

Wilson A. Harvey, Jr.

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Career Objective To obtain a responsible position on a research team that provides opportunities for exploration, creativity, and collaboration.

Executive Summary More than 20 years experience in artificial intelligence/computer vision, knowledge-based systems, and parallelism research. Successful software developer, system designer, administrator and supervisor.

Experience Project Scientist --- 1983 to present
Digital Mapping Laboratory, School of Computer Science,
Carnegie Mellon University.

Automated road feature extraction: Principal architect of RoadMAP, an automated and semi-automated road network extraction suite that explores the use of cooperative methods for robust road feature extraction from high-resolution aerial imagery. Designed and implemented an object-space road tracking system that significantly advanced the state of the art in both automated and semi-automated road delineation. Important features of this work are the tracker technology that supports image- or object-space tracking and multi-image (3D) tracking, and the intuitive user-interface that incorporates automated road detection and delineation systems. Performed detailed user study to compare RoadMAP against manual road extraction and to improve interface usability. Pioneered the use of quantitative metrics to evaluate automated road extraction performance against manually extracted road networks.

Knowledge-based vision & task-level parallelism: Principal designer and implementer of SPAM, a rule-based expert system that directs segmentation and interprets aerial images of airports. Generalized this high-level vision architecture to interpret images of other types of composite scenes, such as suburban housing scenes, and wrote a compiler to build OPS5 rule bases from an automatically generated schematic knowledge representation. Analyzed the SPAM interpretation architecture and parallelized it on two different shared-memory multiprocessors while addressing efficiency issues like load-balancing and tail-end effects. Explored the use of intermediate result analysis to perform knowledge refinement within the context of very large rule-based systems.

Software engineering: Designed and implemented numerous primary data-structures, most notably a library supporting platform-independent binary data structures, and a caching, format-independent image library. Managed code base consisting of over a half million lines of C/C++ code.

Experience (continued)	Project Scientist --- 1983 to present (continued) <i>Project administration and supervision:</i> Participated in all aspects of project administration, including the hiring, training, and supervising of undergraduate and post-graduate researchers, as well as grant and proposal writing, contract demonstrations, remote software installations and interacting with contractors. Web Consultant --- 1995 to 1997 Building Owners and Managers Institute (BOMI): Designed and implemented a multiple-choice quiz web application and a database-backed glossary application, in both CGI-Perl and HTML.
Education	Carnegie Mellon University, 1986 --- Bachelor of Science double major in Physics and Mathematics (Computer Science)
Technical Skills	<i>Languages/Interfaces:</i> C/C++/STL; Perl, various other scripting languages, including shell, WSCRIPT, Visual Basic, JavaScript, Flash/ActionScript, TCL/tk; OpenGL; X11/Motif; Lisp; OPS5; Pascal; XML. <i>Software Tools:</i> LINUX/UNIX; Microsoft Windows; Microsoft Visual Studio .NET; RCS/CVS; Perforce; Purify; Valgrind; gdb; gprof/atom. <i>Web:</i> HTML; XHTML; CSS; Apache/LAMPS; CGI; PHP; AJAX; RSS/ATOM.
Honors	Significant recent honors include --- acceptance of a paper to a special issue of PERS journal in 2004; being an invited speaker at a workshop on automated Synthetic Aperture RADAR data processing at DERA/QinetiQ in Farnborough, England in September 2001; presenting an invited paper entitled "Performance Evaluation for Road Extraction" at the ISPRS Working Group II/6 meeting in Paris, France in April 1999; member of Sigma Xi since 1989.
Publications	Authored over 20 refereed conference and journal articles, as well as many technical reports, in the areas of computer vision, artificial intelligence, parallel systems, and performance evaluation. See http://www.cs.cmu.edu/~wah/pubs.html for a partial list.
Volunteer Activities	Leader of the Forest Hills Web Site Redesign Committee and member of the Forest Hills Community Relations Advisory Board; Lead Teacher in Jr. Worship class (4th-5th grade) at Allegheny Center Alliance Church (ACAC); Providing periodic computer support for ACAC and several missionaries.
References	Furnished upon request.