

Douglas Paul Perrin

CONTACT INFORMATION Harvard University
Division of Engineering and Applied Sciences
9 Oxford St.
Room 312 60 Oxford St.
Cambridge, MA 02138
Voice: (617) 388-2803
Fax: (617) 495-9837
E-mail: dperrin@deas.harvard.edu
WWW: <http://people.deas.harvard.edu/~dperrin>

RESEARCH INTERESTS Computer vision, real-time systems, robotics, medical imaging, artificial intelligence and user interfaces

ACADEMIC APPOINTMENTS **Harvard University,** **September 2005 to Present**
Cambridge, Massachusetts USA
Research Associate
Harvard Division of Engineering and Applied Sciences

Harvard University, **January 2006 to Present**
Boston, Massachusetts USA
Instructor (Entry level research faculty non-tenure track)
Harvard Medical School

HOSPITAL APPOINTMENTS **Children's Hospital Boston,** **January 2006 to Present**
Boston, Massachusetts USA
Staff Scientist
Department of Cardiovascular Surgery

POSTDOCTORAL TRAINING **Harvard University,** **September 2002 to Present**
Cambridge, Massachusetts USA
Post Doctoral Fellow
Harvard Division of Engineering and Applied Sciences
Supervisor: Prof. Robert D. Howe

EDUCATION **University of Minnesota,** **September 2002**
Minneapolis, Minnesota USA
Ph.D., Computer Science and Engineering
Dissertation: "Dynamic Contours for Tracking & Grasping"
Adviser: Prof. Nikolaos Papanikolopoulos

University of Minnesota **May 1999**
M.S., Computer science
Project: "Contour Depth Extraction Using Monocular Eye-in-Hand Systems"
Adviser: Prof. Nikolaos Papanikolopoulos

University of Minnesota **May 1995**
B.S. Computer Science

HONORS & AWARDS	Departmental Dissertation Fellowship	2000
	Best Paper at Fourth Annual TCL/TK Workshop	1996
	Best Student Paper Fourth Annual TCL/TK Workshop	1996
	University of Minnesota Presidential Award for Student Leadership	1995
	University of Minnesota Institute of Technology Student Leadership Award	1995
	Lando Scholarship	1994
	Undergraduate research opportunity grant	1994

RESEARCH EXPERIENCE	Harvard University , Cambridge, Massachusetts USA	
	<i>Post-Doctoral Fellow, Research Associate</i>	2002-present
	R. D. Howe, Division of Engineering and Applied Sciences	
	Developed an algorithm for real-time volume segmentation of 3D ultra sound data. Designed tools for surgical guidance under ultrasound. Conducted research on actuated tether design for urban search and rescue robots. Responsibilities also included supervision of graduate and undergraduate students.	
	University of Minnesota , Minneapolis, Minnesota USA	
	<i>Research Assistant</i>	1996-2002
	N. Papanikolopoulos, Department of Computer Science	
	A member of the Artificial Intelligence and Robotics Laboratory and later the Distributed Robotics Laboratory. Research areas included visual servoing, real-time control, active deformable models, robot control, micro-robots, automatic target identification, and interface design for medical image databases.	
	<i>Research Assistant</i>	1995-1996
	J. Carlis, Department of Computer Science	
Designed and built user interface for distributed collaborative neural imaging. Work in collaboration with R. Elde resulted in conference paper that received best paper and best paper student award.		
<i>Undergraduate Research Assistant</i>	1994-1995	
R. Elde, Department of Pharmacology		
Designed and implemented user interface for medical image handling and image processing.		
<i>Undergraduate Research Opportunities Program</i>	1993-1994	
J. Carlis, Department of Computer Science		
Developed visualization techniques for continuous domain periodic data. Results were later used to analyze chimpanzees' feeding patterns in collaboration with J. Goodall.		

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TEACHING EXPERIENCE

University of Minnesota, Minneapolis, Minnesota USA

Instructor **Spring 2002**

Artificial Intelligence I (CSCI 5511)

Course director for a senior/graduate level Artificial Intelligence course. Wrote lectures, exams, homework assignments, managed teaching assistants, and assigned grades.

Instructor **Summer 2001**

Programming Languages (CSCI 5106)

Course director for a senior higher level languages course; was responsible for writing lectures, exams, homework assignments, managing teaching assistants, and assigning grades.

Instructor **Fall 1997**

Undergraduate Computer Science Colloquium (CSCI 3980)

Proposed and developed as a new course, oversaw weekly colloquium, and recruited speakers.

