



MONICA ANDERSON

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PROFILE

A pioneer of 21st century AI research with over a decade of experience in classical AI; a creative thinker that delivers; competent in many disparate fields from hardware design to Epistemology; a good communicator on the web, as a presenter, and on video; software competence beyond languages and OSs; hardware competence beyond brands; systems competence beyond racks and networks; vision far beyond tomorrow.

EXPERIENCE

CEO, FOUNDER, MAJORITY OWNER – SYNTIENCE, INC. — (2001-2004), 2006-PRESENT

Director of Research and Principal Researcher

Invented revolutionary machine learning algorithm called Artificial Intuition in 2001. Explored and developed the concept 2001-2004 and 2006-present with the goal of creating systems that will fully understand any chosen human language. Potential applications include **data mining**, webpage quality evaluation, spelling/language/**OCR**-error correction, **entity extraction**, and spam filtering.

Developed these ideas into a comprehensive theory of general learning in human minds and in machines in sufficient detail to guide implementation work. **Created** artificial-intuition.com **web site** as an introduction to the theory using Apache, Linux, hand-crafted HTML, CSS, and JavaScript.

Incorporated Syntience Inc. in Feb. 2004. **Managed** two other full-time paid researchers and some external programmers in further development 2007-present. Now managing two volunteer researchers and one offshore volunteer programmer.

Designed and implemented 14 versions of experimental software to explore and improve the algorithm. Co-designed three others that were implemented by research staff. Designed and implemented nearly all debugging, analysis and visualization tools for all versions. Made three attempts to convert algorithm to run on parallel architectures based on **OpenMPI**, **Berkeley Universal Parallel C**, and **OpenMP** but abandoned efforts after recommendations from other corporate researchers. Used several patterns from Gamma et al's book.

Designed and built rack-mounted corporate **supercomputer** from board level up. Provided all IT infrastructure for company including all hardware, networks, security, IDEs, VPNs, firewalls, multi-display workstations, laptops, Wiki, MySQL database, and web servers. **Maintained corporate web site** at syntience.com, a blog at monicasmind.com, and upheld a social networking presence.

Created corporate portable video capability and video studio with multi-camera HDTV, Final Cut Pro/Studio and multi-channel digital recording capability. Posted multiple videos of talks to the web at videos.syntience.com. Volunteered video recording capability to local **ACM** chapter.

Created presentations, documentation, and training materials. Gave presentations to employees and other parties on site, at ai-meetup.org meetings that I organized, and at multiple conferences.

Managed Syntience Inc. 2006-present. Initiated and maintained connections with mentors, legal advisors, corporate accounting services, industry experts, and professional groups. **Funded** all development 2001-present.

SOFTWARE ENGINEER – GOOGLE, INC. — SEPT 2004-SEPT 2006

International Quality, Enterprise Search

Researched automated syntax-based page quality evaluation methodologies. Initiated, designed, and implemented a visualization, analysis, and optimization infrastructure/workbench for this purpose based on **Google's MapReduce** facility and GnuPlot, written in C++ and Python. Provided support for language-specific web search algorithm development in multiple non-english languages. Gave presentation about Genetic Algorithms in internal Machine Learning class. Worked on GUI for Google's **enterprise search** product using Java; discussed enterprise search indexing algorithm improvements with researchers. Development used some agile techniques such as scrum. Submitted applications for five patents in the field of social interactive media.

CO-FOUNDER, 50% OWNER – ROWANWOOD, INC. — 1998, 2001 - MARCH 2002
Systems Design and Java Programming Consultant

Client 2001 - 2002: British Shire Horse Society and Sandy Lerner:

Created a system to manage horse registry since 1889 using **Java**, **Swing**, and **MySQL**. Extracted information by **data mining OCR** scans of registry books using parsers created by writing a grammar for the ANTLR parser-generator. Invented **genetic algorithm** to untangle directed acyclic graphs of interrelated horses. **Invented** string comparison algorithm that is resilient to OCR or data entry errors in horse, owner and breeder names and addresses for unification purposes.

Client 1998: Dept. of Medical Information Systems, IDEWE vzw, Heverlee, Belgium.
Systems design and Java programming

SOFTWARE ENGINEER – KANISA, INC. — 1998 - 2000
Member of AI group, Toolsmith, and Knowledge Engineer

Developed knowledge-base software and supporting tools. Created the prototype for a tech support self-help (tier-zero CRM) system for Apple Computer, Inc. using Kanisa's product. Was **technical lead** in project for the full implementation at Apple's website. Participated in a corporate effort to extract meta-knowledge from previous implementations. Created a catalog of patterns, in the spirit of "Design Patterns" by Gamma et al., for knowledge map and customer dialog design. Taught classes to, and mentored, corporate knowledge engineers.

Initiated an inquiry into the efficacy of a certain methodology, and as a result, recommended a change in corporate strategy and positioning that was adopted by corporate management.

