Curriculum Vitae

John A. Hancock

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Education:

Graduate:	Carnegie Mellon Univ., Robotics Ph.D. student, began 8/93, Ph.D expected Jan. 1999.
College:	Harvard University, B.S., Elec. Engineering, *magna cum laude*, June 1993.
Secondary:	St. Albans School, *cum laude*, June 1989, ranked 2/70.

Employment:

1993-present	Graduate Research Assistant, Carnegie Mellon University.
1992	Summer Physical Sciences Aide, Smithsonian Astrophysical Observatory
1989-91	Summer Research Assistant, Naval Surface Warfare Center, White Oak, MD (1989 as Department of Defense Summer Fellowship Awardee)
1982-89	Carrier, The Washington Post newspaper

Skills:

Programming Excellent knowledge of C++, C, and Open Inventor (a 3D graphics C++ API). Also experienced with Perl, X Windows and X Toolkit, Motif, HTML, VRML, Pascal, LISP, and 68000 assembly. Experienced in the design and implementation of computer vision and artificial intelligence programs.

Game Design Designed and created a full scenario for the Marathon Infinity engine, including a new storyline, level design, new graphics and textures.

Graphic Design Hobbyist in 3D modeling and texture design with working knowledge of Ray Dream Studio, Bryce, Adobe Photoshop.

Research Projects/Systems Developed:

1996-present	**Laser Intensity-Based Obstacle Detection (Ph.D. dissertation)** Combined physical reflection modeling, image processing, Kalman filter based temporal tracking, and robust statistics in order to detect obstacles and provide range information from single-line laser intensity scans. Work with Ph.D. advisors Dr. Charles Thorpe and Dr. Martial Hebert.
1996-present	**High-Performance Laser Range Scanner** Aided in development and integration of a state-of-the-art 3D laser scanner. A laser scanner builds a 3D model of an environment by sweeping a laser across a scene and measuring the distance to every point. Involved both hardware and software design. Work with Dr. Martial Hebert and Dr. Dirk Langer.
1995-present	**Image Library** Developed a small but effective set of C++ classes for developing computer vision algorithms. Currently used by several people within CMU.
1995-96	**Simulated Highways for Intelligent Vehicle Algorithms (SHIVA)** Developed a simulation system to aid in the development of artificial intelligence algorithms for tactical decision-making in robotic vehicles. Designed a 3D graphical user interface, physics-based dynamic simulation, and AI algorithms. Work with Dr. Rahul Sukthankar and Dr.

Shumeet Baluja.

1993-94 **Eigenvectors for Land Vehicle Image System (ELVIS)** Investigated the use of an eigenvector-based learning system for autonomous steering control of a robotic vehicle. Work with Dr. Charles Thorpe.

Teaching Experience:

1996	Guest lectured in CMU graduate computer science class, 15-820B: Advanced Topics in HCI: User Interface Software
1995	Teaching Assistant for CMU Robotics class, 16-761. Introduction to Mobile Robots
1992	Laboratory Teaching Assistant, Harvard University
1990-93	Academic Tutor, Harvard University
1987	Teaching Assistant, Washington Lab School for learning-disabled children (social service)

Hobbies, Interests: Computer games, graphic design, photography, reading, soccer, music

Awards:

1998	**Marathon Evil Mapmaking Award** for computer game level design
1993	**Barrett Teaching Award** for tutoring students at Harvard
1990-92	**Harvard College Scholarship** (for Academic Merit)
1989-93	**Dean's List** (all semesters), Harvard University
1989	**Class Salutatorian, early cum laude graduate**
	Thomas Ewing Scholarship (Washington Post award)
	Department of Defense Summer Research Fellowship
1988	**Eisenstein Fellowship Award** (grant of $1125 for foreign travel and summer study)
	Glover Mathematics Award (best mathematics student in entire school)
1987	**Princeton Club Award** (top sophomore student)
	Science Writing Award (from Society for Technical Communication, Washington, D.C.)
1984	**Scholarship to Univ. of Maryland** (one course, state and regional honors in the Johns Hopkins youth talent search)

