

PAUL A. DUGAS

SENIOR SOFTWARE ARCHITECT & COMPUTER ENGINEER

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Full-stack computer engineer with 22+ years in the ITS industry with a reputation for being the in-house expert for complicated software and hardware systems and the business processes they support. Passionate about integrating open-source and commercial products to build reliable and maintainable solutions that last.

EXPERIENCE

SERCO, INC., Atlanta, GA & Reston, VA

Oct. 2014 – Present

Capability Center Engineer, Transportation & Infrastructure

Development and maintenance of the maintenance management system supporting the ITS field maintenance service for VaDOT. Custom integration of open-source tools, industry-specific extensions, and commercial software to produce a unique “intelligent” MMS.

Workflow design and implementation in IBM Maximo for NOC and field maintenance business processes. Integration with Nagios NMS to create and update service requests. Nearly eliminated SLA violations due to “lost tickets” and allowed end-device operability levels to exceed 98%.

Added true CMDB features to IMMS for documenting field device configuration and connection details. Developed and integrated custom discovery and audit tools to automate CMDB maintenance.

Solution development for ITS and traffic signal maintenance proposals including cost modeling along with partner scope development and integration schemes.

DUGAS ENTERPRISES LLC, Canton, GA

1997 – 2014

Independent contract engineer and developer for various customers.

Contract ITS Software Developer, Serco VDOT IMMS

May 2013 – Oct. 2014

Redesign and implementation of the ITS monitoring system originally developed for GDOT. Integrated Nagios NMS with Maximo EAM for field device inventory and configuration as well as delivery of fault notifications as service requests. Expanded Nagios plugins to support device types and vendors deployed in Virginia.

IT'S Systems Engineer, Georgia DOT NaviGator ATMS

1997 – 2009

Led team of GDOT IT admins and contract developers. Responsible for administration and ongoing maintenance of NaviGator ATMS addressing numerous software defects and feature requests.

Redesigned and implemented TSS module for traffic data collection interfacing with numerous video, radar, and external detection systems. Implemented “gap filling” schemes for estimating missing samples to provide downstream consumers a complete and consistent traffic model. Included aggregation scheme to efficiently support sample data warehousing requirements.

Redesigned NaviGator's video distribution and switching software to support multiple iterations of the field communication architecture. Supported migration from the original 90's-era star topology to the multi-hub and spoke scheme in the 2000's and then to the network encoder scheme currently employed.

Designed and implemented a novel scheme for ITS field device monitoring using the open-source Nagios NMS and MediaWiki. Provided NOC and field techs with detailed live and historical device status along with documentation of expected configs and connections. Developed numerous custom plugins to check the status and configuration of ITS-specific field devices. Able to automatically reconfigure field devices as they were deployed there by dramatically reducing the labor (and fault rate) for field techs. The system quickly became the master reference for NaviGator field equipment and the primary tool for fault isolation and troubleshooting.

Designed and implemented lobby-kiosk display system for NaviGator. A centralized content generator produced web pages detailing local conditions for hundreds of deployments. Solution included custom embedded Linux system, content sync system, and content players mounted behind flat-panel displays.

Designed and implemented the GeorgiaNavigator.com website providing live traffic maps and video captures to the public. Custom back-end content server collected and aggregated data from internal NaviGator subsystems and published XML data for partners. Custom video capture system interfaced with NaviGator video distribution system.

Implemented GDOT's first successful version control and automated build systems for NaviGator. Migrated from proprietary Sun & HP to open-source tool chains (Subversion, GCC, autotools, make, etc.). Eliminated cumbersome `#ifdef` scheme employed by the TRW team and allowed the same code to build on all platforms.

Contract Developer, Chillergy Systems, Inc.

2000 – 2008

Designed and developed a PalmOS application and HotSync conduit for collecting, verifying, and uploading HVAC chiller performance data. Included C/C++ mobile application, C++ Windows DLL, and ColdFusion API scripts.

TRW, INC., Atlanta, GA

1993 – 1997

ITS Systems Engineer, Georgia DOT ATMS

1993 – 1997

Sole designer and developer for the ATMS video control system software. Included communication server design and driver development for multiple CCTV protocols as well as VCR, matrix switchers, image multiplexers, projectors, and other system components. Innovative drag-and-drop UI for video switching and device control. Multi-instance collaborative video switch control system allowed routing of video through multiple regional control centers.

Designed and developed the GIS map application for the GDOT ATMS. Integrated commercial CAD package with custom UIs and other ATMS subsystems to display live graphical maps depicting the road network, traffic congestion, incidents, and field devices.

Built and integrated TRW's ATMS demonstration system supporting customer education and business development efforts. Demo system also served as the development platform for GDOT's ATMS video system.

Developed procurement specifications for field devices, communication networks, and control center equipment.

PROPAGATION RESEARCH ASSOCIATES, INC., Marietta, GA *2004– Present*

Computer Engineer, Orthogonal Interferometry Radar *2012 - 2014*

Architected and developed reference implementation of PRA’s innovative OI radar data and signal processing system in MATLAB. Developed real-time implementation in C++ using CUDA GPU processing. Included development of drivers and CLI tools for interfacing with Pentek high-speed ADC/DAC hardware.

Contract Computer Engineer, ETEC Data Collection System *2005 -2010*

Developed and maintained data collection software for PRA’s innovative ETEC system. Included Perl modules and programs to interface with Novatel GPS receivers. Deployed and operated hardware and software for a number of field tests of the system.

PRA is half-owned by my wife. I’ve provided gratis IT sysadmin and support services since 2004.

LORAL, INC., Norcross, GA *1992 – 1993*

Co-Op Electrical Engineer, Information Display Systems

Digital logic and circuit design for military cockpit displays. Sysadmin support for CAD systems.

CERTIFIED MEASUREMENTS, INC., Centerville, GA *1988 – 1992*

Co-Op Software Developer, Lab Data Collection Systems

Sole developer for an electronic and dimensional measurement calibration laboratory serving government and commercial customers. Developed software to automate data collection and validation for calibration procedures dramatically reducing error rates and labor costs. Learned GPIB and serial communication protocols for interfacing with test equipment.

Developed novel database and reporting tools for tracing calibration references to masters at NIST. Eliminated hours of labor required to produce standards-traceability reports required by DOD customers.

EDUCATION

BACHELOR OF COMPUTER ENGINEERING *Jun. 1993*

Georgia Institute of Technology, Atlanta GA

Mix of Electrical Engineering and Computer Science. Cooperative Education (co-op) program.

SKILLS

TECHNOLOGIES

- C/C++, Perl, PHP, shell
- Ajax, JSON, HTML5, CSS3
- Javascript, ExtJS, AngularJS
- MySQL, Postres, Oracle, SQL
- Linux & Windows Admin
- NTCIP, SNMP, TCP/IP

TECHNIQUES

- Test-driven development
- Configuration management
- Distributed architectures
- REST/SOAP APIs
- Open-source integration

QUALITIES

- Self-directed and energetic
- Meticulous yet pragmatic
- Excellent speaking skills
- Good writing skills
- Personable, sense of humor
- Married 20+ years, two kids