Curriculum Vitae John C. Vernaleo, Ph.D.

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https://github.com/jcvernaleo

Employment

2018-Present | Vice President of Engineering, Bloq/Hemi Labs

2018-2020 | Senior Blockchain Engineer, 2020-2022 | Principal Engineer, 2022-Present | Vice President of Engineering

Bloq provides infrastructure focused products in the cryptocurrency and web3 areas.

Hemi Labs is a subsidiary of Bloq building the Hemi Network, a Layer 2 blockchain enabling enhanced interactivity between Bitcoin and Ethereum.

Current:

- Hands on leading of several of the engineering teams building the Hemi Network (Go and Typescript) and associated infrastructure (Kubernetes).
- Lead engineering team to maintain and enhance Bloq staking.
- Lead internal token custody workstreams.

Previous:

- Lead Development of Bloq's staking offerings (NodeJS, docker).
- Provide engineering guidance for Bloq outreach and communication functions.
- Lead developer of the cryptocurrency nodes portion of Bloq's cloud offerings (NodeJS and docker).
- Lead developer of Bloq's Orchid VPN offering (docker, openvpn).
- Manage pool operations for vesper.finance.
- Act as engineering representative for Bloq sales meetings.
- Principal Engineer for VesperAI, an AI driven tokenized resource management engine (Python).
- Provide general support and development for various internal blockchain projects (Golang, Python, NodeJS).
- Improve internal and external documentation.
- Work on build system and software portability for SpaceChainOS along with the SPC ERC20 token and general software engineering support.
- Develop, package, and support Bloq Enterprise software (C++, Python, shell).

2017-2018 | Smartpool

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

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 (Golang).
- One of two developers of the Decred Web wallet (NodeJS).
- One of two developers of the cross-platform Decred GUI wallet using Electron.
- Developer on the Decred GPU mining software (Golang and OpenCL).
- Coordinate infrastructure and work for initial public release of Decred code and blockchain.
- Maintain and enhance the btcsuite bitcoin client (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, focusing on exchange APIs, test, and performance (Golang).
- 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 (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 focusing on cross-platform compatibility issues (C).
- Developer on Xombrero, a small, fast web browser using the WebKit layout engine (C).

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

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

- Build tools to help study user interaction with kikin's services (Python, Perl).
- 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 (Java).

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 was 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

2022-present | **Safe Guardians** Member of the initial batch of contributors chosen to help with governance for the Gnosis Safe Multisig ecosystem.

2020-present | **btcd** Maintainer for open source btcd bitcoin daemon (was one of the original authors of the project in 2013).

2018-2022 | **Baeond** (Advisor). Baeond is a cryptocurrency based card game.

2017-2019 | **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 focused on the Bitrig ports system, overall system testing, and the ARM port.

2004-2019 | 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: Docker, VirtualBox, Qemu, 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 IATEX 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.

J. C. Vernaleo

Professional Interests

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

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

 $2004\text{-}2007\mid$ 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 (Astro120 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. Blockchain in Low Earth Orbit, Off Earth Atlas, University College London, June 2023
- 2. Bitrig ports: BSD ports, packages, and Uncommon Operating Systems, AsiaBSDCon, March 2016
- Bitrig NYC*BUG Meeting, presentation on the Bitrig operating system at the NYC BSD User Group Meeting, May 2015
- 4. btcd BitDevs Meetup, presentation on btcd software at BitDevs Meetup, April, 2014
- 5. bsdtalk238 Voices from NYCBSDCon 2014, guest on BSD talk podcast, February, 2014
- Looking Back to the Future, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, December 16, 2009
- 7. Astronomical Data's Long Road Home, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, June 30, 2009
- 8. Hydrodynamic Models of AGN Feedback on Cooling Cluster Gas, Galaxy and Black Hole Evolution: Towards a Unified View November 30, 2007, Tucson, Arizona
- 9. Hydro Simulations: How We Can Model Fluids to Understand Astronomy., University of Maryland Observatory Open House, October 5, 2007

Publications in Refereed Journals

- The Utilization of Blockchain for Data Security for the Chronic Pain Physician, J. Kruger, J. C. Vernaleo, D. Mann, M. Lang, J. Pokuri, Z. Marshall, CL Robinson, 2024 Curr Pain Headache Rep, Oct 28
- 11. Energetic impact of jet inflated cocoons in relaxed galaxy clusters, J. C. Vernaleo, C. S. Reynolds, 2007, ApJ, 671, 171
- AGN Feedback and Cooling Flows: The Failure of Simple Hydrodynamical Models, J. C. Vernaleo, C. S. Reynolds, 2006, ApJ, 645, 83
- 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

- 14. Bitrig ports: BSD ports, packages, and Uncommon Operating Systems, J. C. Vernaleo AsiaBSDCon, 2016
- The Fermi Science Support Center, J. C. Vernaleo, Fermi Science Support Center, 2009, AAS Meeting 213, #468.04
- 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

- 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
- 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
- 19. 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