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Throughout my career I've made some significant technological changes at big institutions by often times building working prototypes from start to finish. These prototypes are often developed very quickly, utilizing many different technologies. But, the focus has always been leveraging the technology to meet critical business needs.

Below is an example of some of the prototypes and changes made.

- *FAA Developed an intelligent monitoring system - analyzing Oracle (ASH/AWR reports), Linux system performance, and network performance all in realtime to record, categorize, and predict possible problem. Companies like Lockheed Martin have attempted to sell similar products to the government, (FlightDeck), which this rapidly developed prototype is live, and in production, analyzing software that controls all flights in the NAS.*
- *Developed a Sales Compensation tool for the leader in sales of research laboratory equipment, by building software to intelligently analyze trends developing the market, and capturing the features that lead to the highest sales profits longterm.*
- *Building an automated E-Learning system where text and images, from PowerPoint documents could automatically be combined with video live, for one of the leading Ivy League Medical Schools. In addition, a comprehensive evaluation system was developed. Although such systems are common today, at the time, this was the first institution to develop such a system. I took an active role in writing 95% of the code.*

To make changes in organizations, you have to have technical breath and depth. It's very hard to convince people there's a better, more efficient, automated way of doing things, without rapidly developing a working prototype. Our problems are too complex, to try to solve them in a conference room - you need working designs.

To build working prototypes that can be used and tested, you have to be skilled in many areas: DevOps, DataOps, Software Development, Database Administration, System Administration etc. In addition, you have to have a love for also doing the dirty work of data cleaning, and meeting with people to understand the institutions true problems.

Technical Skills

Likes: swift, python, linux, ios, r, scikit-learn, amazon-web-services, bash, awk, wolfram-mathematica, indesign, sqlite3, pandas, tensorflow, raspberry-pi, docker, redhat, go, jupyter, google-app-engine, google-datastore, google-maps-api-3, angularjs, google-bigquery, photoshop, redis, mysql

Dislikes: windows, cobol

Experience

Machine Learning - Data Analysis - DevOps – CWXSTAT *2015 – Current*
google-app-engine, pandas, r, tensorflow, python, swift2, sqlite, nltk

Building systems from the ground up to get results. Here are a few examples:

- Analyzing Facebook communities - profiling people, conversations, and interactions in an effort to capture productive, meaningful traits so that local governments and schools can get positive results. Also working to profile community voting habits and preferences.
- SEPTA (railroad) - OTP (On Time Performance), the percentage of trains arriving/departing on time is meaningless. A much better indicator is the percentage of late trains during critical times, combined with the degree of lateness. For example, just how late was the train, and was it late during a critical time, such as rush hour. Are there patterns? What's the station-to-station travel time, for each station? This project involves building an accurate collection system, plus deep analysis of the results, and communicating the results to users.
- 911 Calls: FIRE, EMS and Traffic. Building a system from the ground up to collect raw data and process it, almost as it's happening, to identify patterns in Montgomery County, PA. And to keep a history so that say "Outside Electrical Fires," caused from high winds, can be compared, and possibly predictions drawn, to help prevent injuries and save lives. All areas of 911 calls are analyzed from "EMS: OVERDOSE", "Traffic: ROAD OBSTRUCTION", "Traffic: VEHICLE FIRE", "EMS: NAUSEA/VOMITING" etc.
- Crime: Analyzing local crime statics and patterns. This also includes actively working with the Montgomery County Office of the District Attorney, to present evidence in court for the prosecution of, a very difficult to catch, serial, professional burglar. The current case involves over 160 home invasions by a single individual. Technical, very convincing evidence is needed to convict such skilled individuals.

DevOps, DataOps, Developer, DBA, and Linux System Administrator – FAA (Federal Aviation Administration) - Contractor on the TFMS Project *2009 – 2015*
linux, oracle, r, python-2.7, bash, ios, swift2.1, sqlite, git

- Built and integrated, for a production environment, a deployment management system and network checking system similar to Ansible where it can configure and update itself without agents.
- Built (complete start to finish) a performance modeling system. So, basically, in the production environment, with lets say 9,000 flights and 22 reroutes, plus bad weather, you would want to know if the system is performing within the designed parameters. This package was build with Python pandas, R, some C, Jython and SQLite. It gets the data by querying Oracle AWS and AWR reports, plus all linux information on /proc for many servers.

