

DANIEL V. KLEIN

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EXPERIENCE

1979-Present, FREELANCE CONSULTANT/SOFTWARE DEVELOPER, Over the past three decades I have served as a freelance consultant for a wide range of companies worldwide. My important contributions include:

- 1) Acting internationally as a Unix system “guru”, providing consulting and development expertise. My Unix internals experience dates from 1976 – I have written device drivers, enhanced and debugged the kernel, designed file systems for use with the AT&T File System Switch, modified and written user utilities, and dealt with all aspects of Unix. I have also designed and implemented new programs and systems (including numerous web-based and host-based applications).
- 2) Tutorial instructor/trainer (courses range from “Management Introduction to Unix” through “CGI Programming with Perl” through “BSD 4.2 Internals” and “AT&T System V Internals”), and course developer (such as Unix device drivers, CGI Programming with Perl, Solaris Internals, Python Programming, Website Development with Perl, System Security Auditing with Perl, and Combating Spam) all regularly taught worldwide.
- 3) Perl and web consultant. Since 1995 I have been providing Perl and web consultancy, developing quick-turnaround solutions to customer needs. These include firewall monitoring, web proxies, electronic antenna simulations, log processing, financial modeling, and CGI scripting. See Client List, below.
- 4) Systems and security consultancy for Wall Street firms. See Client List, below.
- 5) Expert witness in computer-, internet-, intellectual property and web-based court cases. See Client List, below. I have been deposed a number of times and have experience testifying in front of a jury.
- 6) Developed *thermd*, an open-source environmental monitoring, logging, and reporting system, that supports dozens of manufacturer’s hardware; used by hundreds of people and companies worldwide.
- 7) For General Electric Corporation, Israel Aircraft Industries, Sanders Associates, Control Data Corporation, and International Telephone and Telegraph, provided assistance and consulting expertise on the development of ISPS computer hardware descriptions. Also, designed and delivered a three-day course on ISPS and PMS hardware descriptive languages.

1992-Present, VICE PRESIDENT, TECHNOLOGY DEVELOPMENT, LoneWolf Systems. I founded and implemented The Internet Business Pages, a national Internet-based web hosting and advertising service (once, one of the 25 largest such services worldwide, <http://www.ibp.com/>). I am responsible for the server architecture, creating all of the CGI scripts used on its numerous servers, designing and maintaining the Internet firewalls, and assorted utility systems.

Early in the history of LoneWolf, I designed and implemented of a state-of-the-art multi-architecture distributable User Interface Management System (approx. 85K LOC in one year), as well as overseeing programmers and technical writers responsible for the implementation and documentation of various aspects of the system.

1990-Present, EDUCATION DIRECTOR, The USENIX Association. I am responsible for coordinating all aspects of the tutorial program for the Association. The USENIX Association is 5,500+ member professional association of users of Unix and Unix-like operating systems. The tutorial program offers 60-85 classes a year, and generates over \$2M in income for the Association.

1986-1992, SENIOR MEMBER OF THE TECHNICAL STAFF, Software Engineering Institute. My time at the SEI concentrated on investigation of RISC architectures, compilers, and operating systems for the DoD CORE MIPS project, research, development of a distributed Ada realtime kernel, development of a generalized User Interface Management System (UIMS), and design and development of an architectural description and connection language. Specifically, this included:

- 1) UniCon – technical lead in the design and implementation of a system for specifying software architectures and then constructing them from the component parts. UniCon is part of a research project to investigate software architectures: how they are specified, designed, constructed, and maintained, and what taxonomies can be used to describe the components and connectors of complex software systems.
- 2) Serpent UIMS – participated in the design and development of a generalized User Interface Management System. My work incorporated the technology interface, and portions of the compiler and runtime modules (including greater than 2 orders of magnitude performance improvements) The current version of the Serpent system is in use at over 200 sites worldwide.
- 3) Design and implementation of a Distributed Ada Real-Time Kernel (the DARK project). This Ada Kernel allows a single application to be distributed across multiple, concurrently executing processors, communicating through an independent communication network, executing in real-time with explicit control over scheduling, synchronization, and communication of processes.

- 4) Detailed analysis and evaluation of RISC processors, with comparisons to classical CISC architectures based on architectural efficiency, register allocation and use, data and instruction throughput, software utilization of the architecture, and benchmark performance.

