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Background

- Senior scientist and engineer.
- Most successful roles are in discovering and solving **strategic problems** for a company, and as a tactical team member in implementing large systems within a tight schedule.
- Invent new technologies before they become common practice.
- Generate **patents** (see patent section below).
- Architect and implement major, revenue generating products as well as perform normal code **maintenance** and **testing**.
- Particular expertise in **program correctness** and solving complex problems, especially where **wide domain expertise** is required, spanning both **hardware and software**.
- Demonstrated ability to rapidly develop expertise in new technology.
- Created several inventions not reflected below, such as a **3D bicycle computer** that captures and displays a bicyclist's path, or a **knowledge engineering** and **office automation** product for nearly every aspect of law practice.
- Working on semantic technologies, such as recognizing place names in news articles.
- Working on deducing what I would call "knowledge in the sidebands" in an e-mail project that tries to act as an intelligence personal assistant.

Senior staff engineer 2004–present **Vinq, San Jose**, California

- **Architected** and implemented a social tagging system.
- **Architected** and implemented a e-mail analysis system that looks for queries in outgoing e-mail, responses to queries in incoming e-mails and creates a an automated "todo" list showing the status of responses owed to a manager or that a manager owes to others. Also creates statistical profiles of e-mail user behavior.
- **Architected** and **implemented** Perl modules for database replication and failover, GIS place abstraction and GIS data models. See knowlegeplex.org and dataplace.org.
- **Architected**, and **implemented** a hierarchical configuration system, news crawler, generalized logger, data change logger, error handler, proxy objects for database.
- Architected and implemented a programmable, pattern matching **web crawler** with feature extraction.
- Worked on locale determination, topic relevance and person extraction from crawled documents.
- Created site visualizations applications to show the state of databases, subsystems and so forth.
- Most of the work was done in Perl, with some C and some Java.

Research 2003–2004

- **Researched** a new consumer product to implement "ubiquitous computing" based on micro powered mobile devices that create a dynamic, mesh network. Worked on the prototype.

Senior staff engineer 2000–2002 **Sun Microsystems, Menlo Park**, California

- **Architected**, **implemented** and **shipped** a debugger data visualization system for **netbeans** that provided highly customizable display of data, similar to the Mathematica visualization model, for Java and classic languages (e.g., FORTRAN, C, C++). This increased the marketability and potential user base for what was previously, a Java-only product.
- **Architected** remote services, allowing a developer on, say, a Linux or Wintel box to develop

locally, yet compile, debug, deploy, and execute on a set of remote machines. This would greatly increase the number of developers who could immediately begin creating Sun-based products.
- **Lectured** various groups in the company on use of **goal-directed problem solving methods**, especially for use in debugging and as an **expert system** for customer support.

Senior engineer, web indexer group 1998–2000 **AltaVista,** San Mateo, California
- As **Project manager** for **improved relevance,** created the methodology of using regression to improve the ranking algorithm. Relevance increased more than 10% as a result.
- In order to create a useful regression set of data, I designed, implemented, and administered an online **user survey**. The result was a large database of queries and corresponding collaboratively-ranked search results.
- With diminished opportunities for increased relevance via ranking modification, was **project lead** for 3 simultaneous **strategic** projects to define the next generation of **search technologies**. These projects increased relevance via specific, **goal-directed** strategies, and improved the user experience by providing task-oriented guidance in the use of advance search strategies.
- Created a **site visualization tool** that provided a graphical overview of the status of all the machines involved in building, maintaining, and serving of search results.
- **Created** the technology to support **site compression** of query results.
- **Created** new **algorithms** to improve the performance and relevance in the search engine.

Consultant 1998 **Winbond Systems Laboratory**, San Jose, California
- To release Winbond from dependence on third-parties for critical technology, **designed and implemented** an **ASN compiler** that parsed **H.245** specifications (Control Protocol for Multimedia Communication) and created a portable, customizable C-language handler for H.245 messages.

Senior Engineer 1997–1998 **Newton, Inc.,** Cupertino, California
- During the last few months of Newton's existence, was **toolsmith**. Analyzed the debugging needs for the group. Contributed to the overall design and engineering effort.

Senior engineer 1996–1997 **Apple Computer**, Cupertino, California
- To significantly speedup program startup, **rearchitected** "load on demand" in the debugger.
- To best leverage my background in **program correctness**, produced numerous **analyses of problems** and **proposed solutions** for a simpler, more robust product.
- Responsible for **cross group communication** between debugger, compiler, operating system, and Java groups.
- Acted as **consultant** in the C++ language, its use, and ensured the ability to debug all features of the language so that the future product would support all the required customer features.

Chief architect 1992–1996 **Taligent**, Cupertino, California
- Culminating over 10 years of research, design, and implementation effort, I created a **new paradigm** for debugging, using **goal-directed** problem solving to deliver a debugger which was able to significantly reduce software errors, implementation bottlenecks, and schedule risk. This work led to 5 patents, with 4 more in progress when the company was acquired.
- In order to further reduce software cost and time-to-market, the tool also supported debugging of **severely optimized code, design rule checking**, **performance analysis**, **coverage analysis**, and new models of team debugging (e.g., cooperative and competitive debugging).

- Designed and implemented the compiler/debugger communications, expression handling, core logic, data imaging and formatting, data read/write, language adapter, architecture adapter, register state, stack state, and stack viewer portions of the debugger while still acting as **architect** and **project leader** for the team.

Principle engineer 1987–1992 **Rational**, Santa Clara, California

Manager of the languages and environment grou**p** 1985–1986 **Ebnek, Inc.**, Wichita, Kansas

1983–1985 **Apollo Computers**, Chelmsford, Massachusetts

CEO/CTO 1983–1985 **Iowa Mountain Software**, Hiawatha, Iowa

General Partner 1981–1983 **Legal Data System**, Houston, Texas

Proprietor 1977–1982 **Wimble Robotics**, Marion, Iowa

- **Patents**
  Five software patents for my work in the design of the Taligent "cpProfessional" debugger product.

  US06067641 Demand-based generation of symbolic information

  US05956479 Demand based generation of symbolic information

  US05815653 Debugging system with portable debug environment-independent client and non-portable platform-specific server

  US05812850 Object-oriented symbolic debugger using a compiler driven database and state modeling to control program execution

  US05778230 Goal directed object-oriented debugging system

  The patents cover the architecture and components involved in portable, cross machine debugging; the grammar used to communicate between the compiler and debugger—particularly how the compiler describes the effects of code optimization; and the goal-directed problem solving paradigm used in the core.

- **Languages**
  Assembly (various), BASIC, C, C++, DHTML, DOM, HTML, Java, Javascript, Lisp, NesC, Pascal, Perl, Php, Ruby, XHTML, XML, XPATH, XSLT

- **Education:** BS in mathematics with electronics minor, University of Vermont. Partial completion of Master's degree program at Wichita State University.
- Various courses in J2EE and XML.