

Tod Edward Kurt

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Education

California Institute of Technology: B.S. Electrical Engineering, 1992
Occidental College: B.A. Physics, 1992

Employment

Yahoo Research Labs (2004-current) [labs.yahoo.com]

Research Engineer: Dreaming up new technologies.

Yahoo / Overture Services / GoTo.com (1998-2004) [overture.com]

System Architect / Lead Developer: As a founding member of the GoTo technology team, lead the design and implementation of the GoTo.com search system, a system that scaled easily from ~1k searches/day to >10 M searches/day. The descendant of that system now handles over a billion searches/day. Designed and implemented various technologies to improve search results response time, add new features such as the initial versions of ContentMatch (Overture's contextual ad product) and localized search, and developed several real-time data visualization tools to understand search traffic patterns and server usage. (1998-current)

Senior Manager, Affiliate Technical Services: Created a global "tiger team" of seasoned professionals skilled in software, hardware, and networks to assist affiliates such as Yahoo, MSN, and AOL in optimizing their use of GoTo search services. ATS-related optimization efforts increased affiliate revenue by more than 10% each year since its inception. This highly-skilled team became a key selling point for the affiliate search product. The number of affiliate implementations grew from 20 to over 600 during my tenure as ATS Manager. (2001-2003)

Manager, Unix System and Network Administration: To meet the ever-increasing growth of search traffic, grew the GoTo systems from 10 servers in one site to over 100 servers in three geographically-distinct sites, managed the growth of our backend data warehouse from 500 GB to 10 TB, and managed the network traffic growth from 10 Mbps peak to 100 Mbps peak, with geographic load-balancing and automatic fail-over. Lead the creation of the Overture NOC to monitor 24/7/365 the state of this newly expanded serving capability. (1999-2000)

BlastOff! (2000) [blastoff.com]

Payload Data Systems Lead: Responsible for design and implementation of a remote controlled multi-camera DVD-quality

video and high-resolution still image acquisition system for a privately-funded lunar rover expedition. Investigated the then-novel technique of analysing motion vectors from the MPEG encoding process to supplement radar altimeter readings during EDL (entry/descent/landing). (A technique subsequently used with the descent camera of the recent MER rovers to reduce excessive horizontal velocity before landing)

BlastOff was funded primarily by [Bill Gross](#) and [James Cameron](#), and was their attempt to popularize space travel via "space tourism", bringing space to everyone. At its peak, BlastOff included over thirty scientists and engineers from JPL and NASA, as well as entertainment producers and cinematographers. In spite of generous funding, the cost of a launch vehicle in light of the dotcom bubble popping was too great for BlastOff to continue.

This work was completed during a sabbatical from GoTo.

Presence Information Design / Prama Corporation (1995-1997) [[presence.com](#)]

Software Engineer: Designed and implemented server-side technologies for a variety of high-profile web sites. Clients included [Pacific Bell At Hand](#) (now [SmartPages.com](#), one of the first online yellow pages with editorial enrichment), [Trader Joes](#), Tales from the Crypt (database-driven searches of entire episode library), Fox Interactive, Columbia TriStar, Disney (16 live controllable webcams across both US parks), and [Hot Hot Hot](#) (one of the first e-commerce sites on the Web). Technologies created included session databases, shopping carts, chat systems, application servers, database-to-object translation layers, dynamic page template languages, and many other ideas that have since become staples of e-commerce web sites.

Altadena Instruments Corp. (1994-1996) [[alta.com](#)]

Member of the Technical Staff: Member of a team that designed and implemented a high-resolution visible light camera under the Planetary Instrument Definition and Development Program (PIDDP) under contract with JPL/NASA. This camera would later become the basis for cameras on several Mars missions. The camera was notable at the time in that it relied almost entirely on re-configurable hardware in the form of FPGAs and DSPs, allowing its function to be extensively modified in-flight. Such designs are now standard for most all flight cameras.

Gemstar Development Corp. (1993-1994) [[gemstar.com](#)]

Research & Development Engineer: Designed and implemented several prototypes of consumer electronics devices and in-house tests for said devices. These devices were either microcontroller-based, low-power, embedded systems programmed in both C and assembly, or PC-based embedded systems programmed in C and C++.

TTM & Associates (1994) [[ttminc.com](#)]

Systems Integrator Consultant: Developed several custom IVR (interactive voice response) applications using specialized telephony CASE tools, and integrated and deployed the necessary hardware and software for those applications.

California Institute of Technology - Computer Science Department (1992) [[caltech.edu](#)]

VLSI Mesh Routing Chip Designer: Designed and debugged next-generation Elko Mesh Router Chip (EMRC) under the direction of Dr. Charles Seitz. Using tools such as Magic, COSMOS, SPICE and Verilog HDL, the circuit was simulated at the switch level, behavior level, and transient level and fabricated. The EMRC chip was designed to form the nodes of a large-N 2-D multi-processor / -peripheral mesh.

California Institute of Technology - Computer Science Department (1991-1992, Winter 1993) [caltech.edu]

Teaching Assistant: Taught assembly language programming, digital design, and circuit construction techniques for this three term class using the Intel 80C188/186 processor with development on an In-Circuit Emulator (ICE). Each term required a different project to be designed and built by the students.

California Institute of Technology - Near-Infrared Research Group (Summer 1991) [caltech.edu]

Software Engineer: Helped develop control software for the Keck Telescope infrared imaging system. The software maintained communication with the main Keck computer via Ethernet and archived received data.

California Institute of Technology - Jet Propulsion Laboratory (Summer 1990) [jpl.nasa.gov]

Summer Undergraduate Research Fellow: Designed, constructed and tested an electronically-controlled thermal insulation bath to stabilize a laser light frequency counter.

Skills

In general I try to take a more holistic approach to skillsets. I think there is much to be gained by looking at a problem from many angles. I dislike specialization as it only shows one part of the problem. And so, I've tried to be familiar with a variety of technologies. I feel I can learn anything new pretty quickly. Philosophically, I prefer the peer-review style of [Open Source](#) development.

Computer Languages:

Perl (9 years, expert) --
 Java (8 years, expert) --
 C (12 years, intermediate) --
 SQL (5 years, intermediate) --
 HTML / CSS / Javascript (10 years, intermediate) --
 XML [DTD- or schema-based] (3 years, intermediate) --
 Visual Basic (1 year, beginner) --
 Visual C++ (1 year, beginner) --
 Objective C & Cocoa (1 year, beginner) --
 Assembly [x86, 6502, 68000, 8051, HC11, PIC] (7 years, intermediate) --

Computer Systems:

Unix [Solaris, Linux, Irix] (15 years, expert) --
 DOS/Windows (15 years, expert) --
 Mac OS X (2 years, intermediate) --

Software Design:

Networks [structured, ad-hoc] (10 years, expert) --
Data Design (10 years, expert) --

Hardware Design:

Embedded development (5 years, intermediate) --
FPGAs (2 years, intermediate) --
PALs (2 years, intermediate) --
Digital design (5 years, intermediate) --
Analog/RF design (beginner) --

Publications / Patents

Davis, D., Derer, M., Garcia, J., Greco, L., Kurt, T., Kwong, T., Lee J., Lee, K., Pfarner, P., Skovran, S., Soulanille, T., Gallinatti, J. "System and method for influencing a position on a search result list generated by a computer network search engine" - U.S. Patent no. 6,269,361, July 2001

Interests

Music composition with a variety of instruments (synthesizers, guitar, algorithms)
Subsumption architecture robotics
Mobile ad-hoc networking
Emergent systems
Punny neologisms

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