
Curriculum Vitae
John C. Vernaleo, Ph.D.

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Employment

2018-Present | Senior Blockchain Engineer, Bloq

Bloq provides enterprise support for blockchain products along with development of new blockchain and cryptocurrency technology.

- Develop, package, and support Bloq enterprise software.
- Provide general support and development to various blockchain projects.
- Improve internal and external documentation.
- Work on build system and software portability for SpaceChainOS.

2017-2018 | Smartpool

Short term consulting work to support and enhance a smart contract/go client code based mining pool.

2017 | Lead Blockchain Engineer, MadHive

MadHive is an ad-tech/data management company working on blockchain solutions.

- Evaluate and provide feedback on new blockchain related technology.
- Design the initial version of blockchain-based GDPR solution product.
- Provide guidance and support for planned ERC20 Token.

2014-2017 | 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 of the Decred Web wallet in NodeJS.

- One of two developers of the cross-platform Decred GUI wallet using Electron.
- 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.
- Build and design 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 for 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) at 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

2017-Present | **Pinkcoin** (Developer and board member). Pinkcoin is a hybrid proof-of-work/proof-of-stake cryptocurrency with an added focus on charitable donations.

2013-2017 | **Bitrig** <http://bitrig.org>. Bitrig was 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 <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, Vagrant, AWS, Digital Ocean, Vultr, and Arpnetworks in both production and test environments.

Miscellaneous: Hydrodynamic modeling; Debian packaging; Setup and use of batch processing systems 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; Ethereum/Solidity development; Hyperledger Fabric.

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