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RESUME

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SUMMARY OF EXPERIENCE

Applications: Scientific Instrumentation, Medical Diagnosis, Military Battle Simulation, Avionics, Embedded Vehicle Networks, Cellular Communication, Video and Image Effects, Manufacturing Factory Transport, Energy Contract Management, Engineering Design/Draw Tools, Code Generation and Modeling Language Definition

Data and domain modeling expert

Database design expert, especially with PostgreSQL Oracle and PLpgSQL

Python, C, Objective-C, Go, Cocoa, Core Data, Eclipse, Xcode

Unix tools (bash, vim, sed, awk, etc)

CM (cvs, svn, git)

Real-time, distributed, concurrent and embedded and enterprise applications

Executable UML / MDA expert

Author, Speaker, Trainer

BACKEND APPLICATION DEVELOPER / C, PYTHON, POSTGRESQL, EXECUTABLE UML

If you need to organize highly structured data and features into a reliable, well designed system that can run efficiently on an embedded or distributed platform, I'm your guy. Most of my experience is on large, complex systems with a strong background building and translating data and concurrent - asynchronous state models. I ramp up quickly on new technologies, frameworks and protocols, work hard, enjoy working in a team and love solving puzzles and writing code.

KEY SKILLS

Data Engineering - With a strong combination of relational data and object-oriented experience, I am comfortable moving between object-oriented, key-value pair / NoSQL, and a fully normalized relational representations of data.

I am good at identifying and separating stable requirements from volatile requirements so that they can be implemented differently. The stuff that is unlikely to change (rooted in physics, math or core business logic) is nailed down in the system data structure and constraints (when available). Features subject to change are factored into init or run-time configurable parameters. So, basically, I know how to wrangle the data structures/schemas so that a system is correct, yet highly adaptable.

Programming - Python and Stored Procedures in PostgreSQL are my 'hot' languages right now as I am using them on an active open source project. I have a strong interest in using Python to generate as much efficient C, Objective-C and golang Go code as possible (to save time, speed up maintenance and increase reliability).

I have also spent some time developing in Objective-C and Cocoa for Mac OS X, and would thoroughly enjoy doing such work, but it's been a couple of years and I would need a few weeks of ramp-up time to get back up to speed. Since I already understand MVC, event-driven code and object-oriented principles I imagine I would be up and running quickly.

I've written two backend applications entirely from ~60k lines of stored procedure plpgsql (PLpg/SQL) code recently. The open source portion is viewable on GitHub (see reference in upper-left corner above).

I've also written a fair amount of C, mostly for a TCP/IP networking application.

Language Design / Parsing / DSLs - On several of my projects I've needed to define domain specific text and/or graphic languages and then build parsers to process these languages into code or data populations.

Domain Driven Engineering - I have extensive experience dividing large, complex systems into domains (services / aspects) with clean, minimal interfaces. This method of partitioning concentrates common data (as opposed to common functions) so less interfaces and behavior are necessary to keep the data consistent across boundaries.

Concurrency and Synchronization - My experience in a variety of multi-core and distributed environments has taught me to build naturally concurrent system specifications and designs. I develop careful collaboration/threading strategies to ensure reliability. I typically start with a model that breaks a problem down into a maximally concurrent expression and then sequence as necessary in the design. I have published a papers at uml.org on this topic.

Requirements Analysis and UML Modeling - I have *extensive* experience extracting detailed information from diverse subject matter experts (mathematicians, cardiologists, video HW engineers, cellular network engineers, automotive controls experts, etc),

Also, I am skilled at separating essential product requirements (business-science logic) from platform specific implementation details. This is a critical skill for designing products that can be deployed across multiple platforms or on a rapidly evolving platform. It makes it possible to make fast, productive progress on apps and services when the platform design is still in flux.

