Landon Rabern

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Education

University of California, Santa Barbara Santa Barbara, CA
M.A., Mathematics (GPA 4.00) March 2005

Washington University in St. Louis St. Louis, MO
B.A., Mathematics (GPA 3.87) May 2003
Computer Science Minor
Ross Middlemiss Prize (for top graduating Mathematics major) 2003
Dean's List 1999-2002
Study Abroad in the Netherlands (Utrecht University) 2001-2002

Work History

Owner/Software Architect February 2008 - June 2009
LBD Data

- Took over software development for Safety Vision, a producer of mobile video solutions for police and public transit.
- Rewrote Safety Vision's viewer software using Windows Forms. This uses a C# P/Invoke wrapper of FFMpeg for MPEG4 decoding and GDI+ for MJPEG decoding. Audio is provided by DirectSound.
- Wrote code to automatically find and mount usb attached Linux ext2 partitions (from Windows XP) for easy playback from sources with removable drives.
- Wrote a google maps JavaScript code generator in C#. This was used to display maps showing the vehicle's location during video playback using an embedded WebBrowser control and gps metadata on the video frames.
- Designed and coded wireless backend software. This continuously (asynchronously) pings all vehicle IPs registered in a facility's database. When a response is received, the software downloads all video from the vehicle that has been marked as interesting. Metadata from the video is extracted and put into the database for later search by the viewer. The database is MS SQL Server 2005 Express and LINQ to SQL is used throughout.

.NET Engineer June 2007 - May 2009
Wall Street On Demand Boulder, CO

- Rewrote the company's entire distributed computing layer in C#. This included the implementation of socket based clients and servers that can communicate using both the company's legacy data transfer protocal and .NET binary serialization.
- Wrote large portions of Goldman Sachs' (our parent company) new C# financial plotting tool.
- Built the foundation for our new chart and pdf generation server. This uses WPF to generate thumbnail charts for web pages as well as creating complete stock and research reports.

Scientific Programmer Feb. 2006 - June 2007
L-3 Communications - Applied Technologies Division Santa Barbara, CA
US Government Security Clearance: Secret

- Developed a C# .NET control encapsulating NASA's WorldWind 3D mapping application. Wrote algorithms to display shaded contours on WorldWind's globe.
- Exposed Unmanaged C++ algorithms and graphics packages for use in Managed C# code using both P/Invoke services and C++/CLI wrappers.
- Wrote SurvNETS 1.0 (Survivability and Nuclear Effects Threat Simulator) on contract for White Sands Missile Range. This software is the sole provider of nuclear effects in DIS (Distributed Interactive Simulation) real-time wargaming exercises. This was done in C++ using MFC, GDI+, and the BSD socket API.
- Wrote a COM object which provides SREMP (Source Region Electromagnetic Pulse – the thing that happens when a nuke goes off at low altitude) effects simulation.
- Wrote a Monte Carlo electromagnetic simulation to compute damage probabilities. To reduce runtime, logical processors were optimally loaded and carried out realizations independently, periodically refreshing the GUI.
- Wrote a finite difference time domain (FDTD) Maxwell's equations visualizer in C++ using MFC and GDI.

Teaching Assistant, Freshman Summer Start Program Summer 2005
University of California, Santa Barbara Santa Barbara, CA

- Gave 3 lectures per week on the subject of research in mathematics and the physical sciences, each with ~ 30 students.

Mathematics Instructor Summer 2005
University of California, Santa Barbara Santa Barbara, CA

- Planned and taught a Calculus course to ~ 30 students.

Teaching Assistant 2003-2006
University of California, Santa Barbara Santa Barbara, CA

- Courses included Graduate Algebra, Transition to Higher Mathematics, Calculus with Applications, Introduction to Linear Algebra and Differential Equations.

Software Engineering Intern Summers 2000, 2001, 2003
Attachmate Corporation Bellevue, WA

- Designed and implemented Attachmate Data Engine 1.0 – a Java SDK and resource manager for Unisys, IBM 3270, IBM 5250 and VT terminal emulation.
- Tested the Data Engine's scalability and improved performance.

Miscellaneous

1st place, Mentor Graphics State Programming Competition 1997,1998
Developed Betsy, a master strength chess program, in C 1998-2003
Vice President, Washington University League of Freethinkers 2000-2001
Built Tesla coils and produced massive lightning bolts 1997-1999

Technical Skills

- **Languages and Technologies**
  - C#, C/C++, VB.NET, IronPython, CIL, Java, Pascal, Scheme, x86 assembly
  - WPF, WCF, Silverlight
  - LaTeX, ASP.NET, JavaScript, HTML, CSS, XML
- **Development Tools and Platforms**
  - Microsoft Visual Studio (2003/2005/2008)
  - Subversion, CVS, Visual SourceSafe, NAnt, WiX
  - Microsoft Windows 2000/XP/etc, Mac OS X

Other Skills

- excellent communication skills
- able to quickly understand and apply new ideas
- efficient independent worker
- productive and energetic team member
- able to rapidly learn new programming languages

Research Articles

Brian Rabern and Landon Rabern. A simple solution to the hardest logic puzzle ever. *Analysis*, 68.2, April 2008. http://www.nottingham.ac.uk/journals/analysis/preprints/RABERN%20\&%20RABERN.pdf.

Landon Rabern. The Borodin-Kostochka conjecture for graphs containing a doubly critical edge. *Electronic Journal of Combinatorics*, N22, Volume 14(1), 2007. http://www.combinatorics.org/Volume_14/PDF/v14i1n22.pdf.

Dieter Gernert and Landon Rabern. A knowledge-based system for graph theory, demonstrated by partial proofs for graph-colouring problems. *Communications in Mathematical and in Computer Chemistry*, 58, N2 2007.

Landon Rabern. A note on Reed's conjecture. *Society for Industial and Applied Mathematics (SIAM) Journal on Discrete Mathematics*, 22(2):820-827, 2008 http://link.aip.org/link/?SJD/22/820.

Landon Rabern. Applying groebner basis techniques to group theory. *Journal of Pure and Applied Algebra*, 210(1):137-140, 2007. http://www.ricam.oeaw.ac.at/Groebner-Bases-Bibliography/gbbib_files/publication_1355.pdf.

Landon Rabern. On graph associations. *Society for Industial and Applied Mathematics (SIAM) Journal on Discrete Mathematics*, 20(2):529–535, 2006. http://link.aip.org/link/?SJD/20/529/1.

Landon Rabern. Properties of magic squares of squares. *Rose Hulman Undergraduate Journal Of Mathematics*, 4(1), 2003. http://www.rose-hulman.edu/mathjournal/archives/2003/vol4-n1/paper3/v4n1-3pd.pdf.

References and code samples available upon request.