Cooperated with consultants from CYCorp on vertical-domain knowledge base layer for **CYC**. Took one-week class at CYCorp. Explored CYC internals in some detail. Wrote low level **TCP/IP library** as a Windows DLL to enable CYC access from Kanisa's product.

Initiated and created modular framework for testing natural language processing (NLP) modules. Adapted a parts-of-speech (POS) tagger to this workbench, added CYC access, and wrote other modules such as a super-fast term scanner (implementing an algorithm I developed for the purpose).

Suggested, then developed with two others an implementation language that became a corporate standard, replacing several other ad-hoc efforts. Introduced ANTLR parser generator to the company, wrote a grammar for the language, and created parsers in Java and C++.

Initiated, designed, implemented, and documented a graphical browser and editor for taxonomical datasets, the Kanisa Knowledge Factorizer. Added JDBC/ODBC connectivity to access **Microsoft SQL Server** and **Oracle** databases and **XML** export and import of knowledge maps. Added graphical reporting capabilities including a small report specification language interpreter. Although originally an internal tool, the Factorizer became so popular with customers that it was made part of the product offering.

Attempted to introduce XP (Extreme Programming) into company; management decided not to try it.

SOFTWARE ENGINEER – COMMUNITIES.COM — 1996 - 1998
Systems Designer and Java Programmer

Designed and developed software for a distributed virtual world platform, written in Java. Maintained, redesigned, and re-implemented a distributed Object Persistence Repository developed in-house. Created tools for managing these. Initiated, designed, implemented, and documented a Java Object Inspector using the object serialization created for the Repository. Initiated, designed, implemented, and documented an event debugging tool capable of single-stepping the virtual world, integrated with the Object Inspector. Designed and implemented a peer-to-peer Java object publishing and downloading scheme that uses MD5 CryptoHashes as globally unique keys and caches downloaded objects in the Persistence Repository.

PRIVATE RESEARCH PROJECT — JAN 1994

Genetic Algorithms Research

Successfully attacked an intractable set-theoretical problem called "The Constrained Set Coverage Problem" and which is known to be **NP-Hard** using a genetic algorithm written in Macintosh Common Lisp. Previously, it had taken 3 days on a Cray supercomputer to solve the problem by brute force. My GA code produced the same answers in 20 minutes on a Macintosh Quadra.

CONSULTING — 1989-1995

Software Design Consultant

Client: Cisco Systems, Inc.

Independently designed and implemented three generations of order entry front-end systems and rule-based product configuration verifier **expert systems**, using C and Common Lisp. Created a version using Macintosh **Common Lisp/CLOS** for field use, thereby **pioneering Field Force Automation**, which received a standing ovation from the salesforce at its introduction. Analyzed product line and manufacturing processes and built computer models to do verification of product configurations. Invented concept of "Order Expansion" – Adding required parts to order based on major parts and pseudo-products called "Flavors" acting as high-level specifications. Expansion became very popular. Invented a novel legacy system interface module to Cisco's MRP/ERP system.

SCHLUMBERGER PALO ALTO RESEARCH — 1985-1988

Manager, Systems Support

Maintained all networks, SUN servers and 70+ SUN clients, and all Macintosh systems on site.

Managed five people who maintained Lisp machines, email, backups, and other systems.

Planned, budgeted, purchased, and implemented 5 SUN servers and other infrastructure.

Created automated backup system that allowed 100+ users to themselves access hourly backups.

LINKÖPING UNIVERSITY, SWEDEN

Teaching Assistant

Taught Artificial Intelligence Lab courses (students analyzed SOPHIE and other AI systems). Taught algorithms and data structures, programming project lab, and other courses. Worked on various research and maintenance projects at the CS department, some using Interlisp. Discussed TMS, KR, NLP, LISP, and other AI topics with CS department researchers. **Initiated** and participated in student projects – porting LISP interpreters, building computers using microcomputer chips, writing CRT emulation software (which became a commercial product), and maintaining vintage computers. Built personal computer from chip level on up and wrote 60% of a kernel for it in assembler. Designed and built video card from chip level up without using VLSI chips.

EDUCATION

Master of Science, Computer Science with a minor in Electrical Engineering. Linköping University, Sweden 1985.

OTHER

Born in Sweden; U.S. citizen since 1995.

SKILLS

Multilingual: Fluent in English, Swedish, and Finnish, speaks and reads German, and reads some French; understands Norwegian and Danish. Experienced public speaker. Occasional trade show presenter. **Facilitator** and presenter at over 60 meetings at ai-meetup.org which has over 700 members on mailing list and is **second largest AI meetup in the world**. Competent with HDTV video, multi-channel digital sound recording (in the studio and in the field), lighting, animation (using Apple KeyNote or Apple Motion), and video post-production using **Final Cut Pro**. Current facilitator of monthly life-planning meetings with a handful of friends. **Songwriter** for established artists. keyboardist, beginning Pedal Steel Guitar player and occasional singer. Club level Bridge player. Occasional video gamer. Snowboarder and downhill skier. Built **24-legged robot** with soft legs – video available.

REFERRALS AVAILABLE ON REQUEST