Leon Starr

Published books, articles and speaking engagements

I HAVE WRITTEN THE FOLLOWING:

How to Build Articulate UML Class Models, OMG (uml.org), 2008

Time and Synchronization in Executable UML OMG (uml.org), 2009

Book: How to Build Shlaer-Mellor Object Models, Prentice-Hall, 1996

Book: Executable UML a Case Study, MI Press, 2001

Book: How to Build UML Class Models, Prentice-Hall, 2002

A Method for Making UML Directly Executable, embedded.com, 2002 (with Stephen J. Mellor)

Embedded C Code Generation from Executable Models - book in progress

I HAVE PRESENTED THESE TALKS:

2012 PostgreSQL Meetup: Building an entire App in Postgres

2008-2010 Palo Alto SDF SAM SIG, Articulate UML and Pragmatic Modeling

2004, 2002 Judge, Tokyo 1st and 3rd Annual UML Robot Race (OMG Sponsor)

2004 Palo Alto SDF SAM SIG, Model Driven Architecture

2004, 2002 Tokyo UML Forum

2003 Embedded System Conference

2002 Embedded System Conference

1999 - 2002 SMUG (Shlaer-Mellor Users Group), Tucson, Arizona

1998 Speaker, Tokyo Case98

1997*-1998 *Keynote speaker, UML Users Group, UK

1995 Robot Wars, SF, CA (robot entry)

1993 Tools Europe, Versailles France

1997-2007 Taught numerous classes on Executable UML and Model Driven Architecture

Code generation - I have extensive experience with patterns and algorithms for generating code from concurrent, asynchronous, platform independent executable models and am currently writing a book for Pragmatic Programmers on embedded C generation with two of my colleagues.

Writing / documentation - I leave a trail of well written and clearly illustrated technical notes and documentation on every project. I have designed trainixng materials, presentations and published in print and on the web. I also have a lot of travel/teaching experience.

EXPERIENCE - CLIENT PROJECTS

Model Integration, LLC. (1991 to present)

At my own company I have provided consulting to a variety of distributed and embedded projects for Fortune 500 companies, worldwide. My primary service has been to help design or review domain and data architecture as well as training in executable model development and requirements analysis. I have taught hundreds of training sessions throughout my career with outstanding student reviews. Descriptions of select projects during this time period follow:

SAAB, Sweden (2004 - 2012)

Training and consulting for modeling of JAS39 Jet fighter avionics and control system. Also defined model service domains (middle tier configurable services) for a battle simulation system. Created example model components for each of these domains.

miUML (2012)

Open source executable model to embedded C code generation project. Key contributor.

PG&E (2010-11)

Web based Energy Contract Management System: Developed a back end application consisting of five service domains and wrote about 20k lines of database code for a Postgresql/Oracle implementation. Worked closely with colleague who plugged in both a browser and an eclipse based GUI.

Draw tool (2009)

Taught myself Cocoa/Objective-C/Core Data. Specified a full-featured keyboard driven (vi-style) graphical model layout system for UML models. Prototyped using Core Data framework and Cocoa.

Ericsson (2002-9)

Reviewed and refactored C++ / UML models for a cell network radio base station control subsystem. Normalized the underlying data and helped simplify the control scheme. (Multiple short visits over the time span).

Caterpillar, Inc. (2003 - 2008)

Assisted development of embedded vehicle control and network communications models. Also modeled requirements for an internal system engineering tool. Periodic visits.

Lockheed (2005 - 2007)

Modeled an ARINC 739 network layer for an avionics system. This model goes beyond hard coding a specific protocol (the original motivation). Protocol features are formalized and data driven so that the network can be dynamically reconfigured for command, handshake and bit field variations.

xUML Model Editor (2006 and 2011-12)

Coded up an editor in Python and MySQL that takes command line input for fast model editing. The editor enforces precise model constraints (e.g. recursive propagation of inheritance edits). It performs extensive validation using a set of language metamodels that I also built. I have since re-implemented this as an open source project using PL/pgSQL stored procedures downloadable at miuml.org.

St. Jude Medical, Implantable pacer/defibrillator and model assembler (2001-2005)

Studied requirements and large mass of executable UML models. Replaced individual state charts for each pace timing mode with a universally configurable and data driven cyclic, interrupt driven scheduler. Models were successfully translated directly to assembly code directly from executable UML models. That's right, executable UML direct to Assembler language. We did that.

