

## EYAL AMIR – Curriculum Vitae

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Computer Science Department

Siebel Center, room 3314

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### Academic Employment and Education

- **University of Illinois at Urbana-Champaign**, Beckman Institute Affiliate (Jan 2006–*present*).
- **University of Illinois at Urbana-Champaign**, Assistant Professor in Computer Science (Jan 2004–*present*).
- **Technion, Israel's Institute of Technology**, Visiting Scholar (Jun–Dec 2007).
- **University of California at Berkeley**, Post-doctoral research in the Electrical Engineering and Computer Science Department (2001–2003).
- **Stanford University**, Ph.D. in Computer Science (1995–2001).  
Thesis title: *Dividing and Conquering Logic*. – Best Stanford CS thesis, 2001-2002 (see *Awards*).
- **Bar-Ilan University**, M.Sc. in Mathematics and Computer Science (1990–1994).
- **Bar-Ilan University**, B.Sc. in Mathematics and Computer Science, *cum laude* (1987–1990; conferred 1992).

### Research Interests

**Artificial Intelligence and Machine Learning**, with emphasis on systems that combine knowledge, reasoning, learning, and sensings. My technical work is divided between three areas: (a) logic-based knowledge representation and reasoning, (b) probabilistic reasoning and machine learning, and (c) human-level AI theory and systems. Examples of my works that combine these areas include logic-based reinforcement learning in partially observable domains, posterior computation for large relational probability distributions, and probabilistic connections between common-sense knowledge bases and low-level sensory data. I apply my basic-research results to applications that combine these areas. Recent applications of my work include an autonomous car project that I am heading, intelligent game agents (e.g., an award-winning scrabble player, adventure games, and Kriegspiel (partially observable chess)), natural-language processing, robot motion planning, network routing, and others.

### Awards and Honors

- *Junior Xerox Award for Faculty Research*, University of Illinois Urbana-Champaign, 2009.
- *C. W. Gear Faculty Award*, University of Illinois Urbana-Champaign, 2008.
- *Fellow, Arnold O. Beckman Institute*, University of Illinois Urbana-Champaign, 2007-2008.
- *Fellow, Center for Advanced Studies*, University of Illinois Urbana-Champaign, 2007-2008.
- *AI Ten to Watch Award*, IEEE Intelligent Systems Magazine, 2006.
- *Faculty Early Career Development (CAREER) Award*, National Science Foundation, 2006.
- *Arthur L. Samuel Award for best Ph.D. thesis*, Computer Science Department at Stanford, 2002.
- *IBM Yosef Raviv Fellowship*, 2001 (declined).
- Bar-Ilan University M.Sc. Scholarship, 1992-1993.
- Scitex Foundation Scholarship, 1991-1992.
- Wolf Foundation Scholarship, 1990-1991.
- Bar-Ilan University, Computer Science Department Scholarship, 1990-1991.

## Papers and Publications

### Journal Papers

- [1] E. Amir, *We Want More from Computers – But not Too Much*, Forbes, The AI Report, *forbes.com/ai*, June 2009.
- [2] A.H. Shirazi and E. Amir, *First-Order Logical Filtering*, accepted for publication, Artificial Intelligence Journal, 2009.
- [3] N.J. Roese and E. Amir, *Speculations on Human-Android Interaction in the Near and Distant Future*, in press, Perspectives on Psychological Science, 2009.
- [4] E. Amir and A. Chang, *Learning Partially Observable Deterministic Action Models*, Journal of Artificial Intelligence Research, Vol 33, pp.349-402, 2008.
- [5] E. Amir, *Approximation Algorithms for Treewidth*, in press, Algorithmica, 2008.
- [6] B. Engelhardt and E. Amir, *Factored Planning*, conditionally accepted to Artificial Intelligence, 2008.
- [7] E. Amir and S. McIlraith, *Strategies for Focusing Structure-Based Theorem Proving*, accepted for publication, Artificial Intelligence, 2008.
- [8] E. Amir, *Steps on the Way to Human-Level AI*, IEEE Intelligent Systems, p.6, issue May/June, 2006.
- [9] E. Amir and S. McIlraith, *Partition-Based Logical Reasoning for First-Order and Propositional Theories*, Artificial Intelligence, vol. 162 (1–2), pp. 49-88, a special issue on Abstraction, Reformulation and Approximation, 2005.
- [10] E. Amir and P. Maynard-Reid II, *Logic-Based Subsumption Architecture*, Artificial Intelligence, vol. 153 (1-2), pp. 167-237, special issue on commonsense reasoning, 2004.
- [11] S. McIlraith and E. Amir, *Theorem Proving with Structured Theories (2001)*, Electronic Notes in Discrete Mathematics vol. 9, pp. 18-18, 2001.
- [12] E. Amir, *Object-Oriented First-Order Logic*, Electronic Transactions on Artificial Intelligence, vol. 3, Section C, 1999.