Professional Activities:

1996-97	CMU Robotics Student President
1995-97	Carnegie Mellon Robotics Institute Review Committee Member
1994-present	Reviewed papers for the following conferences and journals: Transportation Research Board National Research Council Conference (TRB 1999), IEEE Transactions on Robotics and Automation, Intelligent Transportation Systems Congress (ITSC 1997), International Journal of Applied Intelligence, IEEE/ASME Transactions on Mechatronics, Intelligent Transportation Society of America (ITSA 1997), International Conference on Pattern Recognition (ICPR 1996), International Conference on Computer Vision and Pattern Recognition (CVPR 1996), International Conference on Robotics and Automation (ICRA 1995), International Conference on Computer Vision (ICCV 1995), Intelligent Robots and Systems (IROS 1995).

Technical Publications:

[1] Hancock, J., M. Hebert, and C. Thorpe. “Laser Intensity-Based Obstacle Detection.” *Proceedings of the IEEE Conference on Intelligent Robots and Systems (IROS)*, 1998.

[2] Hancock, J., et. al. “Active laser radar for high-performance measurements.” *Proceedings of the IEEE International Conference on Robotics and Automation*, 1998.

[3] Sukthankar, R., S. Baluja, and J. Hancock. “Multiple adaptive agents for tactical driving.” *Applied Intelligence Journal*, vol. 9, no. 1, pp. 7-23, 1998.

[4] Hancock, J., E. Hoffman, R. Sullivan, D. Ingimarson, D. Langer, M. Hebert. “High-performance laser range scanner.” *Proceedings of the SPIE Conference on Intelligent Transportation Systems*, 1997.

[5] Hancock, J. “High-Speed Obstacle Detection for Automated Highway Applications.” Ph.D. Thesis Proposal. Carnegie Mellon Technical Report, CMU-RI-TR-97-17.

[6] Sukthankar, R. S. Baluja, and J. Hancock. “Evolving an Intelligent Vehicle for Tactical Reasoning in Traffic.” *Proceedings of the International Conference on Robotics and Automation*, 1997.

[7] Baluja, S., R. Sukthankar, and J. Hancock. “Prototyping Intelligent Vehicle Modules Using Evolutionary Algorithms.” *Evolutionary Algorithms in Engineering Applications*, Dasgupta, D. and Z. Michalewicz, eds., pub. by Springer-Verlag, 1996.

[8] Sukthankar, R., J. Hancock, D. Pomerleau, and C. Thorpe. “A Simulation and Design System for Tactical Driving Algorithms.” *Proceedings of AI, Simulation and Planning in High Autonomy Systems (AISP ‘96)*, 1996.

[9] Sukthankar, R., J. Hancock, S. Baluja, D. Pomerleau, and C. Thorpe. “Adaptive Intelligent Vehicle Modules for Tactical Driving.” *Proceedings of AAAI workshop on Adaptive Intelligent Agents*, 1996.

[10] Sukthankar, R., J. Hancock, and C. Thorpe. “Tactical-level Simulation for Intelligent Transportation Systems.” To appear in *Journal on Mathematical and Computer Modeling*, Special Issue on ITS, 1996.

[11] Hancock, J. and C. Thorpe. “ELVIS: Eigenvectors for Land Vehicle Image System.” *Proceedings of the Intl. Conf. on Intelligent Robots and Systems (IROS ‘95)*, 1995. (full version appeared as Carnegie Mellon Technical Report, CMU-RI-TR-94-43, 1994).

[12] Internal Report of NAVSWC Electrochemistry Branch: wrote appendix on “SO_2 Gas Concentrations Released from Lithium Batteries”, 1990.

Non-Technical Publications:

[13] Davis, S. and J. Hancock. “A Changing Argentina: 1988 Eisenstein Fellowship,” *St. Albans Bulletin*, No. 110, pp. 3-6, 1989.

[14] Hancock, J. poetry and short stories published in Gyre, the St. Albans Literary Magazine (Spring, 1989).