1977-1984, MANAGER OF SOFTWARE SYSTEMS, Computer Engineering Center, Mellon Institute. I was in charge of the technical direction and administration of several projects. I also acted as the local consultant to all software projects at the Computer Engineering Center. Additionally, I generated proposals and acted as a primary customer contact for both ongoing contract work as well as obtaining funding for new contract work. The various projects included:

- 1) A real time, distributed intelligence, process control system, including communications protocols between field microprocessors and a centralized PDP-11 system, local hardware control algorithms, and fault tolerant software/hardware redundancy.
- 2) Implementation of a generalized cross assembler generator, which takes a simplified description of a target machine and automatically generates a complete cross assembler for that machine. The cross assembler system is very flexible, and can handle arbitrary width processors (including bit slice). The project also included the design and implementation of a generalized, machine independent, relocating linker.
- 3) Implemented and optimized of the ISPS computer hardware descriptive language simulator under VAX-VMS. This involved the translation and reimplementing of 20,000 lines of source program.
- 4) Designed and coordinated the implementation of the MODLINK interconnection language. This high level language interfaces with ISPS, and serves as the structural modelling component of the system. It allows for sophisticated, multi-level connections between functional descriptions on a per-bit or per-bus basis.

1977, INSTRUCTOR, Carnegie-Mellon University, Department of Mathematics. Designed and taught an introductory programming class for liberal arts students (enrollment 150+ students), and served as a recitation instructor for sophomore level calculus.

1976, SYSTEMS PROGRAMMER, Mt. Sinai Hospital, Computer Science Department. Implementation and participation in design of an automated ophthalmological diagnostic system, including speech synthesizer, analog plotting system, graphics output terminal, and user interface.

1975-1977, PROGRAMMER, part time, Carnegie-Mellon University, Computer Science Department. Design and implementation of user and system level software for C.mmp/Hydra.

EDUCATION

M.A.M. (Masters of Applied Mathematics) 1983 Carnegie-Mellon University.

B.S. (Mathematics) 1977 Carnegie-Mellon University.

PROFESSIONAL ASSOCIATIONS

Professional Consultant for TELTECH and Intota/Guidewise (Telephone Technical Support)

Member of USENIX Association

Conference chairman for Winter 1990 Meeting.

Program committee member in 1987, 1988, 1989, and 1992.

Nominee for Board of Directors, 1990, 1991.

Tutorial Coordinator, 1990-1999.

Director of Tutorial Training, 1999-2007.

Education Director, 2007-present.

European Unix User's Group, Program committee member in 1990.

Soviet Unix User's Group, Program committee member in 1993.

Chairman, Carnegie-Mellon University Staff Council (1980-1983)

Chairman, Carnegie-Mellon University Grievance Review Board (1981-1983)

Member of Board of Advisors, Signature Financial Planning (1997-present)

Certified ICCA (International Championship of Collegiate A Cappella) Adjudicator

LANGUAGES

Perl, Python, C, HTML, Javascript, VBA, Ada, BLISS, PASCAL, SAIL, ALGOL, various assembly languages, BASIC, FORTRAN, Java, PHP, C++, APL, numerous assembly languages, LISP, various CHDL languages, MODULA-2, PostScript, SNOBOL...

Russian, German, French...

PERSONAL DATA

Age: 52 Health: Excellent, secret security clearance (exp. 2/88). I enjoy travelling, bicycling, Ultimate frisbee, and raquetball. I performed for 6 years with a professional improvisational comedy troupe, teach improv workshops, direct and sing bass-baritone in a professional *a cappella* group (In Acchord), am a docent at the National Aviary, photographer for Pittsburgh Opera, have volunteered at local women's health clinics, and serve on the speaker's bureau for the Center for Organ Recovery and Education.

Invited Talks and Keynotes

- “Frank Lloyd Wright was Right!”**, Opening plenary, AusCERT, May 2009
- “Security As If Your Life Depended On It (because it might!)”**, Invited talk, AusCERT, May 2008; Keynote, OpenSource Days, Copenhagen, October 2008
- “RFID – Social Impacts and Implications”**, Invited talk, AusCERT, May 2007
- “Perfect Data in an Imperfect World”**, Keynote, LinuxForum Denmark, March 2006; also an invited talk at the USENIX LISA Conference, Washington D.C., December 2006. Keynote, TRMA/CFCA Summer Conference, Orlando FL, <http://trmanet.org/>, June 2009
- “Flying Linux”**, Keynote, LinuxForum Denmark, February 2004; also an invited talk at USENIX LISA Conference, Atlanta, November 2004
- “The Constitutional and Financial Argument Against Spam”**, Invited talk, USENIX LISA Conference, Philadelphia, November 2002
- “The Evolution of E-Commerce: a 150 Year History”**, Invited talk, Open Systems Conference, Moscow, Russia, May 2000 and USENIX LISA Conference, San Diego, December 2001 and SANS conference June 2002
- “Succumbing to the Dark Side of the Force: The Internet as Viewed from an Adult Website”**, Invited talk, USENIX General Conference, New Orleans, June 1998 and USENIX LISA Conference, Boston, December 1998
- “Scaling your Website to a Million Hits a Day (and more)”**, Invited talk, USENIX General Conference, San Diego, June 1996
- “From Blazon to PostScript – Eight Centuries of Page Markup Languages”**, Invited talk, USENIX Conference, Nashville, June 1991