SPAWAR Networked Joint Forces Battle Simulator (1999-2001)
When I arrived, this Navy project had been in process for two years and was suffering from severe analysis-paralysis. Models were at wildly inconsistent levels of detail. Complex requirements were not properly reflected in the models. Reviews were unproductive and the model to code plan was completely unrealistic. I introduced a more agile, pragmatic process focused on tangible results and realistic work products. After several months, the team of ~50 began delivering successful quarterly build/releases. We consistently beat our Army and Air Force counterparts with on-time and stable releases.

ATL Ultrasound (now Phillips), Medical Ultrasound Diagnostic Station (1998-2000)
Worked with project team members to design key components of application and modeled service domains of a next generation, 3D ultrasound imager. This included scan mode behavior, parameter management, EPROM configuration, networking, image archival and playback. Upper management presented a glowing presentation of my contributions at a user group. (Powerpoint slides available)

Varian, Gas Chromatography Station (1995-1996)
I was invited to help another analysis-paralysis situation on the brink of total catastrophe after two years of fruitless modeling by the team. Waded through the models and proposed a new agile plan and software architecture. Worked with the team for one year to implement this plan and deliver the product. Ninety-five percent of the code in this device was generated from xUML models.

KLA-Tencor, Semiconductor Test and Measurement Stations (1991-1994)
Developing models for several semiconductor measurement instrumentation systems. Performed extensive analysis of wafer pattern geometry, registration and calibration.

Acuson, Medical Ultrasound Diagnostic Station (1989-1991)
Worked with project team members to model key components of a next generation ultrasound system. Created a simplified model of scan geometry and data pipelining.

EMPLOYMENT (BEFORE 1991)

Ampex Corporation, Broadcast Real-time Video Special Effects (1987-1989)
Technical lead in the development of next generation video special effects software. 14 custom hardware boards were designed in parallel with the software effort. Not only did we finish before a sister project at the same company (who began coding several months ahead of us), but we finished ahead of the hardware team as well. We demonstrated our software on simulated hardware while we waited. I've still got a cool video of the effects output. Modeled advanced (at the time) video compression hardware, data pipelining, 3D transforms and surface manifold geometry.

Systems Control, Manufacturing Automation (1986-1987)
I was hired initially to document system specifications. We went beyond that and built executable models, had them entered into AutoCAD. Then we translated them to code using AutoLISP. We were controlling demo factory equipment long before the coding process was even scheduled to begin. This is where I first applied modeling theory to deliver tangible results on a real project.

Project Technology (1984-1986)
Apprenticed with Sally Shlaer and Stephen J. Mellor where I helped design their course materials on Object Oriented Analysis for Real-Time Systems. In addition to teaching I consulted on numerous object-oriented modeling projects for robotics, particle accelerator, chemical processing, factory and other scientific/industrial applications.

Yourdon, Inc. (1983-1984)
Apprenticed with Stephen J. Mellor and Paul Ward and taught their Structured Analysis and Design for Real-Time Systems course at Fortune 500 companies throughout the US.

Fortune Systems (1982-1983)
Developed Unix utilities and documentation.

Education

University of California, Santa Cruz, CIS (1979-1982) with summer internships at **IBM** (370/ assembler debugging and **Plantronics** (Fortran test/debug). I published nine articles on structured programming techniques for Personal Computing Magazine while attending UCSC as well as a suite of PC tools (word processor, calculator, database and calendar apps) that I ported to four platforms and distributed by the magazine publisher. At Central Valley High School in Redding CA I wrote statistical analysis software for the US Forestry service in MicroNova Basic. I've been programming since I was 15.

Hobbies

Cooking, French (almost fluent), Swedish & Japanese (learning), Alternative/Indie Music and Film, Art, Reading (History, Biography, Science, Physics, Math), Snowboarding, Travel, Xbox, Darts