Teaching Assistant **Spring 2000 & 2001**

Computer Vision, N. Papanikolopoulos

Graded exams and programming assignments; held office hours and gave select lectures.

Teaching Assistant **Spring 1997**

Robotics, N. Papanikolopoulos

Graded exams, homework, and programming assignments and held office hours.

Teaching Assistant **Summer 1996**

User Interfaces Short Course, J. Konstan

Implemented students' user interface designs.

Teaching Assistant **Spring 1997**

Computer Graphics, P. Barry

Graded exams, homework, and programming assignments and held office hours.

PUBLICATIONS **Peer Reviewed Papers**

Perrin, D., Kadioglu, E., Stoeter, S., Papanikolopoulos, N., "Grasping and Tracking Using Constant Curvature Dynamic Contours.", *International Journal of Robotic Research*, pp.855, vol. 22, October 2003

Feller, R.L., Perrin, D.P., and Howe, R.D., "Validation and Explanation of Waterhammer-Based Locomotion", (Accepted) IEEE International Conference on Robotics and Automation, 2006

Wagner, C.R., Vasilyev, N., Perrin, D.P., del Nido, P.J., Howe, R.D. "Force Feedback in a Three-Dimensional Ultrasound-Guided Surgical Task", (Accepted) 14th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, Washington, D.C., USA, 2006

Wagner, C.R., Feller, R.L., Perrin, D.P., Clatz, O., Howe, R.D., Delingette, H., and Ayache, N., "Integrating Tactile and Force Feedback with Finite Element Models", Proceedings of the 2005 IEEE International Conference on Robotics and Automation, pp. 3942 - 3947, April 2005

Perrin, D.P., Kwon, A., Howe, R.D., "A novel actuated tether design for rescue robots using hydraulic transients", IEEE International Conference on Robotics and Automation, pp.3482-3487, Vol.4, May 2004

Perrin, D., Ladd, A.M., Kavraki, L.E., Cannon J.W., and Howe R.D., "Keeping it simple: Efficient simplicity checking for real-time parametric deformable models", Proc. SPIE Int. Soc. Opt. Eng. (Symposium on Medical Imaging), Vol.5747, pp.1468-1475 2005.

Feller, R.L., Lau, C.K.L., Wagner, C.R., Perrin, D.P., Howe, R.D., "The Effect of Force Feedback on Remote Palpation," IEEE International Conference on Robotics and Automation, pp.782 - 788, vol. 1 , April 2004.

Perrin, D. and Smith, C., "Rethinking classical internal forces for active contour models", The IEEE International Conference on Computer Vision and Pattern Recognition, pp. 615-620 , vol 2, 8-14 Dec. 2001

Perrin, D., Papanikolopoulos, N., "Usefulness of Parametric Dynamic Contours Vs. Level Sets for Real-Time Computer Vision", IEEE International Conference on Digital Signal Processing, pp. 1243-1246, vol. 2, July 2002.

Perrin, D., Kadioglu, E., Stoeter, S., Papanikolopoulos, N., "Localization of Miniature Mobile Robots Using Constant Curvature Dynamic Contours", IEEE International Conference on Robotics and Automation, pp. 702-707, vol. 1, 2002.

Smith, C. and Perrin, D., "HOLDeR: a layered system for vision-guided robotics", Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, 2000.

Perrin, D., Masoud, O., Smith, C., and Papanikolopoulos, N.P., "Using Fast Statistical Dynamic Contours for Grasping Occluding Contours", Proceedings of the 8th IEEE Mediterranean Conference on Control and Automation, July 2000.

Perrin, D., and Papanikolopoulos, N.P., et. al. "Unknown Object Grasping Using Statistical Pressure Models", Proceedings of the 2000 IEEE Int. Conference on Robotics and Automation, pp. 1054-1059, San Francisco, CA, April 24-28, 2000.

Perrin, D., Masoud, O., Smith, C., and Papanikolopoulos, N. P., "Snakes for Robotic

Grasping", Proceedings of the IEEE European Control Conference, Karlsruhe, Germany, August 31-September 3, 1999.

Pavlidis, I., Perrin, D., Papanikolopoulos, N. P., Au, W., and Sawtelle, S., "A Ground Truth Tool for Synthetic Aperture Radar (SAR) Imagery", Proceedings of the 1999 IEEE Workshop on Computer Vision Beyond the Visible Spectrum: Methods and Applications, pp. 82-87, Fort Collins, CO, June 21-22, 1999.