Expert Witness and Other Legal Experience

- LoneWolf Systems, Inc. (Plaintiff) vs. Cybertainment, Inc.**, Allegheny County Court, Pennsylvania (AR-00-000623). I was the plaintiff (Thomas J. Dempsey, Jr. as counsel). I was deposed by the defendant and delivered testimony in front of Arbitration Board #28230. Judgment was awarded to the plaintiff.
- Woodworker’s Supply, Inc. vs. Los Alamos Technical Associates, Inc. (Defendant)**, United States District Court for the District of New Mexico (D.C. No CIV-99-796 LCS/DJS). Represented Defendant (Jay Hertz of Sutin, Thayer & Browne as lead counsel). I delivered an expert report, was deposed by the plaintiff, and delivered testimony in a jury trial. The jury awarded judgment to the Defendant, which was unanimously upheld in appeal.
- Elonex I.P. Holdings (Plaintiff) Phase II Power Management Litigation vs. Apple Computer Corporation, Compaq Computer Corporation, et. al.**, United States District Court for the District of Delaware (01-082 GMS; 01-083 GMS; 01-084 GMS; ... 01-103 GMS; 01-104 GMS). I represented the plaintiff (Robert Rhoad of Dechert, Price, and Rhoades as lead counsel) in a patent infringement case. I delivered an expert report, and case was settled favorably for plaintiff.
- SCO (Plaintiff) vs. IBM**, United States District Court for the District of Utah (Civ No 03-CV-0294). I represented the plaintiff (Robert Silver of Boise, Schiller & Flexner LLP as lead counsel). I performed case-related research, prepared internal reports, and gave technical advice. Case is on administrative hold.
- ThePlanet.Com Internet Services Inc. vs. Softlayer Technologies, Inc. (Defendant)**, District Court, 298th Judicial District, Dallas County, Texas (Cause No. 05-08690-M). I represented the defendant (for attys. Paul Storm and Mark Perdue of Storm LLP) in an intellectual property case. I delivered an expert report, was deposed by the plaintiff, and delivered testimony in a bench trial. Case is in deliberation.

Selected Client List

- JP Morgan Chase** – project manager: developed requirements, specifications, and design for a company-wide password escrow system
- Morgan Stanley** – security analysis and consulting
- RedPathIP** – developed software for pathology screening
- Grant Street Group** – LAMP (Linux/Apache/MySQL/Perl) software development for tax collection and reporting for a number of Florida Counties
- SystemExperts** – security consulting

Cummins Diesel – developed web-proxy and firewall analysis tools

Air Force Judge Advocate General – developed web-based email system

Lycos – developed banner advertising system

Galt/Intuit/Quicken – developed web-log analysis tools

Erdős-Bacon Numbers

Erdős number = 5

Daniel V. Klein coauthored with Mary Shaw (see below)

Mary Shaw coauthored with Paul N. Hilfinger [MR0642985 \(83e:68001\)](#)

Paul N. Hilfinger coauthored with Günter Rote [MR1116360 \(92i:68122\)](#)

Günter Rote coauthored with János D. Aczél [MR1402406 \(97m:39003\)](#)

János D. Aczél coauthored with Paul Erdős [MR0186563 \(32 #4022\)](#)

Bacon number = 2

Daniel V. Klein appeared with Richard Kind in *If It Ain't Broke, Break It!* (2009)

Richard Kind appeared with Kevin Bacon in *Queens Logic* (1991)