### Book Chapters

- [13] E. Amir, *Automated Reasoning and Decision Making*, invited chapter to Cambridge Handbook of Artificial Intelligence, Keith Frankish and William Ramsey eds., forthcoming, 2009.
- [14] R. Braz, E. Amir, and D. Roth, *A Survey of First-Order Probabilistic Models*, in Innovations in Bayesian Networks, D.E. Holmes and L.C. Jain eds., SCI 156, pp. 289-317, 2008.
- [15] R. Braz, E. Amir, and D. Roth, *Lifted First-Order Probabilistic Inference*, in Statistical Relational Learning, L. Getoor and B. Taskar eds., 2007.
- [16] E. Amir, *Interpolation Theorems for Nonmonotonic Reasoning Systems*, Logics in Artificial Intelligence, Lecture Notes in Computer Science (LNCS) vol. 2424, pp.233–244, Springer Berlin / Heidelberg, 2002.
- [17] E. Amir, *Towards a Formalization of Elaboration Tolerance: Adding and Deleting Axioms*, book chapter in Frontiers of Belief Revision, M. Williams and H. Rott eds., Kluwer, 2000.
- [18] E. Amir and H. Judah, *Souslin Absoluteness, Uniformization and Regularity Properties of Projective Sets*, book chapter in Set Theory, T. Bartoszyński and M. Scheepers eds., AMS, 1996.

## Proceedings of Peer-Refereed Conferences

- [19] H. Hajishirzi, A. Shirzi, J. Choi, and E. Amir, *Greedy Algorithms for Sequential Sensing Decisions*, in Proceedings of the 21st International Joint Conference on Artificial Intelligence (IJCAI 2009), 2009.
- [20] J. Choi and E. Amir, *Combining Planning and Motion Planning*, in Proceedings of 2009 IEEE International Conference on Robotics and Automation (ICRA 2009), 2009.
- [21] T. Achler and E. Amir, *Neuroscience and AI Share the Same Elegant Mathematical Trap*, in Proceedings of the Second Conference on Artificial General Intelligence (AGI 2009), 2009.
- [22] H. Hajishirzi and E. Amir, *Sampling First-Order Logical Particles*, in Proceedings of the 24th Conference on Uncertainty in Artificial Intelligence (UAI 2008), 2008.
- [23] A. Shirazi and E. Amir, *Factored Models for Probabilistic Modal Logic*, in Proceedings of the 23rd National Conference on Artificial Intelligence (AAAI 2008), 2008.
- [24] T. Achler, C. Omar, and E. Amir, *Shedding Weights: More with Less*, in Proceedings of International Joint Conference on Neural Networks (IJCNN2008), part of 2008 IEEE World Congress on Computational Intelligence (WCCI2008), 2008.
- [25] T. Achler and E. Amir, *Recurrent Feedback Neuronal Networks: Classification and Inference Based on Network Structure*, in Proceedings of the 2008 Artificial General Intelligence (AGI 2008), 2008.
- [26] J. Choi and E. Amir, *Factor-Guided Motion Planning for a Robot Arm*, in Proceedings of the 2007 IEEE International Conference on Intelligent Robots and Systems (IROS 2007), 2007.
- [27] H. Hajishirzi and E. Amir, *Stochastic Filtering in Probabilistic Action Models*, in Proceedings of the 22nd National Conference on Artificial Intelligence (AAAI 2007), 2007.
- [28] A. Shirazi and E. Amir, *Probabilistic Modal Logic*, in Proceedings of the 22nd National Conference on Artificial Intelligence (AAAI 2007), 2007.
- [29] A. Chang and E. Amir, *Reachability Under Uncertainty*, in Proceedings of the 23rd Conference on Uncertainty in Artificial Intelligence (UAI 2007), 2007.
- [30] I. Gammer and E. Amir, *Solving Satisfiability in Ground Logic with Equality by Efficient Conversion to Propositional Logic*, in Proceedings of the 7th Symposium on Abstraction, Reformulation and Approximation (SARA 2007), Springer, 2007.
- [31] D. J. Hill, B. Minsker, and E. Amir, *Real-Time Bayesian Anomaly Detection for Environmental Sensor Data*, in Proceedings of the 32nd Congress of IAHR, International Association of Hydraulic Engineering and Research, Venice, Italy, 2007.
- [32] W. Dawsey, B. Minsker, and E. Amir, *Real Time Assessment of Drinking Water Systems Using a Bayesian Network*, in Proceedings of the World Environmental and Water Resources Congress, 2007.
- [33] D. Shahaf and E. Amir, *Towards a Theory of AI Completeness*, in 8th International Symposium on Logical Formalizations of Commonsense Reasoning (Commonsense 2007), 2007.
- [34] D. Ramachandran and E. Amir, *Bayesian Inverse Reinforcement Learning*, in Proceedings of the 20th International Joint Conference on Artificial Intelligence (IJCAI 2007), 2007.
- [35] M. Richards and E. Amir, *Opponent Modeling in Scrabble*, in Proceedings of the 20th International Joint Conference on Artificial Intelligence (IJCAI 2007), 2007.
- [36] D. Shahaf and E. Amir, *Logical Circuit Filtering*, in Proceedings of the 20th International Joint Conference on Artificial Intelligence (IJCAI 2007), 2007.
- [37] J. Choi and E. Amir, *Factored Planning for Controlling a Robotic Arm: Theory*, in 5th International Cognitive Robotics Workshop (CogRob 2006), 2006.
- [38] M. T. Young and E. Amir, *Building knowledge about buildings*, in AAAI Fall Symposium workshop

