CONTACT INFORMATION

• Administrator
  Alex Sandra Pinedo - Administrative Associate
  Email  asandra@cs.stanford.edu
  Tel  (650) 721-6625

Bio

Shoham’s artificial intelligence work includes formalizing common-sense (including notions such as time, causation, and mental state), and multi-agent systems (including agent-oriented programming and coordination mechanisms). His current interests concern game theory pragmatics, and formal models of intention.

ACADEMIC APPOINTMENTS

• Emeritus Faculty, Acad Council, Computer Science

HONORS AND AWARDS

• Fellow, Association for the Advancement of Artificial Intelligence (2002)
• Autonomous Agents Research Award, ACM/SIGART (2008)
• Best Paper Award, ACM Conference on Electronic Commerce (2009)
• Best Paper Award, ACM Conference on Electronic Commerce (2010)
• Influential Paper Award, AAMAS (2011)
• Fellow, ACM (2013)
• Allen Newell Award, AAAI/ACM (2013)

PROFESSIONAL EDUCATION

• PhD, Yale (1986)

Publications

PUBLICATIONS

• If Multi-Agent Learning is the Answer, What is the Question? Artificial Intelligence, special issue on Foundations of Multi-Agent Learning
  Shoham, Y., Powers, R.
  edited by Vohra, R., Wellman, M.
  : 365–377
• Empirical Hardness Models for Combinatorial Auctions. Chapter 20 of Combinatorial Auctions.
  Leyton-Brown, K., Nudelman, E.

• A Test Suite for Combinatorial Auctions. Chapter 19 of Combinatorial Auctions.
  Leyton-Brown, K., Shoham, Y.

• Introduction to Combinatorial Auctions. Introductory chapter of Combinatorial Auctions.
  Cramton, P., Shoham, Y.

• Marginal Contribution Nets: A Compact Representation Scheme for Coalitional Games.
  Ieong, S., Shoham, Y.

• Game Theory Pragmatics: A Challenge for AI.
  Shoham, Y.

• Success, Strategy and Skill: an Experimental Study.
  Archibald, C., Altman, A., Shoham, Y.

• Multi-Attribute Coalitional Games.
  Ieong, S., Shoham, Y.

• Learning in Games with More than Two Players.
  Vu, T., Powers, R., Shoham, Y.

  Shoham, Y.

• Optimal Testing of Structured Knowledge.
  Munie, M., Shoham, Y.

• Asymptotically Optimal Repeated Auctions for Sponsored Search.
  Lambert, N., Shoham, Y.

• Internal Implementation.
  Anderson, A., Shoham, Y., Altman, A.

• Dispersion Games AAAI-02.
  Grenager, T., Powers, R., Shoham, Y.

• Run the GAMUT: A Comprehensive Approach to Evaluating Game-Theoretic Algorithms.
  Leyton-Brown, K., Nudelman, E., Wortman, J., Shoham, Y.

• On the Agenda Control Problem in Knockout Tournaments.
  Vu, T., Altman, A., Shoham, Y.

• Modeling Billiards Games.
  Archibald, C., Shoham, Y.

• Bayesian Coalitional Games.
  Ieong, S., Shoham, Y.

• Near-Optimal Search in Continuous Domains.
  Ieong, S., Lambert, N., Shoham, Y., Brafman, R.

• Eliciting Properties of Probability Distributions.
  Lambert, N., Pennock, D., M., Shoham, Y.

• Broadening the Scope of Optimal Seeding Analysis in Knockout Tournaments.
Vu, T.

- **Rational Programming** *Unpublished.*
  Shoham, Y.

- **Joint Process Games: From Ratings to Wikis.**
  Munie, M., Shoham, Y.

- **Higher Educated Guesses.**
  Shoham, Y.

- **On the Complexity of Schedule Control Problems for Knockout Tournaments.**
  Vu, T., