
14. *Hydrodynamic Models of AGN Feedback in Cooling Core Clusters*, **J. C. Vernaleo**, C. S. Reynolds, 2006, AAS/AAPT Joint Meeting 2007, AAS Meeting 209, #113.01
15. *AGN Heating of Cooling Flow Clusters: Problems with 3D Hydrodynamic Models*, **J. C. Vernaleo**, C. S. Reynolds, Proceedings of "Heating vs. Cooling in Galaxies and Clusters of Galaxies", August 2006 - Garching, Germany
16. *AGN Heating of Cooling Flow Clusters: The Failure of Simple Hydrodynamical Models*, **J. C. Vernaleo**, C. S. Reynolds, 2005, AAS Meeting 207, #55.03; Bulletin of the American Astronomical Society, 37, 1239
17. *Radio Galaxy Heating of Cooling Flow Clusters: Problems with Pure Hydrodynamic Models*, **J. C. Vernaleo**, C. S. Reynolds, 2005, 6 years of Science with Chandra Symposium