on Semantic Web for Collaborative Knowledge Acquisition, 2006.

- [39] M. Nance, A. Vogel, and E. Amir, *Reasoning about Partially Observed Actions*, in Proceedings of the 21st National Conference on Artificial Intelligence (AAAI 2006), 2006.
- [40] D. Shahaf and E. Amir, *Learning Partially Observable Action Schemas*, in Proceedings of the 21st National Conference on Artificial Intelligence (AAAI 2006), 2006.
- [41] D. Shahaf, A. Chang, and E. Amir, *Learning Partially Observable Action Models: Efficient Algorithms*, in Proceedings of the 21st National Conference on Artificial Intelligence (AAAI 2006), 2006.
- [42] R. Braz, E. Amir, and D. Roth, *MPE and Logical Variable Conditioning in Lifted Probabilistic Variable Elimination*, Proceedings of the 21st National Conference on Artificial Intelligence (AAAI 2006), 2006.
- [43] A. Chang and E. Amir, *Goal Achievement in Partially Known, Partially Observable Domains*, in Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS 2006), 2006.
- [44] D. Ramachandran and E. Amir, *Compact Propositional Encoding of First-Order Theories*, in Proceedings of the 20th National Conference on Artificial Intelligence (AAAI 2005), 2005. Earlier versions of this work appeared in IJCAR'04 Workshop on Strategies in Automated Deduction (STRATEGIES 2004), 2004, and in ECAI'04 Workshop on Local computations with Logic and Uncertainty, 2004.
- [45] E. Amir, *Learning Partially Observable Deterministic Action Models*, in Proceedings of the 19th International Joint Conference on Artificial Intelligence (IJCAI 2005), 2005. An earlier version of this work appeared in ECAI'04 Workshop on Cognitive Robotics (CogRob 2004), 2004.
- [46] A. Shirazi and E. Amir, *First-Order Logical Filtering* in Proceedings of the 19th International Joint Conference on Artificial Intelligence (IJCAI 2005), 2005. An earlier version appeared in 7th International Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 2005), 2005.
- [47] R. Braz, E. Amir, and D. Roth, *Lifted First-Order Probabilistic Inference* in Proceedings of the 19th International Joint Conference on Artificial Intelligence (IJCAI 2005), 2005.
- [48] P. Oertel and E. Amir, *A Framework for Commonsense Knowledge Retrieval*, in 7th International Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 2005), 2005. An earlier version appeared in AAAI Spring Symposium workshop on Knowledge Capture from Volunteer Contributors (KCVC 2005), 2005.
- [49] B. Hlubocky and E. Amir, *Knowledge Gathering Agents in Adventure Games*, in AAAI'04 Workshop on Challenges in Game AI, 2004.
- [50] E. Amir, and S. Russell, *Logical Filtering*, in Proceedings of the 18th International Joint Conference on Artificial Intelligence (IJCAI 2003), 2003. An earlier version appeared in 6th International Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 2003), 2003.
- [51] E. Amir and B. Engelhardt, *Factored Planning*, in Proceedings of the 18th International Joint Conference on Artificial Intelligence (IJCAI 2003), 2003.
- [52] B. MacCartney, S. McIlraith, E. Amir and T. Uribe, *Efficient Theorem Proving Through Partitioning*, in Proceedings of the 18th International Joint Conference on Artificial Intelligence (IJCAI 2003), 2003.
- [53] E. Amir, R. Krauthgamer, S. Rao, *Constant Factor Approximation of Vertex-Cuts in Planar Graphs*, in Proceedings of the ACM Symposium on Theory of Computing (STOC 2003), 2003.
- [54] E. Amir, *Interpolation Theorems for Nonmonotonic Reasoning Systems*, 9th International Workshop on Nonmonotonic Reasoning (NMR 2002).

