Omar Padron
Head of Production Engineering at Proprietary Trading Firm omarpadronmail@gmail.com

Education

Kean University	M.S. Computational Mathematics	2011
Kean University	B.S. Science and Technology	2010

Professional and Research Experience

Head of Production Engineering — Private Proprietary Trading Firm — Since May 2024

- Developed Production Engineering as a distinct discipline within the firm. Established best practices for automating software deployments and managing algorithmic trading systems in production environments. Built a new team from the ground-up dedicated to supporting high-frequency trading systems covering several asset classes and operating across diverse markets.
- Develops automated health monitoring, alerting, and troubleshooting tools. Resolves production issues in real-time. Leads new architectural initiatives aimed at improving system scalability, reliability, and observability.
- Built and operates data acquisition, ingestion, and processing system delivering daily market data covering equities, futures, options, fixed income, and crypto. Reliably delivers hundreds of terabytes a day to research teams.
- Developed Cloud-Based infrastructure supporting custom generative and agentic AI systems.
- Technologies:
  - Infrastructure as Code (Ansible, Terraform)
  - Version control (git)
  - CI/CD (Jenkins, Team City)
  - Containers (Docker, Podman, Kubernetes)
  - Automation/Programming (Python, Linux Shell, C/C++)
  - Build tools (make, cmake, ninja)
  - SQL/NoSQL Databases (Postgres, mongodb, redis)

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Principal Systems Engineer Citadel Sept. 2022 – June 2023

- At Citadel, I worked in the Foundational Software group. My work focused on software supply chain optimization; sourcing, building, testing, and delivering extremely complex software stacks supporting trade ops across the entire firm. I also maximized value by architecting and refining the internal processes by which my team and I supplied these stacks.
- CMake, Jenkins, GCP, Linux, Bash, Python, Docker

Staff R&D Engineer Kitware 2015 – 2022

- Worked as a consultant for multiple customer organizations using software and cloud technologies to address challenges in data analytics, automation, configuration management, and DevOps.

- Featured Projects
  - Spack (https://spack.io)
    - Acted as technical lead for infrastructure. Developed and deployed a fully-automated build process producing optimized, signed binaries for over 500 open-source software packages.
    - Deployed and operated a suite of user-facing and internal support services on cloud infrastructure. Integrated AWS services, Kubernetes, and Gitlab CI. Developed GitHub integration enabling custom CI/CD capabilities on pull requests.
    - Developed core Spack improvements supporting binary package installation and remote repository management.
  - SMART (https://www.iarpa.gov/research-programs/smart)
    - Consulted on automation and security challenges. Used cloud resources and Kubernetes to orchestrate and execute complex, data-intensive workflows.
  - VIGILANT (https://sbir.gov/sbirsearch/detail/1159805)
    - Developed custom build tooling. Migrated from monolithic to incremental build process with caching. Reduced build times from hours to minutes. Improved analyst productivity and added CI/CD processes.

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Research Programmer National Center for Supercomputing Applications 2012 – 2015

- Delivered specialized application support for the Blue Waters Sustained Petascale Supercomputer (13+ PFLOPS Cray XE6/XK7 SMP System)
- Delivered technical consulting services to open science users. Debugged/ported/profiled/optimized massive-scale parallel applications
- Developed/Administered technical training and documentation to system users and broader scientific community. Lead technical support efforts for education and training allocations.
- Presented original research in extreme-scale system monitoring/analysis/visualization tools.
- Deployed/Maintained open source software stack, particularly scientific python software
- Technologies:
  - Version control (CVS, subversion, git)
  - SQL Databases (mysql, postgresql)
  - Automation/Programming (Python, Linux Shell, C/C++)
  - Distributed & Shared memory parallel computing (MPI, OpenMP, OpenACC)
  - GPU acceleration (CUDA, OpenACC)
  - Build tools (make, cmake, ninja, autotools)

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Publications and Presentations

2016 *Scikit-build: A build system generator for CPython C extensions.,* with J. C. Fillion-Robin, M. McCormick, and M. Smolens. In Proceedings of the 2016 PyData Carolinas annual conference (PyData Carolinas 2016). Research Triangle Park, NC. September, 2016.

2014 *TorusVis: a topology data visualization tool,* with D. Semeraro. In Proceedings of the second annual meeting of the Cray User Group (CUG 2014). Lugano, Switzerland. May, 2014.

2012 *Applications of computational science: data intensive computing for student projects*,
with J. Howard and P. Morreale. IEEE J. Comp. Sci. Eng. March, 2012.

2010 *Improving numerical reproducibility and stability in large-scale numerical simulations on GPUs*. with S. Patel, P. Saponaro, and M. Taufer. In Proceedings of the 2010 IEEE International Symposium on Parallel and Distributed Processing (IPDPS 2010). Atlanta, GA. April, 2010.

2008 *Simulation of nonlinear mode-locked lasers in fiber optic medium*. Poster presentation with C. Costoso and E. Farnum. In Proceedings of the 2008 SIAM conference on Frontiers in Applied and Computational Mathematics (FACM 2008). Newark, NJ. May, 2008.

2007 *System dynamics markup language: an open source modeling toolkit*. Poster presentation with M. Agresta, R. Berns, and D. Joiner. In Proceedings of the 2007 SIAM conference on Frontiers in Applied and Computational Mathematics (FACM 2007). Newark, NJ. May, 2007

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Awards and Honors

2019 R&D 100 Award in the "Software/Services" category. Awarded for the project *Spack: A Package Manager for HPC Systems*.

R&D 100: SILVER special recognition award in the "Market Disruptor -- Services" category. Awarded for the project *Spack: A Package Manager for HPC Systems*.

2014 First Place in the Intel Parallel Universe Computing Challenge. ($26,000 donation to the National Center for Women and Information Technology)

2013 NCSA Technical Achievement Award: in recognition of outstanding performance and achievement. Urbana, IL

2011 University of Delaware Computer and Information Sciences Research Fellowship.

2010 Kean University Presidential Scholar's Award. University-funded research grant ($4,000)

2009 Dr. Robert M. Panoff Award. Awarded for the project *Improving numerical reproducibility and stability in large-scale numerical simulations on GPUs* at the SC 2009. Portland, OR. November, 2009.

Distributed Research Experience for Undergraduates Research Award. NSF-funded award ($6,000 and travel).

2008 Supercomputing Undergraduate Program at Maine Research Award. NSF-funded award ($4,800 and travel).

Best Undergraduate Presentation Award. New Jersey Academy of Science. April, 2008.
Kean University Students Partnering with Faculty Research Award. University-funded research award sponsored by the Kean University Office of the President ($3,500).