Paul McJones

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Employment

Computer History Museum — Volunteer software preservationist
San Jose, California — December 2002 to present

Main contributor to Software Preservation Group including IBM 704 FORTRAN, LISP I/1.5, ALGOL, ..., Xerox Alto, and Xerox PARC file system archive; cataloged the Herbert Stoyan collection on LISP programming. Publish the Dusty Decks blog.

Adobe Systems — Principal Scientist
San Jose, California — January 2003 to January 2010

Coauthor with Alexander Stepanov of *Elements of Programming* (Addison-Wesley, 2009 and Semigroup Press, 2019). Codesigner and implementor of Adobe Pixel Bender language for parallel execution of image processing algorithms. Created a corporate archive of historic Adobe source code, including Photoshop 1.0.

AgileTV (now Promptu) — Director, Internet Technologies & Applications
Menlo Park, California — 2001 to October 2002

Recruited and led a team that built client-server systems for two-way voice-controlled digital cable TV.

Epiphany (now Infor) — Principal Engineer
San Mateo, California — 1998 to 2001

Architected components for Epiphany Service 6. Designed, implemented and/or project-managed various features of Epiphany E.4 thin-client business intelligence/campaign management system. Ran build/test automation for early product releases (3.4, 4.0).

DEC Systems Research Center — Consultant Software Engineer
Palo Alto, California — 1985 to 1998

Millicent microcommerce system: transferred technology from research to product development team.

Each to Each recommendation system: designed the C++ API for the collaborative filtering kernel; managed beta deployment; ran the EachMovie showcase for its final seven months of operation; published the anonymized user preference data for use by academic collaborative filtering researchers.

Virtual Paper high-quality document viewing system and pstotext PostScript text extraction utility: co-designer.

Modula-3 libraries: designed the portable operating-system interfaces and edited the reference manual for the core libraries. Modula-3, with its strong typing, object orientation, threads, and exceptions, was a precursor of Java.

Vulcan programming environment: managed a project that built a fast turn-around Modula-2+ programming environment, in conjunction with the Vesta configuration management system; served as release manager for one million lines of code managed with this system: Vulcan, Vesta, the Topaz operating system, and applications.

Taos operating system: co-designer of Unix emulation server for a pioneering microkernel-based operating system for the Firefly multiprocessor workstation. Topaz was binary-compatible with Ultrix (4.2BSD) and also provided a new RPC-based API for multithreaded programs.

Tandem Computers — Software Designer
Cupertino, California and Austin, Texas — 1981 to 1985

Instigator, technical leader, and architect of a workstation for an integrated data processing/office environment. The team of four built a hardware prototype (Motorola 68010 CPU, virtual memory map, 1000x800x1 bitmap display) and low-level system software (written in Ada).

Xerox — Consulting Member of Programming Staff
Palo Alto, California — 1976 to 1981

Pilot architecture: co-designer of the Pilot embedded operating system. Pilot implemented multiple threads and a single virtual address space; it was implemented in Mesa, a strongly-typed system implementation language in the Pascal/Modula-2 family.

Pilot technical lead: technical leader, then formal project leader of the Pilot group, up through the first releases used in the 5700 electronic printer, the Xerox 8010 Star office automation system and early versions of Xerox PARC's Cedar programming environment.

Pilot implementation: designed and implemented many components of Pilot, including virtual memory, boot-loading, debugger interface, hardware abstraction layer, etc.

IBM Research — Research Staff Member
San Jose, California — 1974 to 1976

System R recovery component: designed the transaction abort and crash recovery component. System R introduced the SQL language and demonstrated that a relational system could provide good transaction processing performance.

Functional programming: proved the well-definedness of an operational semantics for a precursor to John Backus's FP language; consulted with Backus on modeling systems with state using applicative languages.

Virtual Memory Systems — Programmer
Orinda, California — 1973 to 1974

Designed and implemented an indexed access method for a minicomputer data management system.

University of California, Berkeley — Programmer
Berkeley, California — 1967 to 1973

CRMS APL: designed and implemented a virtual machine for APL in microcode for a Digital Scientific Meta4 processor. The virtual machine featured correctly-rounded floating-point (some 12 years before IEEE 754) and dynamically-allocated storage.

CAL TSS: designed the directory manager and other components of the CAL Timesharing System. This system ran on the CDC 6400 and featured a capability protection scheme.

CAL SNOBOL: co-designed with Charles Simonyi an implementation of SNOBOL4 for the CDC 6400 that was efficient enough to use for undergraduate programming assignments.

Athena Programming — Programmer
Redondo Beach, California — 1967

Developed and maintained Univac 1108 utility programs.

