

Chris X Edwards

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www.xed.ch

December 2015 - present [System Administrator/Programmer]

SCRIPPS INSTITUTION OF OCEANOGRAPHY, UCSD <scripps.ucsd.edu>

(ocean science sensor data collection)

Complete system administration and data management for a worldwide marine sensor network. Initiated a complete refactoring of all data management practices. Created a thorough internal documentation system. Wrote a full-featured Python module to properly handle all tasks involving messages from the Iridium satellite constellation's Short Burst Data service. Used this module to write a multi-threaded socket server to acquire, unpack, and organize data arriving from thousands of remote ocean monitoring sensors. Set up a data handling service hosted with AWS to provide complete redundancy for all critical data acquisition services. This includes AWS and VM planning, management, and monitoring. Set up data storage redundancies and fail safe measures.

November 2009 - present [System Administrator/Research Associate]

SAN DIEGO SUPERCOMPUTER CENTER, UCSD <ablab.ucsd.edu>

(computational biophysics and pharmacology)

Complete system administration for the Abagyan lab's computational chemistry research. Installed OpenLDAP on custom hardware to create a server providing centralized authentication to over 100 machines for 60 users. Designed and built two custom storage servers whose cost, plus my annual salary, was less than half of a typical quote from enterprise vendors for equivalent specifications. Created a convenient and highly secure web appliance using Gentoo and Apache which served content exported read only from the file server. Set up jails for CGI programs with write requirements. Wrote CGI web interfaces for various projects including Python back ends for interactive auto-completion. Created browser software with JavaScript and HTML5's canvas tag. Advised on web usability and responsive web design using CSS media queries. Built and administered a dedicated high performance MySQL server using commodity hard drives and Linux software RAID. Personally built, configured, and administered a 500 core cluster at the San Diego Supercomputer Center, featuring CentOS Linux, DHCP, TFTP, Sun Grid Engine and a PXE boot system. Mentored students, wrote extensive documentation, and gave a series of technology lectures covering SSH, make, CVS and Mercurial, SWIG, Rsync and Rdiff-backup, Gnu Parallel, web design and cgi-programming, SQL, Hadoop, and effective cluster usage. Purchased and built high-performance CentOS Linux workstations, and managed updates. Profiled network and disk IO performance, and performed security audits. Set up automated crawlers and acquisition scripts to amass a large database of all known chemical compound data. Installed and configured Linux-controlled security cameras for remote monitoring of physical security. Acquired a good foundation in bioinformatics, molecular physics, genetics, human physiology, pharmacology, computer simulation of molecular phenomena, and macromolecular biochemistry, especially protein-ligand interaction.

February 2009 - November 2009 [System Administrator/Programmer]

ALEPH ONE LLC <www.tradeworx.com>

(high frequency trading hedge fund)

Complete system administration for a highly technical hedge fund start up. Responsible for network provisioning, system configuration, fault tolerance, security, version control management, and hardware. Worked closely with researchers to support modeling, testing, and trading operations. Wrote custom software to manage large volumes of data generated including a custom high performance change notification package responsible for discovering recurring nondeterministic results.

April 1997 - present [Independent Consultant]

XED TECHNOLOGY <www.xed.ch>

(technical consulting)

Linux system administration (Gentoo expert), software design (Python, C++/STL, Perl, bash, PostScript), web page creation, computer instruction, technical writing, software installation, and custom computer work. Have performed a nightly web crawl for over 1800 consecutive days for a large-scale data mining operation and an AI-based forecasting analysis system. Researched, designed, and wrote a generalized 3-d geometric modeler. Wrote a 3d to 2d rendering engine, written entirely in object oriented C++, including sophisticated camera placement, perspective, and hidden line removal algorithms. Wrote a companion C++ vector math library. Designed a custom general purpose programming language for working with spatial databases and implemented a complete interpreter. Created a complete car racing AI optimized with a genetic algorithm and submitted the fastest Python entry into the Simulated Car Racing competition. Interfaced a micro RC car to a Linux computer with a GPIO and custom electronics controlled by a C program. Solid experience with XML and related technologies (SAX, DTDs, XML Schema, XPath, DOM). This document is produced from XML by xsltproc using custom XSLT.

