Eirik Bakke

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Work

Ultorg. *October 2016–present:* Founder/CEO (Washington, DC). Bootstrapped product company selling Ultorg Desktop, *the missing user interface for relational databases*. A commercialization of earlier PhD work. NSF SBIR grant recipient.

Ultorg connects to the customer's existing data and provides a rapid, visual alternative to hand-typed SQL and custom CRUD forms. Among competitors, Ultorg is unique in its ability to represent one-to-many relationships and arbitrary SQL-92 queries, through a spreadsheet-like direct manipulation interface. www.ultorg.com

Engineering: Designed and built the Ultorg product, and its self-serve, multi-user license management system. Reactive, multi-threaded UI and custom layout engine. Compiler for major SQL dialects via relational algebra, extensively tested.

Sales & Marketing: Thousands of interactions with users and sales leads, meticulously tracked using Ultorg as a dogfooded CRM system. Created Ultorg's website, presentations, and marketing copy.

Cloudera. Engineering Intern (Palo Alto, CA). *Summer 2013:* Developed an XML-based templating system for interactive Hadoop management workflows. 10 weeks. *Summer 2012:* Implemented service management and monitoring support for *Apache Flume*, a log distribution system. Work was used in production at major customer sites by October. 11 weeks.

Adobe Systems. Research Intern (San Jose, CA). *Summer 2009:* Developed a persistence library for ActionScript. 9 weeks.

Data Domain. Software Engineering Intern (Santa Clara, CA). *Summer 2007:* Developed a modified NFS client and FUSE file system to intercept I/O operations from proprietary backup extraction tools. 8 weeks. *Summer 2006:* Implemented a method for uploading files from a portable Sun RPC client while skipping data segments already present on the server's compressed file system. Ported in-house C libraries and build system to cross-compile from Linux to Windows. 8 weeks.

Norwegian Gov't. *2003–04:* Civil service in administration of public arts education (Bergen, Norway). Managed CRM system data for 3000 students and 200 employees, performed marketing and graphic design, stage-managed events. 11 months.

Teaching. *Fall 2015:* Instructor, *6.170 Software Studio* (MIT). *May 28–29, 2014: Data Journalism—New Techniques and Tools*. Workshop for IPYS Venezuela (Caracas). *2010–2015:* TA, *6.813 User Interface Design*, *6.170 Performance Engineering* and 4 other courses (MIT). *Summer 2011:* Technical Instructor, *Middle East Education through Technology* (Jerusalem). 7 weeks. *Spring 2008:* TA, *System Design and Analysis* (Princeton University).

Education

Massachusetts Institute of Technology. *2008–16:* Doctor of Philosophy (PhD) and Master of Science (SM) in Computer Science (Cambridge, MA). Research advised by Prof. David Karger at MIT CSAIL. Minor in Management.

Designed and developed SIEUFERD, an expressive graphical query interface for relational databases. Work published at premier venues in Database Systems, Information Visualization, and Human-Computer Interaction; see below.

Princeton University. *2004–08:* Bachelor of Science in Engineering (BSE) in Computer Science (Princeton, NJ). Concurrently satisfied all degree requirements for BSE in Electrical Engineering. Attended on full scholarship.

Selected projects: *Fall 2007:* Extended *Opal*/*Simics*, a SPARC processor model simulator, to evaluate trace cache performance. *Spring 2006:* Modified the *coLinux* virtualization system to run *PlanetLab*, a distributed resource sharing platform, on Windows. *Fall 2005:* Implemented a protected-memory multitasking OS for x86.

Technical Skills

Software Development. Current stack: Java, Java EE, JavaScript, PostgreSQL, Stripe Billing, AWS, git, GitHub Actions, Maven, ANTLR, Eleventy/HTML/CSS, various data sources (e.g. GSheets API, Excel/POI, Oracle, MSSQL). Strong UNIX background. In past projects: C, Python, OCaml, F#, Knockout, Ruby/Rails, Hibernate, C++, assembly, Win32, OpenGL, PHP, MTurk. Heavy user of Photoshop, Illustrator, Excel. Committer and PMC member on the *Apache NetBeans* project.

Electronics. Digital logic, microcontrollers, FPGAs. *2006, 2008:* 2 CPU designs in Verilog, including a PDP-8. *April 2004:* 1st Prize, *Norwegian Contest for Young Scientists* for a CPU designed and built from 74-series logic (Oslo, Norway).

Publications and Talks

Refereed Articles. *June 2016:* E. Bakke and D. Karger. *Expressive Query Construction through Direct Manipulation of Nested Relational Results*. SIGMOD '16. *October 2013:* E. Bakke, D. Karger, and R. Miller. *Automatic Layout of Structured Hierarchical Reports*. InfoVis '13. *May 2011:* E. Bakke, D. Karger, and R. Miller. *A Spreadsheet-Based User Interface for Managing Plural Relationships in Structured Data*. CHI '11. *January 2011:* E. Bakke and E. Benson. *The Schema-Independent Database UI: A Proposed Holy Grail and Some Suggestions*. CIDR '11.

Invited Talks. *April 29, 2022: Ultorg: A User Interface for Relational Databases*. HYTRADBOI '22. *April 14, 2020: Ultorg: A General-Purpose UI for Relational Databases*. MIT CSAIL. *December 5, 2013: Automatic Layout of Structured Hierarchical Reports*. Tableau Software (Seattle, WA). *October 18, 2011: Table-, Form- and Report-based Database GUIs, and How to Stop Building Them*. Google (Cambridge, MA). *February 18, 2010: A Common Class of Business-Oriented Database Applications*. IEEE Computer Society, GBC/ACM (Cambridge, MA). *October 6, 2009: Making Database GUI Development as Declarative as SQL*. Endeca Technologies (Cambridge, MA).