SELECTED PUBLICATIONS

- DiFatta, C.; D. V. Klein; M. Poepping; “**Harnessing a Wide Array of Telemetry Data to Enhance the State of the Practice of Distributed System Diagnostics**”. *Proceedings of the First USENIX Workshop on the Analysis of System Logs, December 2008*
- Klein, D. V.; “**A Forensic Analysis of a Distributed Two-Stage Web-Based Spam Attack**”, *Proceedings of the 20th Large Installation System Administration Conference, Washington D.C., December 2006 (this paper was voted an “Honorable Mention” award by the program committee)*
- Klein, D. V.; “**Defending Against the Wily Surfer – Web-based Attacks and Defenses**”, *Proceedings of the USENIX Intrusion Detection Symposium, April 1999*
- Klein, D. V.; “**Developing Applications with the Alpha UIMS**”, *ACM Interactions 11(4), October 1995*
- Shaw, M., R. DeLine, D. Klein, T. Ross, D. Young, G. Zelesnik; “**Abstractions for Software Architecture and Tools to Support Them**”, *IEEE Transactions on Software Engineering, Special Issue on Software Architecture, 21(4) April 1995, pp 314-335.*
- Bishop, M., D. Klein; “**Achieving Password Security Through Proactive Checking**”, *Computers and Security 14(3)*
- Klein, D. V.; “**Developing Applications with a UIMS**”, *Proceedings of the USENIX Applications Development Symposium, Toronto, April 1994*
- Klein, D.V.; “**Serpent: System Guide**”, Software Engineering Institute User’s Guide CMU/SEI-91-UG-2, April 1991
- Hardy, E. J., D. V. Klein; “**The Serpent UIMS**”, *Proceedings of the European Unix User’s Group, Nice FRANCE, October 1990*
- Klein, D. V.; “**Foiling the Cracker; A Survey of, and Improvements to Unix Password Security**”, (revised paper with new data) *Proceedings of the 14th DoE Computer Security Group, May 1991*
- Klein, D. V.; “**Foiling the Cracker; A Survey of, and Improvements to Unix Password Security**”, (original paper) *Proceedings of the United Kingdom Unix User’s Group, London ENGLAND, July 1990*
- Bamberger, J., T. Coddington, R. Firth; D. Klein, D. Stinchcomb; R. Van Scoy; “**DARK Porting and Extension Guide**”, Software Engineering Institute Technical Report CMU/SEI-89-TR-40, December 1989
- Klein, D. V.; “**RISC vs. CISC From the Perspective of Compiler/Instruction Set Interaction**”, *Proceedings of the European Unix User’s Group, Vienna AUSTRIA, September 1989*
- Klein, D. V.; “**Comparison of RISC CPUs**”, *MIPS – The Magazine of Intelligent Personal Systems, July 1989*
- Bamberger, J., T. Coddington, R. Firth; D. Klein, D. Stinchcomb; R. Van Scoy; “**Kernel User’s Manual**”, Software Engineering Institute Technical Report CMU/SEI-89-UG-1, February 1989
- Klein, D. V.; “**A Comparison of Compiler Utilization of Instruction Set Architectures**”, *Proceedings of the Winter 1989 USENIX Conference, San Diego CA, January 1989*
- Bamberger, J.; Colket, C.; Firth, R.; Klein, D., Van Scoy, R.; “**Distributed Ada Real-Time Kernel**”, Software Engineering Institute Technical Report CMU/SEI-88-TR-17, August 1988
- Klein, D. V.; Firth, R.; “**Final Evaluation of MIPS M/500**”, Software Engineering Institute Technical Report CMU/SEI-87-TR-25, November 1987
- Klein, D. V.; “**UBOAT – A Unix Based On-Line Aid to Tutorials**”, *Proceedings of the European Unix User’s Group, Dublin IRELAND, September 1987*
- Klein, D. V.; “**A Capability Based Protection Mechanism for Unix**”, *Proceedings of the Winter 1985 USENIX Conference, Dallas TX, January 1985*
- Klein, D. V.; Svolou, A.; “**MODLINK - An Interconnection Language for the ISPS environment**”, *International Congress on Technology and Technology Exchange (ICTTE), Pittsburgh, PA, October 1984*
- Klein, D. V.; Sznyter, E. W., III; “**MIRAGE Assembler Designer Manual**”, Computer Language Investors, July 1982
- Klein, D. V.; “**Pay no attention to the man behind the curtain**”, *IEEE Computer, 14(11) November 1981*
- Bortz, A. B.; Klein, D. V.; McConnell, T. M.; Svolou, A.; Wan, C. M.; “**Recommendations for a VHSIC Standard Hardware Descriptive Language**”, Technical Report to VHSIC-1 Development Program, Mellon Institute of Research, Computer Engineering Center, October 1981
- Hudak, J. J.; Klein, D. V.; Leonard, R. J.; “**A Multi Level Distributed Architecture for Real Time Control**”, *Fourth Annual Conference on Computer Technology, March 1981*
- Klein, D. V.; “**MMPS - A Multiple Microprocessor Simulator**”, *AFIPS Conference Proceedings, National Computer Conference, July 1979*

D'Ippolito, R. S.; Gerwing, T. P.; Hermann, T. S.; Jones, A. P.; Klein, D. V.; Krutz, R. L.; Kyle, E.; Nowak, F.; Patton, G. R.; Sieworek, D.; Wecker, D. B.; **"A Study to Predict Computer Applications and Requirements for the 1985 Time Frame"**, Technical Report to Corporate Research Center, Honeywell Inc., May 1978