- [55] E. Amir, *Projection in Decomposed Situation Calculus*, Proceedings of the 8th International Conference on Principles of Knowledge Representation and Reasoning (KR 2002), 2002.
- [56] E. Amir and P. Doyle, *Adventure Games: a Challenge for Cognitive Robotics*, AAAI'02 Workshop on Cognitive Robotics (CogRob 2002), 2002.
- [57] E. Amir, *Planning With Nondeterministic Actions and Sensing*, AAAI'02 Workshop on Cognitive Robotics (CogRob 2002), 2002.
- [58] S. McIlraith and E. Amir, *Theorem Proving With Structured Theories*, Proceedings of the 17th International Joint Conference on Artificial Intelligence (IJCAI 2001), 2001.
- [59] E. Amir, *Efficient Approximation for Triangulation of Minimum Treewidth*, Proceedings of the 17th Conference on Uncertainty in Artificial Intelligence (UAI 2001), 2001.
- [60] E. Amir and S. McIlraith, *Solving Satisfiability using Decomposition and the Most Constrained Subproblem*, Proceedings of Theory and Applications of Satisfiability Testing (SAT 2001), 2001.
- [61] E. Amir and P. Maynard-Reid II, *LiSA: A Robot Driven by Logical Subsumption*, 5th Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 2001), 2001. An earlier version appeared in AAAI Fall Symposium on Parallel Architectures for Cognition, 2000.
- [62] S. Shapiro, E. Amir, H. Grosskreutz, D. Randell, and M. Soutchanski, *Commonsense and Embodied Agents*, 5th Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 2001), 2001.
- [63] E. Amir, *(De)Composition of Situation Calculus Theories*, Proceedings of the 17th National Conference on Artificial Intelligence (AAAI 2000), 2000.
- [64] E. Amir and S. McIlraith, *Improving the Efficiency of Reasoning Through Structure-Based Reformulation*, Proceedings of the 4th International Symposium on Abstraction, Reformulation and Approximation (SARA 2000), 2000.
- [65] E. Amir and S. McIlraith, *Partition-Based Logical Reasoning*, Proceedings of the 7th International Conference on Principles of Knowledge Representation and Reasoning (KR 2000), 2000.
- [66] E. Amir and P. Maynard-Reid II, *Logic-Based Subsumption Architecture*, Proceedings of the 16th International Joint Conference on Artificial Intelligence (IJCAI 1999), 1999. An earlier version appeared in AAAI Fall Symposium on Cognitive Robotics (CogRob 1998), 1998.
- [67] E. Amir, *Object-Oriented First-Order Logic*, IJCAI Workshop on Nonmonotonic Reasoning, Action and Change (NRAC 1999), 1999.
- [68] E. Amir, *Pointwise Circumscription Revisited*, Proceedings of the 6th International Conference on Principles of Knowledge Representation and Reasoning (KR 1998), 1998.
- [69] E. Amir, *Towards a Formalization of Elaboration Tolerance: Adding and Deleting Axioms*, Symposium on Abstraction, Reformulation and Approximation (SARA 1998), 1998. Also appeared in 7th International Workshop on Nonmonotonic Reasoning (NMR 1998) (Belief Revision track), 1998.
- [70] E. Amir, *Point-Sensitive Circumscription*, 4th Symposium on the Logical Formalizations of Commonsense Reasoning (Commonsense 1998), 1998.
- [71] E. Amir, *Machinery for Elaborating Action – Preliminary Report*, IJCAI'97 Workshop on Nonmonotonic Reasoning, Action and Change (NRAC 1997), 1997.
- [72] E. Amir, *Formalizing Action Using Pointwise Circumscription and Set Theory*, IJCAI'97 Workshop on Nonmonotonic Reasoning, Action and Change (NRAC 1997), 1997.

