Timothy Gross

Tim Gross is a technical leader and engineer with 17+ years experience building and managing software systems and the teams that operate them. As a software developer and operations engineer, he's demonstrated an ability to hunt down and solve technical process problems in organizations of all sizes. His previous experience with building secure architectural environments in the telecommunications and pharmaceutical manufacturing industries has inspired a focus on building rock-solid information systems, and given him the broad base of practical knowledge to make those systems align with business needs.

Professional Experience

Machinist Labs, LLC
Founder   *May 2018-Present*
DevOps consultancy providing coaching and training to software engineering teams.

Density, Inc.
Principal DevOps Engineer   *Sept 2017-May 2018*
Led infrastructure and security projects for a IoT machine vision product.
- Designed and built continuous integration and deployment based on Nomad. Included embedded system builds, machine learning model verification pipeline, and web APIs; allowed for self-service build, test, and production deployment by developers without operations assistance.
- Designed and built infrastructure to support embedded system: telemetry collection, over-the-air updates, and PKI supporting secure boot.
- Hardened and audited AWS infrastructure. Reduced AWS costs by >50%.

Joyent, Inc.   *Sept 2015-Sept 2017*
Product Manager / Engineer
Led development of open source applications for Joyent's Triton cloud infrastructure. Played a key role in shaping Joyent's product strategy, collaborated with open source communities, and worked in parallel with marketing and business development. Joyent was acquired by Samsung in July 2016.
- Created and led open source development of ContainerPilot, which is now used as a core orchestration component at HBC/Saks Fifth Avenue, Jet.com, HomeAway, Optoro, and Samsung's S-Cloud (among others). This project was a key factor in landing enterprise sales prospects in 2015-2016.
- Developed the Autopilot Pattern, a design pattern for self-assembling containerized applications. Created example applications, CI/testing tooling, and documentation.
- Led community engagement around the Autopilot Pattern: frequent speaker at conferences, gave workshops, wrote blog posts, and supported sales team discussions with prospects.

DramaFever, Corp.   *April 2012-August 2015*
Director of DevOps
Headed operations team for a online television network: 10+ million global users for DramaFever as well as AMC's SundanceNow DocClub and Shudder sites. Led design and development of entire AWS infrastructure and CI/CD systems, from early stages through $100M acquisition by SoftBank.
- Hired and led a team of 6 operations and IT engineers. Mentored junior developers in designing for operability, reliability, testability, and performance.
- Managed Akamai vendor relationship, negotiating a $1 million annual savings in last contract.

- Designed and managed deployment of Docker in production (this project is a featured case study in the O'Reilly book *Effective DevOps* by Katherine Daniels and Jennifer Davis).
- Redesigned and rewrote analytic ingest pipeline to offload 70% of the load of the main application stack (20-30K req/s), reducing total operating cost of analytics to <5% of the original design.
- Redesigned and rewrote user video history service. Offloaded 20% of the latency of the core application, and reduced operating cost of DynamoDB provisioning by 50%.
- Redesigned and rewrote hot-path Django views to reduce p99 latency by >70%.
- Managed production deployments and incident response, and triaged critical bugs and performance problems. Led after-action reviews and documented findings, including translating the technical results to the senior leadership team.
- Designed and executed projects for site reliability and performance, including open source contributions to django-cache-machine and goamz, caching, and query plan improvements.
- Managed migration of AWS infrastructure from EC2 classic to VPC.
- Implemented monitoring and alerts with Graphite, statsd, collectd, and AWS Cloudwatch.
- Managed build-out of continuous-integration infrastructure w/ Docker, Fabric, Chef, and Jenkins.
- Designed internal networking for build-out of 50+ person NY headquarters, provisioned Internet connectivity, coordinated networking and electrical contractors.

LegalCap, Inc.   *Feb 2011-August 2011*
Lead Developer (Contractor)
Designed and developed prototype document management application targeting the legal profession. Prototyped backend Django application for document and template editing, account management and document conversion from user-uploaded content. Built initial development infrastructure.

