

# Liam Pedersen

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## EDUCATION

- Ph.D., Robotics.** Defended  
Carnegie Mellon University, Pittsburgh, PA. 11/2000  
**Dissertation:** *Robotic Rock Classification for Autonomous Geological Exploration.*  
Developed a system, based on Bayesian statistics, for finding and identifying rocks and meteorites from a mobile robotic platform. This system was demonstrated onboard the Nomad robot, successfully finding and identifying meteorites amongst terrestrial rocks on the Antarctic ice sheet in January 2000, the first time a robot has accomplished such a task.  
Committee: M. Hebert (chair), W. Whittaker, R. Simmons, A. Moor and P. Cheeseman (NASA Ames).
- M.S.E.E., Robotics and Automation** 8/95  
George Washington University, Washington, DC.
- B.Sc.Hons. Physics with Electronics and Computer Science** 12/92  
**B.Sc., Physics with Electronics, Computer Science, Mathematics, Applied Mathematics** 12/91  
Rhodes University, South Africa.  
Achieved 4 majors with distinctions in each.

## EMPLOYMENT EXPERIENCE

- NASA Ames Research Center**, California, USA. 5/99 – 9/99  
Joint Research Interchange (JRI) program fellow. 6/98 – 9/98  
Researched autonomous rock identification from a planetary rover platform using reflectance spectra and color imagery. Liaison between space science (geology and astrobiology) community and CMU robotics community.
- NASA Ames Research Center**, California, USA. 8/97 - 10/97  
Researcher for "Graduate Student on Mars" project.
- Albany Museum**, Grahamstown, South Africa. 2/93 - 5/93  
Designed and built a three-floor computer controlled Foucault Pendulum exhibit.

## AWARDS AND SCHOLARSHIPS

- Ph.D. Graduate Fellowship, Robotics Institute, C.M.U. 9/95 – 5/01
- Fulbright Scholarship.** 9/93 – 5/95  
Foundation for Research and Development (FRD) scholarship (declined), Muirhead Scholarship 1993 (declined), Masters degree scholarship (declined), Basil Schonland Prize for Physics.
- Academic Colours** for B.Sc.Hons. Degree, David Williams Memorial Prize for Mathematics, Dr. Kendal Scholarship, FRD postgraduate scholarship, 1992
- Academic Honours** for distinctions in all 4 majors of B.Sc. degree, Rhodes University Scholarship, R. B. Hagart Bursary. 1991

## FIELD, RESEARCH & TEACHING EXPERIENCE

- Expeditions to Antarctica (Patriot Hills 1997, 1998, and Elephant Moraine 2000), Canadian Arctic (NASA Mars-Haughton expedition to Devon Island, 1998) and the Atacama Desert in Chile (1997) in furtherance of Ph.D. research, acquisition of field data, and demonstrations and tests of the Nomad robot.
- Participated in the South African National Antarctic Expedition (SANAE, 12/89 – 2/90), South African Astronomical Observatory (1/91) and Hartebeeshoek Radio Astronomy Observatory (intermittently 1989-1992) research programs as a research assistant at the various facilities (in South Africa and Antarctica).
- Teaching assistant for Robotic Art Studio course, Carnegie Mellon University (1997) and teaching assistant for 1st year Physics and Electronics, Rhodes University (1992).

## MISCELLANEOUS INFORMATION

- Member of Institute for Electrical and Electronics Engineers (IEEE).
- Fluent in English and Spanish; elementary knowledge of French and Japanese.
- Instrument rated private pilot, with complex and hi-performance aircraft endorsements.