

Tom H. Rafferty

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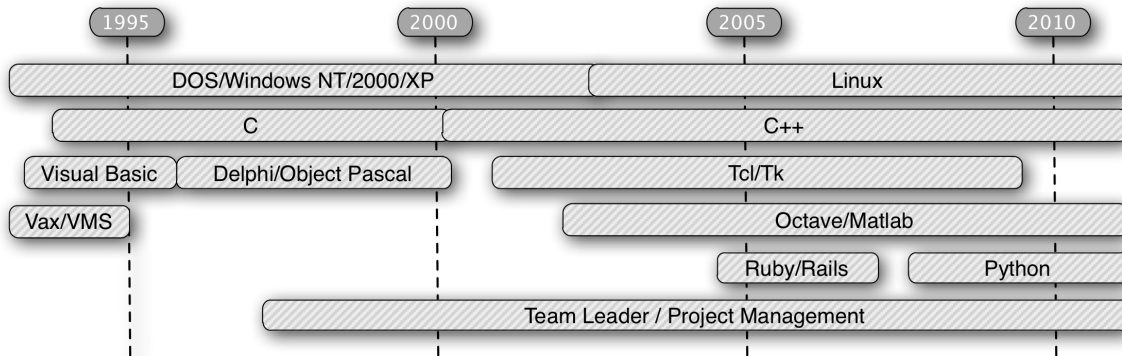
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Technical leader for start-up technology companies with extensive experience in complex hardware and software products. Expertise in large system architectures, control system software and image processing systems. Solid skills in the areas of problem solving, team/project management and logistics. Demonstrated ability to quickly adapt to new technologies and disciplines with ease. Serious love for learning new things.

Skills Overview



Development Software/Utils:

C/C++, Python, Git, SWIG, Tcl/Tk, JSON, Octave/Matlab, SLALIB, cfitsio, gnuplot, CORBA/OmniORB, SQLite, MongoDB, Matrox MIL, Qt4, Jenkins, Cognex VisionPro, Image Processing/Machine Vision, PowerPC/Altivec, DSP, Object Pascal/Delphi.

Operating Systems:

Linux (RHEL x64 5/6, Ubuntu), Mac OS X, Windows NT/2000/XP

Professional Experience

McDonald Observatory (University of Texas), Austin, TX

Sep 2008 to Present

Project Coordinator/Software Team Lead – HETDEX Project (Hobby-Eberly Telescope Dark Energy Experiment)

The HETDEX project involved a major upgrade to the Hobby-Eberly telescope, including rewriting the main software using modern software engineering technologies. My role as software team lead involved the following:

- Designed component-based architecture for a distributed Telescope Control System, using object-oriented techniques throughout and utilizing modern (and proven) design patterns. System is used for full control of the telescope and execution of all observation. Written in C++ under RHEL6 x64.
- Developed the core routines for trajectory generation, telescope mount model, metrology control loops, pointing and tracking (used SLALIB), FITS file archival, image processing, CCD data de-interlacing.
- Implemented embedded Python interpreter that allowed script/recipe-driven observation control.
- Helped to design centralized, multi-interface logging system which utilized an easily maintained NOSQL backend.
- Developed a flexible inter-process messaging scheme using JSON documents.
- User interface layout design, including engineering interfaces for all subsystems.
- Led team of four software engineers using (some) agile project management techniques. Put together development tool chain and utilities including use of git, Jenkins (CI), Bugzilla, and a wiki.

Molecular Imprints, Inc., Austin, TX

Apr 2002 to Dec 2008

MII develops Imprint Lithography tools for the semiconductor market.

Senior Image Processing Engineer

- Developed the Interferometric Alignment System, an embedded system with Linux-based host used to control high precision alignment on next-generation Imprint Lithography tool. Worked with patent lawyer to obtain intellectual property rights to system novelties (US Patent 7292326).

- Created the Image Processing Control System, an object-oriented system which uses machine vision and image processing to control alignment system on Imprint Lithography tool.
- Team Lead for Alignment Productization project, which involved taking prototype components and fast-tracking their development into a reliable, customer-friendly system.
- Developed the Automated Dispense Calibration System, a Windows-based utility used to automatically calibrate signal characteristics of sub-nanoliter dispenser.
- Led team through the design and integration of a robotic front-end (EFEM) to facilitate factory automation for a high-throughput Imprint Lithography tool.
- Leader for all image processing hardware selection, setup and calibration.

Interactive Silicon, Austin, TX

Feb 2000 to Feb 2002

Senior Software Engineer/Team Leader

- Developed user mode applications that served as diagnostic and configuration tools for a set of kernel mode device drivers.
- Managed team that created next generation suite of applications including Control Panel Applet and Performance Monitor Counters extending capabilities to make products Windows-friendly. Included porting to Linux.

Performance Engineering Group Manager

- Spearheaded new performance group to ensure products adhered to industry benchmarks. Grew team to three performance engineers. Worked closely with engineering teams from Compaq, Intel, and Dell.
- Managed growth of testing capacity from 8 clients to over 120, with a variety of server technologies and operating systems. Managed a 24/7 "crunch-time" of testing to facilitate the rapid development of critical device drivers.

Asyst Technologies (formally Progressive System Technologies), Austin, TX

May 1994 to Feb 2000

Asyst develops semiconductor fab automation and containment solutions.

Team Leader and Software Engineer

- Led multidiscipline "A-team" through development of next generation product, from design conception to fully qualified system. Final product was on time and exceeded original performance goals.
- Created the Lot Verification System, which utilized multiple CIM interfaces, including SECS I/II.
- Developed flat panel cassette indexer, which integrated with multiple process tools.

Special Projects and Component Technology

- Developed OCR/Vision application which utilized a PCI vision card to detect and decode scribe IDs, barcodes, and 2D matrix symbols.
- Evaluation and selection of current and future automation components, such as robots, substrate aligners, and motion control technology used on various products.

The Dow Chemical Company, Houston, TX

Jan 1989 to May 1994

System Analyst

- Created the Global Drawing Production system. Co-developed core API functions for Drawing Creation system.
- *Other Position Held:* Mechanical Engineer.

Education

Texas A&M University, College Station, TX

Sep 1983 to May 1988

Obtained BS degree in Mechanical Engineering, with a specialty in Automation/Robotics. Courses included FORTRAN programming, CAD/CAM, Robotics Design, Microprocessors, Thermo/Fluid Dynamics.

Professional Development Center, University of Texas, Austin, TX

Jan, 2008

Successfully completed courses required for certificate in *Leadership Skills for Managers Certificate Program*. Courses included *Building Personal Leadership Skills, Managing Projects, Team Leadership Skills, Emotional Intelligence, Strategic Planning*, and *Nineteen Strategies for Successful Leaders*.