The Burns Group (Burns Engineering, Inc.)   *Feb 2009-April 2012*
Software Developer, System Administrator, BIM Manager
In-house developer supporting engineering teams. Software deployments, purchasing, and network support. Expert in Building Information Modeling, the use of information-rich 3D models to replace traditional engineering project delivery methods. Select projects:
- Developed plugins for AutoCAD, in C#, that performed fuzzy comparison of engineering contract drawings vs prototypes to detect and automatically correct defects.
- Developed in-process functional and unit-testing framework for AutoCAD plugins, in C#.
- Developed scripting engine for engineering calculations. C# with embedded IronPython interpreter. Ported existing mechanical/electrical engineering algorithms from GW Basic.
- Trained engineers in the use of BIM software, and managers in the operational and liability impact of BIM. Acted as in-house consultant on CAD/BIM best-practices and automation opportunities.
- Wrote white-papers for management on BIM and concepts of Integrated Project Delivery, standards documentation, illustrated tutorials, and Frequently Asked Questions documents.

Francis Cauffman Architects
CAD/BIM Manager   *Feb 2001-Nov 2008*
Developed software tools for construction estimation and planning tasks. Developed and implemented 3D CAD and Building Information Modeling training program, including classroom sessions, consulting to project teams, and large pilot project. Developed prototyping system for rapid-delivery of CAD production.

Project Architectural Designer   *Apr 1999-Aug 2008*
Designed and delivered several mid-size ($10-20 million) projects in high-assurance industries including

medical devices manufacturing, controlled-substance drug manufacture, biosafety laboratories, clean-room manufacturing, and telecommunications. Supervised 1-3 designers depending on project size.

Highlighted Skills

Languages	Expert in Python and Go. Professional experience in AutoLisp, .NET (C#, IronPython). Dabbler in C, Erlang, Elixir, Javascript, Rust.
Environments	Deep expertise in Linux, AWS, Joyent's Triton, Nomad. Proficient with GCP, Windows.
Technologies	Docker, Ansible, Chef, Fabric, Django, Flask, gevent, CherryPy, webapp2, SqlAlchemy, Nginx, Celery, Consul, MySQL, Postgres, DynamoDB, ELK, Graphite, Prometheus, firewalls and security appliances (SonicWall NSA, Cisco ASA), IDS/IPS
Proficiencies	DevOps, CI/CD, distributed application design, networking, performance analysis

Community   see a full listing at: *http://0x74696d.com/community/*

Lead organizer of PhillyPUG   *Feb 2014 - Jan 2015*

Selected Talks and Workshops

They Didn't Stop to Think If They Should (Ethics in ML and IoT)	*DevOpsDays MSP, Jul 2018*
Debugging Python in Production	*PhillyPUG, Nov 2017*
Designing Self-Orchestrating Applications (workshop)	*DevOpsDays MSP, Jul 2017*
Software Defined Culture (opening keynote)	*DevOpsDays Philly, Oct 2016*
Full Stack Metrics w/ Native Prometheus Support	*PromCon Berlin, Aug 2016*
Stateful Applications on Autopilot	*Velocity Santa Clara, Jun 2016*
Docker Production Training (workshop)	*ContainerSummit LV, May 2016*
Framework Agnostic Discovery	*KubeCon, Nov 2015*
Introduction to Python for Women and Their Friends [workshop]	*PhillyPUG, Mar 2013, Aug 2014*
Docker: Training Wheels for LXC	*Philly DevOps, Feb 2014*
Falling In and Out of Love with DynamoDB	*PhillyDB, Jun 2013*
Django Data-Access Antipatterns	*PhillyPUG, May 2013*

Selected Open Source Contributions   see also *https://github.com/tgross*

PLAN tools: permissions proof-of-concept and security threat modelling
ContainerPilot: init system for self-assembling containerized applications
Autopilot Pattern blueprints: design patterns for applications using ContainerPilot
goamz: completed support for DynamoDB map datatype
django-cache-machine: Contributions for multiple-database support and testing
GilaMon: WMI-based monitoring agent for Windows DFSR

Education

Drexel University   *2012-2014*
Major in Computing & Security Technology (Security concentration).

Philadelphia University   *1995-1998*
Major in architecture, minor in environmental science. Founded / co-chaired Green Planning Committee.