Lead Developer, Linux System Administrator, Data Analysis – VWR International - Contractor *2007 – 2009*
sql-server, database, oracle10g, vb.net, linux, python-2.7, r, c

Developed custom pricing tools for price prediction, market analysis, and sales rep performance.

Linux System Admin/DevOps – Fiberlink - now Intel *2006 – 2007*
linux, python, oracle, vmware, radius

Automating VMware applications in a clustered environment. Working with Radius and setting up new accounts. Installing Oracle. Creating scripts to better automate applications in a large environment.

DevOps: Senior Linux Engineer and Developer – Thomas Jefferson University *2005 – 2006*
postfix-mta, linux, python, awk, sed, apache

Managing Postfix/Cyrus email system for 18,000 accounts. Created custom intelligent filters for email processing.

Senior Linux Engineer and Developer – SilverStorm Technologies - Now Intel *2004 – 2005*
linux, python, bash, awk, c, sqlite3, postfix-mta

Managing computers, and supporting software development (Postfix, OpenLDAP, Bonsai, CVS, NIS, NFS, UnionFS, 2.6 kernel customization, Exim, Postfix to Microsoft Exchange, tcpdump, Cfengine, customizing open source tools, and writing technical articles).

Developer and Linux System Admin – University of Pennsylvania - Medical School *1999 – 2004*
linux, python, r, vb.net

Managed teams and co-developed VC2000: A portal of over 4000 lectures and integrated learning tools. The most advanced Medical School Portal, as reported in The Wall Street Journal.

Single handedly, start to finish, developed (750 users) Medical Student Evaluation System. (Apache/PHP Linux, Microsoft IIS, ASP, and MS-SQL Server 2000) LCME cited this as the most extensive of all Medical Schools.

Created client server technologies for automatically capturing and converting PowerPoint presentation into Real Audio/Video streaming. (GNU C and C++ Socket programming, MS COM, Linux Sockets)

Advised and helped build a CME (Continuing Medical Educational) program for a consortium of hospitals whereby physicians could interact with Internet learning objects.

Created Palm PDA scheduling application for populating course schedule changes dynamically. Saving 70K per year in AvantGo license fees. Technologies (CodeWarrier C, MS-SQL, Apache/PHP)

Selected to give security talks to various University of Pennsylvania administrators on personal firewalls for servers and workstations (iptables, ipsecmd, ipsecpol), secure email client configuration (ssh port forwarding), and customization of (NIDS) Network Intrusion Detection Systems (snort).

Senior System Administrator for combined Linux Microsoft environments building secure database conduits and managing MS-SQL and MySQL interoperability, firewall customization, Real Audio server configuration, and installation of Web Servers (Linux Apache/PHP, Tomcat, IIS)

IT Director/Software Developer - Building Executive Compensation Products – Aon Consulting *1987 – 1999*
neural-network, sql-server, oracle, machine-learning

Education

M.S. in Computer Science – Villanova University

B.A. in Computer Science/Mathematics – Rutgers University

Projects & Interests

Current Active Incident Alerts – http://montcoalert.org/
pandas, google-cloud-datalab, swift2

Data Analysis and Machine Learning on all EMS, Fire, Traffic and Crime events in Montgomery County, PA

Everything...End to End.

Writing

SQLite Tutorial – http://souptonuts.sourceforge.net/readme_sqlite_tutorial.html

Detailed SQLite Tutorial

Gun vs Vehicle Deaths | Kaggle – https://www.kaggle.com/mchirico/d/cdc/mortality/gun-vs-vehicle-deaths

Exploring Centers for Disease Control and Prevention (CDC) data on the impact that cars and guns have on US deaths in 2014.

Steps for Running Kaggle Docker Images – https://www.kaggle.com/forums/f/15/kaggle-forum/t/20036/steps-for-running-kaggle-docker-images

Kaggle puts together some great docker images - a lot of cutting edge machine learning software. This article shows you how to leverage all that work for your own environment.

TensorFlow on Iris | Kaggle – https://www.kaggle.com/mchirico/d/uciml/iris/tensorflow-on-iris/notebook

TensorFlow is Google's Machine Learning library. This document demonstrates how to train a model, save it, then restore it.

Current Active Incident Alerts – http://montcoalert.org/

Live tracking and history of all 911 calls in Montgomery County, PA

Tools

Favorite Editor: Emacs

Background

I enjoy long distance running, however, I am no longer a competitive athlete.