

Lars Schumann

20 Poplar Way
Rochester, NY 14618

(734) 383-0003
larsi.org@gmail.com

Highlights

- 20 years of professional experience in all phases of the software development life-cycle
- Designed and implemented software projects using Agile (Scrum certified), Waterfall, and mixed approaches
- Work in consulting and R&D in both industry and academia
- Strengths in cloud computing, scientific data visualization, graphics programming, human-computer interfaces, and sensor integration
- Enjoys collaborating with team members as well as working independently on projects; excellent communication skills

Skills

General Skills:	project management, written and oral communication, consulting, leadership, software / system design, algorithms / data structures, Agile development (Scrum certified)
Languages:	English (fluent), German (native)
Programming Languages:	Python, JavaScript, Java, C/C++, PHP, Go, Perl
Programming Tools:	code versioning systems, automated testing, documentation generator, continuous integration server
Programming Environments:	Windows, Linux, virtual machines (VM), embedded system
Concurrent:	cloud: Amazon Web Services (EC2 & S3), OpenStack, Docker clusters: job queue / MPI
World Wide Web:	extensively familiar: Apache and Nginx, HTML/CSS, Bootstrap, PHP/JavaScript, dynamic data with databases/XHR familiar: Node.js, Express.js, AngularJS
Database:	extensively familiar: PostgreSQL, MySQL, and SQLite familiar: Redis and MongoDB
Database Front Ends:	phpMyAdmin, pgadmin3, pgmodeler, sqliteman, redis-commander, mongo express
3D Toolkits:	OpenGL, JOGL, GLSL, Performer/CAVELib

Experience

Datto, Inc. Rochester, NY
Senior Software Engineer August 2020 – present

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Datto, Inc. Rochester, NY
Senior Software Engineer November 2015 – May 2020

- Designed and implemented a prototype for data breach alerting based on anomaly detection of access patterns using Python and PostgreSQL. The system would learn from previous data access patterns and adapt to changes in behavior over time.

- Worked on multiple products in the Datto router, switch, and WiFi access points portfolio. The devices are cloud-managed (web configurable) and my responsibilities had an emphasis on firmware development, but also full-stack development. Datto strongly values Agile development and automated testing.
- Ported early builds of the DNA edge router to use the OpenWrt / Lede SDK, implementing a service based architecture in PHP, C, and native OpenWrt scripting.
- Contributed to the embedded Linux firmware of the devices, including long-term projects like the integration of router based web content filtering, intrusion detection / prevention, VPN, and remote access (rly).
- Implemented several product features to enable seamless configuration of networking devices from cloud based management interfaces using a variety of technologies. This was composed of new and legacy components using JavaScript, MySQL, Phinx database migrations, Redis, Symfony framework for PHP, as well as Go/Golang for newer backend services.
- Actively participated in college recruiting; delivered tech talks to diverse audiences, interviewed hundreds at college job fairs, and worked closely with interns on dev teams.

BUILDlab, LLC
Senior Software Engineer

Dryden, NY
April 2013 – September 2015

- Creation of Apidae, a highly scalable, cloud-based computational engine that conducts high-performance simulation of energy models of buildings. Apidae allows users to run thousands of simulations concurrently, offers special statistical and parametric search algorithms, and visualizes the results with interactive charts.
- Core team member responsible for all project aspects including: designing the system; creating install scripts for the cloud instances and maintaining the development virtual machines (VM); creating database schemas and queries for metadata and high-level results; processing of simulation results and visualizing them; and managing sensor / weather data.

Cornell University – Program of Computer Graphics
Research Support Specialist III

Ithaca, NY
September 2008 – April 2013

- Co-lead designer/programmer of the Sustain framework for the Sustainable Energy Project (100k lines of Java code)
- Supported Cornell faculty with their research and advised graduate and undergraduate students
- Integrated cluster and cloud computing to create a flexible computational environment
- Created wired and wireless sensor networks to log data (like temperature, relative humidity, pressure, and ambient light), stored data in databases, and made data accessible on web servers
- Prototyped advanced human-computer interfaces, including 3D projection systems and 3D gesture recognition using depth-sensors (Kinect); built a multi-touch table interface; and reverse engineered a digital drafting table

University of Michigan – UM3D Lab
Research Computer Specialist (formerly Programmer Analyst II)

Ann Arbor, MI
March 1999 – September 2008

- Lab manager of the University of Michigan 3D Lab (previously Acting Team Leader of the Imaging Technology Group)
- Collaborated with faculty and students interested in scientific visualization and virtual reality
- Visualized data sets using the latest software methods and display technology
- Supported CAVE, AccessGrid, GeoWall, GeoWall2
- Contributed to projects including Virtual Football Trainer, the National Science Foundation (NSF)-funded Network for Earthquake Engineering Simulation project, the Centers for Disease Control (CDC)-funded Virtual Disaster Simulator, and the Medical Readiness Trainer (MRT)
- Purchased lab equipment, monitored all lab expenses and income, assisted Lab Director with budget

Publications

- Donald Greenberg, Kevin Pratt, Brandon Hency, Nathaniel Jones, Lars Schumann, Justin Dobbs, Zhao Dong, David Bosworth, Bruce Walter: "SUSTAIN: An Experimental Test Bed for Building Energy Simulation," *Energy and Buildings*, vol. 58, March 2013, pp. 44-57.
- Lars Schumann and Donald P. Greenberg: "Environment Mapping for Fast and Robust Calculation of Indirect Radiant Energy," 5th National Conference of the International Building Performance Simulation Association-USA, Madison, WI, August 1st - 3rd, 2012.
- Nathaniel Jones, Kevin Pratt, Lars Schumann, David Bosworth, Andrew Heumann: "Automated Translation of Architectural Models for Energy Simulation," 2012 Proceedings of the Symposium on Simulation for Architecture and Urban Design.
- Maic Masuch, Lars Schumann, Stefan Schlechtweg: "Animating Frame-to-Frame Coherent Line Drawings for Illustrative Purposes," Bernhard Preim, Peter Lorenz (eds.): *Proceedings Simulation und Visualisierung' 98*, SCS Europe, pp. 101-112.
- Stefan Schlechtweg, Bert Schönwälder, Lars Schumann, Thomas Strothotte: "Surfaces to Lines: Rendering Rich Line Drawings," *Proceedings of WSCG'98, The Sixth International Conference in Central Europe on Computer Graphics and Visualization*, vol. 2, pp. 354-361.

Education

University "Otto von Guericke" Magdeburg
"Diplom-Informatiker" (comparable to M.S. in Computer Science)

Magdeburg, Germany
October 1991 – April 1997

- Master Thesis: "A parametric model for the rendering of lines"
- Emphasis in Simulation and Computer Graphics, courses included:
Computer Graphics, Geometric Modeling, Image Processing, Computer Vision, Simulation, Continuous Simulation, Petri Nets, Programming Techniques, Logical Programming, Assembly Programming, Efficient Algorithms, Software Engineering, Expert Systems, Data Banks, Operating Systems, Parallel Programming, Theoretical CS, Computer Systems, Mathematics, Electronics

References available upon request.