## In Progress

- [73] E. Amir and S. Russell, *Logical Filtering*, in preparation.

- [74] E. Amir, *Reasoning with Propositional Theories and Probability Distributions*, in preparation.
- [75] H. Hajishirzi, E. Mueller, and E. Amir, *Text Understanding through Probabilistic Reasoning about Actions*, submitted for publication.
- [76] A. Shirazi and E. Amir, *Dynamic Probabilistic Knowledge about Probabilistic Knowledge*, submitted for publication.
- [77] D. Ramachandran and E. Amir, *Solving Markov Decision Processes in Metric Spaces*, submitted for publication.

## In the Media: Articles About Me and My Work

- L. D. Paulson, *Scrabble Program Wins by Inference*, Computer Magazine, March 2007 issue (Vol. 40, No. 3).
- K. Sackley, *Winning Computer Program Created by Graduate Student Beats World Champion Scrabble Player*, Daily Illini, 28th February 2007.
- D. Graham-Rowe, *Robot Learns to Play Dirty Scrabble*, New Scientist Magazine, issue 2586, 16th January 2007.

## Teaching Experience

- **Research Advisor at Present** for Ph.D. students (6), undergraduate students (2), and a Postdoctoral researcher (1).
- **Graduated Advisees:** MS students (6), and BS students (3).
- **Collaborative Project**, lead an *Autonomous Car* project, including 4 faculty and 50 students University of Illinois Urbana-Champaign, Computer Science Department, Fall 2006, Spring 2007.
- **Instructor**, *CS 440: Introduction to Artificial Intelligence*, University of Illinois Urbana-Champaign, Computer Science Department, Fall 2006, Spring 2008.
- **Instructor**, *CS 598-EA: Decision-Making Under Uncertainty*, University of Illinois Urbana-Champaign, Computer Science Department, Spring 2005, Spring 2006, Spring 2007.
- **Instructor**, *CS 498-EA: Reasoning and Knowledge Representation*, University of Illinois Urbana-Champaign, Computer Science Department, Fall 2004, Fall 2005.
- **Instructor**, *CS 497-EA: Reasoning in Artificial Intelligence*, University of Illinois Urbana-Champaign, Computer Science Department, Spring 2004.
- **Seminar Organizer**
  - AI-Vision-Robotics Seminar, University of Illinois, Urbana-Champaign (2005–Present)
  - Seminar on Logical Methods, University of Illinois, Urbana-Champaign (2005–2006)
  - Seminar on Approximate Probabilistic Inference, University of Illinois, Urbana-Champaign (2005–2006)
  - Knowledge Representation and Reasoning Seminar, University of Illinois, Urbana-Champaign (2005)
  - AI-Vision-Robotics Seminar, University of California Berkeley. (2001–2003)
  - AI-Vision-Robotics Colloquium, Stanford University. (1998–1999)
- **Reading Group Organizer**, *Artificial Intelligence Agents*,

University of California Berkeley, Computer Science Division, Spring 2002, Autumn 2002.

