

Joseph Modayil

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- EDUCATION
- ◇ **The University of Texas at Austin**, Austin, TX.
Doctoral student in Computer Sciences. Expected Graduation: July 2007.
Advisor: Benjamin Kuipers
Thesis title: *Bootstrap learning an object ontology*
 - ◇ **University of Alberta**, Edmonton, Alberta, Canada.
M.Sc. in Mathematics, August 1999.
Advisor: Peter Antonelli
Thesis title: *Landsberg spaces in Finsler geometry*
 - ◇ **University of Alberta**, Edmonton, Alberta, Canada.
B.Sc. in Honors Mathematics (with a minor in Computing Science), May 1997.

- AWARDS
- ◇ Best Student Paper at CRV 2006
 - ◇ MCD Fellowship (1999)
 - ◇ NSERC PGS-A Scholarship (September 1997 – August 1999)
 - ◇ Canada Scholarship (September 1994 – May 1997)

RESEARCH INTERESTS Developmental robotics, Autonomous robotics, Spatial reasoning, Machine learning.
Bootstrap learning (Cognitive development through unsupervised learning).

PUBLICATIONS **Conferences**

- ◇ Joseph Modayil and Benjamin Kuipers. Autonomous shape model learning for object localization and recognition. IEEE International Conference on Robotics and Automaton (ICRA), 2006.
- ◇ Aniket Murarka, Joseph Modayil, and Benjamin Kuipers. Building local safety maps for a wheelchair robot using vision and lasers. Third Canadian Conference on Computer and Robot Vision (CRV), 2006. (**Best Student Paper**)
- ◇ Joseph Modayil and Benjamin Kuipers. Bootstrap learning for object discovery. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2004.
- ◇ Joseph Modayil, Patrick Beeson and Benjamin Kuipers. Using the topological skeleton for scalable global metrical map-building. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2004.
- ◇ Benjamin Kuipers, Joseph Modayil, Patrick Beeson, Matt MacMahon, and Francesco Savelli. Local metrical and global topological maps in the Hybrid Spatial Semantic Hierarchy. IEEE International Conference on Robotics and Automation (ICRA), 2004.
- ◇ Joseph Modayil, Howard Cheng, and Xiaobo Li. Experiments in simple one-dimensional lossy image compression schemes. IEEE International Conference on Multimedia Computing and Systems, 1997.

Journals

- ◇ Benjamin Kuipers, Patrick Beeson, Joseph Modayil, and Jefferson Provost. Bootstrap learning of foundational representations. *Connection Science*, Volume 18, Number 2, 2006, pp. 145–158.
- ◇ Peter Antonelli, Bin Han, and Joseph Modayil. New results on two-dimensional constant sprays with an application to heterochrony. *Nonlinear Analysis: Theory, Methods & Applications*. Volume 37, Issue 5, August 1999, pp. 545–566.
- ◇ Joseph Modayil, Howard Cheng, and Xiaobo Li. An improved piecewise approximation algorithm for image compression. *Pattern Recognition*, Volume 31, Number 8, 1 August 1998, pp. 1179–1190.

Workshops and Symposia

- ◇ (accepted) Joseph Modayil and Benjamin Kuipers. Where do actions come from? Autonomous robot learning of objects and actions. *AAAI Spring Symposium Series, Control Mechanisms for Spatial Knowledge Processing in Cognitive/Intelligent Systems*, 2007.
- ◇ (accepted) Patrick Beeson, Matt MacMahon, Joseph Modayil, Aniket Murarka, Benjamin Kuipers, and Brian Stankiewicz. Integrating multiple representations of spatial knowledge for mapping, navigation, and communication. *AAAI Spring Symposium Series, Interaction Challenges for Artificial Assistants*, 2007.
- ◇ Joseph Modayil and Benjamin Kuipers. Bootstrap learning of grounded object representations. *NIPS Workshop on Grounding Perception, Knowledge and Cognition in Sensori-Motor Experience*, 2006.
- ◇ Joseph Modayil and Benjamin Kuipers. Towards bootstrap learning for object discovery. *AAAI Workshop on Anchoring Symbols to Sensor Data*, 2004.
- ◇ Patrick Beeson, Matt MacMahon, Joseph Modayil, Jefferson Provost, Francesco Savelli and Benjamin Kuipers. Exploiting local perceptual models for topological map-building. *IJCAI-2003 Workshop on Reasoning with Uncertainty in Robotics (RUR)*, 2003.
- ◇ Benjamin Kuipers, Patrick Beeson, Joseph Modayil and Jefferson Provost. Learning from uninterpreted experience in the SSH. *AAAI Spring Symposium Series, Learning Grounded Representations*, 2001.

Invited Talks

- ◇ *AAAI Spring Symposium on Developmental Robotics*, March 2005.
- ◇ *Forum for Artificial Intelligence, The University of Texas at Austin*, April 2004.

TEACHING	◇ Teaching Assistant , The University of Texas at Austin (2001)
EXPERIENCE	Course: Analysis of Programs (Undergraduate)
	◇ Teaching Assistant , The University of Texas at Austin (2000)
	Course: Algorithms (Graduate)
	◇ Teaching Assistant , University of Alberta (1997)
	Course: Engineering Calculus I
	◇ Teaching Assistant , University of Alberta (1995–1996)
	Courses: Introduction to Data Structures and Algorithms, Assembly Language Programming
INDUSTRIAL	◇ Internship NASA Johnson Space Center (through S&K Electronics) (Summer 2000)
EXPERIENCE	Project: Developed a video streaming server for robots. Mentor: Robert Burridge
CITIZENSHIP	Canadian