EDUCATION

University of California, Berkeley, Bachelor of Science (with highest honors), Engineering Mathematics, 1971

PUBLICATIONS

History of CRMS APL. To appear in *IEEE Annals of the History of Computing*, January-March 2026. Author's draft: PDF / Archive

(Refurbished) Software Preservation Group web site, October 2025. Online

History of the CAL Timesharing System, with Dave Redell. *IEEE Annals of the History of Computing*, July-September 2023. Online / Archive

Xerox PARC file system archive. May 2023. @CHM by David Brock / Walkthrough, with Hansen Hsu / Archive

CAL SNOBOL web site. July 2021. Online

The Advent of Digital Typography: Interview With Liz Bond Crews. *IEEE Annals of the History of Computing*, January-March 2020. Online

Elements of Programming, with Alexander Stepanov. Addison-Wesley Professional, 2009 and Semigroup Press, 2019. Online

The LISP 2 Project. *IEEE Annals of the History of Computing*, October-December 2017. Online / Archive

In Search of the Original Fortran Compiler. *IEEE Annals of the History of Computing*, April-June 2017. Online

Oral history interview of Liz Bond Crews, 24 May 2017. Computer History Museum, Mountain View. Transcript Video

Oral history interview of Bjarne Stroustrup, 5 February 2015. Computer History Museum, Mountain View. Transcript Video

Xerox Alto Source Code. October 2014. @CHM Walkthrough Archive

ACM Turing Award web site for Jim Gray, 2012. Online

Guide to the Herbert Stoyan collection on LISP programming, November 2011. Online Archive of California. Online

Oral history interview of Donald Chamberlin, 21 July 2009. Computer History Museum, Mountain View. Transcript

Oral history interview of Robert W. Taylor, 10-11 October 2008, Woodside, CA. Computer History Museum, Mountain View. Transcript

EachMovie collaborative filtering data set, 1997. Citations

Each to Each Programmer's Reference Manual, with John DeTreville, Technical Note 1997-023, Digital Equipment Corporation Systems Research Center (October 1997). PDF

Editor, The 1995 SQL Reunion: People, Projects, and Politics (2nd ed., August 1997). Online

Virtual Paper web site, with Andrew Birrell. Online via archive.org

Some Useful Modula-3 Interfaces, with Jim Horning et al., Research Report 113, Digital Equipment Corporation Systems Research Center (December 1993). PDF

The Vesta Approach to Precise Configuration of Large Software Systems, with Roy Levin, Research Report 105, Digital Equipment Corporation Systems Research Center (June 1993). PDF

"The Topaz System: Distributed Multiprocessor Personal Computing", with Andy Hisgen, *Proceedings of the Workshop on Workstation Operating Systems, IEEE Computer Society Technical Committee on Operating Systems*, Cambridge, MA (5–6 November 1987). PDF

"Evolving the UNIX System Interface to Support Multithreaded Programs", with Garret Swart, *Proceedings of the Winter 1989 USENIX Conference* (February 1989). Also appeared as Part I of Research Report 21, Digital Equipment Corporation Systems Research Center, September 1987. PDF

"The Recovery Manager of the System R Database Manager", with Jim Gray et al., *ACM Computing Surveys* 13, 2 (June 1981), 223-242. (Recipient of 1982 ACM Programming Systems and Languages Paper Award.) Online

"Pilot: An Operating System for a Personal Computer", with David D. Redell et al., *Proceedings of the 7th ACM Symposium on Operating Systems Principles*, 1979, and *Communications of the ACM* 23, 2 (February 1980), 81-92. Also appeared in *Classic Operating Systems: from Batch Processing to Distributed Systems* (Per Brinch Hansen, editor), Springer-Verlag New York, Inc., 2000. Online

"System R: A Relational Approach to Database Management", with M. M. Astrahan et al., *ACM Transactions on Database Systems* 1, 2 (June 1976), 97-137. Also appeared in *Readings in database systems, 3rd ed.* (Michael Stonebraker and Joseph M. Hellerstein, eds.), Morgan Kaufmann Publishers Inc., 1998. Online

A Church-Rosser Property of Closed Applicative Languages, Research Report RJ 1589, IBM Research Laboratory, San Jose (May 1975). PDF

CRMS APL Processor Reference Manual, Center for Research in Management Science, University of California, Berkeley (February 1973). PDF

Professional Activities

ACM member since 1971; ACM Fellow since 1994.

Associate Editor, ACM SIGMOD Anthology, 2001.

Program Committee Member for IEEE Workshop on Workstation Operating Systems, Cambridge, Mass., November, 1987.

Referee for various journals and conferences.