- **Teaching Assistant**, *CS 121: Introduction to Artificial Intelligence*, Stanford University, Computer Science Department, taught by Nils J. Nilsson, Spring 1998.
- **Teaching Assistant**, *CS 323: Commonsense and Nonmonotonic Reasoning*, Stanford University, Computer Science Department, taught by John McCarthy, Winter 1996, Winter 1997.
- **Teaching Assistant**, *Math 102, Math 103: Introduction to Set Theory and Analysis*, Bar-Ilan University, Department of Mathematics and Computer Science, taught by Yaacov Choueika, Autumn 1991, Spring 1992.
- **Instructor**, *Info 705: Computer Applications* Bar-Ilan University, Information Science Department, Spring 1990.

## Academic Service

- **Journals and Conferences Service**
  - **Chairmanship**
    - \* co-Chair of the 8th Symposium on Logical Formalizations of Commonsense Reasoning (*Commonsense 2007*)
  - **Editorial Board**
    - \* Member in the editorial board of Journal of Artificial Intelligence Research (*JAIR*), 2006–Present
  - **Program Committee Member** for
    - \* National Conference on Artificial Intelligence: *AAAI 2008, AAAI 2007, AAAI 2006, AAAI 2005, AAAI 2004*
    - \* Uncertainty in Artificial Intelligence Conference (*UAI 2008, UAI 2007*),
    - \* Logic in Computer Science (*LICS 2008*),
    - \* Logic Programming and Automated Reasoning (*LPAR 2007*),
    - \* International Conference on Machine Learning (*ICML 2006*),
    - \* European Conference on Artificial Intelligence (*ECAI 2006*),
    - \* International Conference on Principles of Knowledge Representation and Reasoning (*KR 2008, KR 2006*),
    - \* International Conference on Knowledge Science, Engineering and Management (*KSEM 2006*)
    - \* International Symposium on Practical Cognitive Agents and Robots, 2006.
    - \* European STarting AI Researcher Symposium (*STAIRS 2006*)
    - \* Workshop on Context Representation and Reasoning, 2005,
    - \* Symposium on Logical Formalizations of Commonsense Reasoning *Commonsense 2005, Commonsense 2003, Commonsense 2001*,
    - \* Doctoral Consortium in Conference on Knowledge Representation and Reasoning (*KR 2004*),
    - \* International Cognitive Robotics Workshop (*CogRob 2002*),
    - \* Intl. Workshop on Non-Monotonic Reasoning *NMR 2002, NMR 2000*.
  - **Reviewer** for
    - \* *Artificial Intelligence Journal (AIJ)*,
    - \* *Journal of Artificial Intelligence Research (JAIR)*,

- \* *Journal of Machine Learning Research (JMLR)*,
  - \* *Communications of the ACM*,
  - \* *Annals of Mathematics and Artificial Intelligence*,
  - \* *AI Communications*,
  - \* *Discrete Applied Mathematics*,
  - \* *Addison-Wesley*,
  - \* *Cambridge University Press*,
  - \* *Morgan Kauffman Publishers*,
  - \* Intl. Joint Conference on Artificial Intelligence *IJCAI 2005, IJCAI 2003, IJCAI 2001, IJCAI 1999*,
  - \* National Conference on Artificial Intelligence *AAAI 2000*.
- **Professional organizations:**
    - Association for the Advancement of Artificial Intelligence (AAAI).
    - Institute of Electrical and Electronics Engineers (IEEE).
    - Association for Computing Machinery (ACM).
  - **Advisory Boards**
    - Lifeboat Foundation
    - Project Elliot
  - **Departmental Committee Memberships:**
    - Courses and Curricula Committee.
    - Student Awards Committee.
    - Quality of Doctoral Program, strategic committee.
  - **Service for Government Agencies and Funding Sources:**
    - Reviewer and review-panel member for National Science Foundation (NSF)
    - Reviewer for Israel Science Foundation (ISF)

## Awarded Grants

- PI, \$15K, 2007, award from University of Illinois, Urbana-Champaign, Campus Research Board.
- PI, \$20K, 2006, award from University of Illinois, Urbana-Champaign, Coordinated Science Lab.
- PI, \$20K, 2006, award from University of Illinois, Urbana-Champaign, Computer Science Dept.
- PI, \$25K, 2006, award from University of Illinois, Urbana-Champaign, Dean of the College of Engineering.
- PI, \$360K, 2006–2009, award from National Geospatial Intelligence Agency (NGIA).
- co-PI, \$100K (my share), 2006, award from US Army CERL, together with Mehdi Harandi (PI, UIUC).
- PI, \$500K, 2005–2010, CAREER award from NSF.
- PI, \$200K (my share), 2005–2006, together with Jerry DeJong (co-PI, UIUC).
- co-PI, \$880K (my share), 2004–2009, award from DARPA/IPTO, together with Stuart Russell (PI, UC Berkeley).