May 2008 - February 2009 [Scientific Computing Manager]

BURNHAM INSTITUTE FOR MEDICAL RESEARCH <www.burnham.org>

(molecular biology, bioinformatics, medical research)

Provided system administration and support for several high-performance scientific computing clusters running Linux. Provided system administration for several critical public web servers serving the protein research and bioinformatics communities. Responsible for back up and archive support, OS updating, account management, hardware repair, software installation and troubleshooting. Created and contributed to a blog for The Open Protein Structure Annotation Network. Managed several VM installations using Xen and VMWare. Using Python and Twisted, wrote and remotely installed an httpd proxy server to test development web sites from a stable network environment.

February 2006 - May 2008 [System Administrator/Research Programmer]

UNIVERSITY OF CALIFORNIA SAN DIEGO <sysnet.ucsd.edu>

(Computer Science Department, Systems and Networking Research Group)

Complete Linux system administration service for a group of computer science professors and advanced graduate students specializing in, among other things, system administration. Solely responsible for security, backups, hardware, and networking of all dedicated SysNet resources. Managed and relocated eight racks of 250 heterogeneous servers and assisted with desktop systems. Built from scratch several large-scale storage servers and created novel backup strategies. Conceived and implemented a CPU benchmark based on the BBP algorithm for calculating the digits of pi. Managed several web servers using Xen virtual machines. Maintained servers for NFS, LDAP, DNS, TFTP, CVS, NTP. Worked with the developer of Usher, a system for Xen virtual machine resource management which was beta tested on the SysNet cluster. Researched and installed new equipment purchases. Organized physical wiring and configured VLANs and switches. Was the system administrator for the Center for Networked Systems.

June 2004 - February 2006 [System Administrator]

MOLSOFT LLC <www.molsoft.com>

(software for molecular modeling, computational chemistry)

Complete Linux system administration service for a group of scientists and programmers. Responsible for security, backups, hardware, and networking. Helped with the administration and configuration of two Linux clusters with a total of over 100 compute nodes. Configured dedicated servers for firewall, CVS,

Samba, mail, and www. Created Black Fly Partition, a novel Linux distribution designed to manage the administration of clusters.

March 2004 - February 2006 [Programmer/Analyst III]

JOINT CENTER FOR STRUCTURAL GENOMICS <www.jcsg.org>

(high-throughput protein structure determination)

Database/visualization programmer using Python, Perl, and Oracle. Developed a comprehensive, general-purpose, object-oriented Python library for working with Protein Data Bank files. Created a cross platform, GUI SQL database browser (a clone of Toad) using Perl/Tk. Wrote a modular C++/STL program to produce diagrams of protein secondary structure features. Created Unix shell scripts, and handled Linux/Unix system administration tasks. Audited and lectured about Perl CGI security practices. Part of a team working with the San Diego Supercomputer Center and The Scripps Research Institute to create software infrastructure for high-throughput protein structure research.

April 1990 - March 1997 [Senior Technical Specialist/Manufacturing Engineer]

DYNAMIC INDUSTRIES, INC. <www.dynamic-industries.com>

(subcontract large component machine shop)

Administered a PC-based SCO Xenix computer. Designed and planned the installation of large machinery. Managed construction subcontractors and mechanics during site preparation, layout, excavation, foundation construction, machine installation, alignment, and testing. Interfaced, programmed, operated, calibrated, and taught CNC control systems. Developed custom software for applications such as machining and geometry analysis. Wrote custom software in Lisp to generate CNC programs for 3-d contour milling. Designed a sophisticated CNC programming and data handling system based on handheld technology. Wrote a detailed manual and trained machinists, in addition to writing all software for the handheld project. Translated foreign shop prints and technical manuals into English. Researched special tooling and manufacturing processes. Designed and personally manufactured special fixtures and jigs. Invented a modified form of Gantt chart to accurately track continuous multiple interacting projects. Worked with customers to improve manufacturing aspects in the design of various large metal components such as turbines, machine tools, presses, and molds. Designed and implemented quality control systems and laser interferometry techniques.

August 1988 - April 1990 [Manufacturing Engineer Intern]

SHEFFIELD MEASUREMENT, INC. <www.sheffieldmeasurement.com>

(manufacturer of metrology robots and instruments)

Created AutoCad models for facilities planning. Specified machine shop work plans. Wrote programs for electronics assembly robots. Computerized parts databases.

June 1992 B.Sci. Industrial Engineering / Operations Research

UNIVERSITY OF CINCINNATI <www.uc.edu>