Dave Vandervies

dj3vande@terse.ca
+1 519 496 0437

Summary

Objective: To work on interesting things that challenge my mind and improve the world
Qualifications: 10+ years of industry experience and an education in pure math
High-level skills: Turning domain knowledge into useful, robust, maintainable software

Skills

Short buzzword list: C; Math; Unix; System design

Technical skills

- **Making The Damn Thing Work**
  By preference, reliably and repeatably on a predictable timeline
- **C (primarily C90)**
  Guru-level knowledge and experience
- **Math**
  At fourth-year level in pure math degree, with experience applying math-fu to real-world problems
- **Unix**
  Experience with various flavours as user, programmer, and lightweight sysadmin
- **Win32**
  Programming to core API for network servers and GUI applications
- **SML, Awk, Scheme, and C++**
  Have written nontrivial useful code in all of these

Other skills

- **Working with large existing piles of code**
  Adding functionality and improving maintainability, without breaking anything
- **Isolating and taming complexity in large systems**
  Understanding how to identify and extract coherent subsystems
- **Designing and building robust, maintainable, and extensible software systems**
  Especially knowing what to leave out
- **Abstract reasoning and problem-solving skills**
  Practical application of math-fu and other tools to any technical problem
- **Identifying key technical ideas and presenting them in accessible ways**
  Assisting non-technical people in understanding important technical ideas
- **Applying general and broad-domain knowledge to new areas**
  Instant expertise - just add domain-specific details
- **Adequate communication skills**
  Effectively communicating in varied environments

Interests for professional development

- **Static analysis and formal verification**
- **Large-scale parallel processing**
- **Functional programming**
- **Kernel-space or embedded software**
- **Implementation of compilers and related toolchain**

Projects

Marine Small Target Tracker (MSTT) at Raytheon

- **Responsible for major portions of a radar tracking system for low-visibility targets**
  - Implemented feature requests in legacy code
  - Estimated system impact and time requirements for proposed changes
  - Provided roadmap to streamline legacy subsystems into a coherent architecture
- **Designed and built radar video capture and preprocessing subsystem**
  - Took responsibility for software requirements analysis and interface specification for preprocessing subsystem
  - Worked with hardware team on hardware requirements analysis and interface specification for digitizer hardware
  - Built software side of PCIe data interface
  - Designed and built software infrastructure for communication between subsystem modules
  - Implemented image assembly, preprocessing, and plot extraction on radar pulses fetched from digitizer
  - Migrated legacy code's upstream interface to new front-end subsystem
  - Implemented moving-radar upgrade, with minimal impact on existing components
- **Built modular data viewer**
  - Designed GUI (for Win32 and Wine) to display a zoomable view of two-dimensional data
  - Designed DLL plugin interface to allow arbitrary data to be displayed using a common instance of the user interface
  - Built plugins to display user-relevant radar and tracker data, and intermediate products useful for system development and tuning
  - Supported development of plugins to display data produced by other systems

Non-MSTT projects at Raytheon

- Set up and managed source code repository server
- Led migration from CVS to git
- Implemented and upgraded components of other Raytheon radar systems
- Was the go-to guy for software (and sometimes hardware) problems of all kinds

School

- Working on a pure math degree
- Took one course per term, 1-2 terms per year while working full-time
- Consistently earning grades in the 90s

Building small tools to make life easier

These, and possibly a few more, can be found at <`https://github.com/dj3vande/`>.

- **tiny-inetd** Command-line invocation of inetd-based network daemons
- **showpath** Scriptable modifications to $PATH, without clobbering existing entries

History

Full-time Student, University of Waterloo *2013—present*
Part-time Student, University of Waterloo *2005—2013*
Working toward BMath in Pure Math

Software Developer, Raytheon Canada Ltd., Waterloo *2001—2013*
Responsible for major components of marine low-visibility-target tracking system, from requirements analysis through to post-delivery support

Full-time Student, University of Waterloo *1999—2001*
Completed three full-time school terms and two co-op work terms