

USA Phone: (215) 821-8830

*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 systems built.*

- *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.*

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## 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, java, twilio

**Dislikes:** windows, cobol

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google-app-engine, pandas, r, tensorflow, python, swift2, sqlite, nltk, rabbitmq, go, amazon-web-services, jupyter-notebook, redis, mysql, java

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.

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**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, java, rabbitmq, google-bigquery, go

- 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.

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**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.

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**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.

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**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.

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**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).

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

1999 – 2004

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 (CodeWarrior 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)

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

1987 – 1999

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## Education

**M.S. in Computer Science/Mathematics** – Villanova University  
mathematics, signal-processing

1994

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

1989

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## Projects & Interests

**GitHub - ct** – <https://github.com/mchirico/ct>

March 2013 - October 2015

ct (Connection Test) - simple tool for testing a connection, without blocking.

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**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.

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**SEPTA - Regional Rail | Kaggle** – <https://www.kaggle.com/septa/on-time-performance>

google-app-engine, google-compute-engine, google-bigquery, pandas, r, go

SEPTA Regional Rail dataset

Collecting, aggregating, and cleaning the data posted to this site as well as maintaining the site itself. It's all about contributing to greater good for both SEPTA, commuters, and Data Analysts.

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**Cheltenham's Facebook Groups | Kaggle** – <https://www.kaggle.com/mchirico/cheltenham-s-facebook-group>

google-app-engine, pandas

Analyzing Facebook data. A public place to analyze prepared Facebook data on a community.

I built and prepared the data. Eventually, if we don't get enough public interest, I'll actually create more sophisticated models to demonstrate how the data can be analyzed.

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## Writing

**Learning iPhone Programming: From Xcode to App Store** – <http://www.amazon.com/Learning-iPhone-Programming-Xcode-Store/dp/0596806434>

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**SQLite Tutorial** – [http://souptonuts.sourceforge.net/readme\\_sqlite\\_tutorial.html](http://souptonuts.sourceforge.net/readme_sqlite_tutorial.html)

Detailed SQLite Tutorial

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**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.

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**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.

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**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.

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**Current Active Incident Alerts** – <http://montcoalert.org/>

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

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**Souptonuts: Old SourceForge Site** – <http://souptonuts.sourceforge.net/chirico/index.php>

This is an old SourceForge site. I used to publish a lot of articles, and this link lists some of the old articles.

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**Breaking Firewalls with OpenSSH and PuTTY** – <http://souptonuts.sourceforge.net/sshtips.htm>

Summary on using ssh and putty for port forwarding. This is an older article.

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## Tools

**Favorite Editor:** Emacs

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## Background

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