Konstan, J., Herbst, S., Perrin, D., and Wieckowski, Z., "The Overnight Staff: An Approach to Teaching Short Courses on User Interface Design and Evaluation", ACM SIGCHI 96 Basic Research Symposium, April 13-14, 1996, Vancouver, BC.

Safonov, A., Perrin, D., Konstan, J., Carlis, J., Riedl, J., and Elde, R., "Lessons from the Neighborhood Viewer: Building Innovative Collaborative Applications in TCL and TK", Proceedings of the Fourth Annual TCL/TK Workshop, 1996, Monterey, CA.

Safonov, A., Carlis, J., Konstan, J., and Perrin, D., "The Neighborhood Viewer: A Paradigm for Exploring Image Databases", Proceedings of CHI 97, the ACM SIGCHI Conference on Human Factors in Computing.

Invited Papers

Perrin, D., Smith, C., and Papanikolopoulos, N.P., "Depth Extraction for Contours by Monocular Eye-In-Hand Systems", Proceedings of the 8th IEEE Mediterranean Conference on Control and Automation, Rio, Greece, July 2000.

PATENTS

Perrin, Douglas P. and Howe, Robert D. "Actuated Tether", US patent application submitted October 2004.

PRESENTATIONS & INVITED TALKS

Department of Computer Science, SUNY Stony Brook	Apr 2005
IEEE International Conference on Robotics and Automation	May 2002
14TH International Conference on Digital Signal Processing	July 2002
IEEE International Conference on Computer Vision	Dec 2001
Department of Computer Science, Texas A&M	Dec 2001
Department of Computer Science, Vanderbilt University	Dec 2001
Department of Computer Science, University of Wisconsin	Dec 2001
IEEE International Conference on Robotics and Automation	Apr 2000
IEEE Mediterranean Conference on Control and Automation	July 2000
Honeywell Technology Center client review, Wright Patterson USAFB	1998
USENIX Fourth Annual TCL/TK Workshop	1996

SERVICE

Program Committy Member

IEEE International Conference on Robotics and Automation	2006
Robotics: Science and Systems	2006

Panelist

Nation science foundation CISE Research Resources Panel

Journal Reviewer

IEEE Transactions on Robotics and Automation

IEEE Robotics and Automation Magazine

IEEE Transactions on Systems, Man, and Cybernetics

IEEE Transactions on Intelligent Transportation Systems

Conference Reviewer

IEEE International Conference on Robotics and Automation

IEEE International Conference on Computer Vision

International Symposium on Robotics

European Conference on Control

UNIVERSITY
SERVICE

Computer Science Departmental Committees

Ethics 1999

Computing 1998

Faculty Search 1998

College Committees

University of Minnesota IT Computing Fees Committee 1994

INDUSTRIAL
EXPERIENCE

Consultant 2000-2002

Banner Engineering, Minneapolis, MN

Consulted on development of machine vision algorithms and prototypes.

Consultant 1998-1999

Honeywell Technology Center, Minneapolis, MN

Developed synthetic aperture radar segmentation algorithms.

MEMBERSHIP
& ACTIVITIES

Member 2002-

IEEE and IEEE Robotics and Automation Society

President, Member 1997-1998, 1996-2002

U of M CS Graduate Students Association

Volunteer Coordinator 1996

IEEE Int. Conference on Robotics and Automation

President, Member 1994-1995, 1990-1997

U of M Student Chapter - ACM

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REFERENCES

Nikolaos Papanikolopoulos, Ph.D.

Professor
Department of Computer Science and Engineering
University of Minnesota
200 Union Street,
Minneapolis, MN 55455 USA
E-mail: npapas@cs.umn.edu
Phone: (612) 625-0163
Fax: (612) 625-0572

Robert D. Howe, Ph.D.

Professor
Division of Engineering and Applied Sciences
Harvard University
323 Pierce Hall, 29 Oxford Street
Cambridge, MA 02138, USA
E-mail: howe@deas.harvard.edu
Phone: (617) 496-8359
Fax: (617) 495-9837

Pedro J. del Nido, M.D.

Professor of Surgery, Harvard Medical School
Chairman, Department of Cardiac Surgery
Childrens Hospital Boston
300 Longwood Avenue
Boston, MA 02115
E-mail: Pedro.DelNido@CARDIO.CHBOSTON.ORG

Richard M. Voyles, Ph.D.

Associate Professor
Department of Computer Science and Engineering
University of Minnesota
200 Union Street, SE
Minneapolis, MN 55455 USA
E-mail: voyles@cs.umn.edu
Phone: (612) 624-8306
Fax: (612) 625-0572