## Invited Talks

- Princeton University, Computer Science Department, Mar 2008, *Reinventing Partially Observable Reinforcement Learning*
- University of Texas at Austin, Computer Science Department, Feb 2008, *Reinventing Partially Observable Reinforcement Learning*
- University of Southern California, Information Science Institute, Feb 2008, *Reinventing Partially Observable Reinforcement Learning*
- Harvard University, Computer Science Department, Feb 2008, *Reinventing Partially Observable Reinforcement Learning*
- Technion, Israel, Industrial Engineering Department, Jan 2008, *Combining Planning and Motion Planning*
- University of Toronto, Canada, Computer Science Department, May 2007, *Logical Filtering and Its Applications and AI Completeness: A New Model of Computation for Artificial Intelligence*
- India Institute of Technology (IIT), Delhi, Computer Science Department seminar, December 2006, *Craig's Interpolation Theorem and Its Applications*
- Yahoo! Research Labs, Research seminar, July 2006, *Learning Partially Observable Action Models*
- Reservoir Labs, Research seminar, April 2006, *Learning Partially Observable Action Models*
- Google, Research seminar, March 2006, *Learning Partially Observable Action Models*
- MIT, Machine Learning seminar, March 2006, *Learning Partially Observable Action Models*
- Tel Aviv University, Logic seminar, December 2005, *Lifted First-Order Probabilistic Inference*
- Israel Institute of Technology (Technion), Industrial Engineering and Management seminar, December 2005, *Lifted First-Order Probabilistic Inference*
- Hebrew University, CS seminar, December 2005, *Lifted First-Order Probabilistic Inference*
- University of British Columbia, CS seminar, September 2005, *Lifted First-Order Probabilistic Inference*
- Bar-Ilan U, CS seminar, May 2005, *Learning Partially Observable Action Models*
- UIUC, CS seminar, April 2005, *Agents with Knowledge*
- UIUC, General Engineering seminar, March 2005, *Dividing and Conquering Logic*
- UIUC, ECE seminar, February 2005, *Logical Filtering*
- Tel-Aviv U, Logic seminar, January 2005, *Compact Propositional Encoding of First-Order Theories*
- Tel-Aviv U, CS colloquium, January 2005, *Learning Partially Observable Action Models*
- Cycorp, November 2004, *Using Commonsense Knowledge*
- Cycorp, November 2004, *Directions for Research in First-Order Inference*
- U. of Iowa at Iowa City, CS colloquium, October 2004, *Dividing and Conquering Logic*
- Cycorp, June 2004, *Dividing and Conquering Logic*
- Cycorp, June 2004, *Agents with Knowledge*
- Weizmann inst., Math&CS, May 2004, *Logical Filtering*
- Tel-Aviv U, logic seminar, May 2004, *Dividing and Conquering Logic*
- Tel-Aviv U, CS colloquium, May 2004, *Logical Filtering*
- Hebrew U, CS colloquium, May 2004, *Dividing and Conquering Logic*

- Hebrew U, Machine-Learning seminar, June 2004, *Learning Partially Observable Action Models*
- Technion, CS colloquium, June 2004, *Logical Filtering*
- Haifa U, Rothschild Inst, July 2004, *Logical Filtering*
- MIT, CSAI lab, February 2004, *Logical Filtering*

## **Industrial Experience**

- **Consultant**, Giza Venture Capital. (2000-2008)  
Technical evaluation of start-up companies that use artificial intelligence techniques.
- **Software Engineer**, Israel Defense Forces, **Captain**. (1990–1995)  
Programming game models and GUI in C++ in a Sun/Solaris environment.
- **Lab Manager**, Bar-Ilan University. (1989–1990)  
Hardware and software maintenance for a PC lab.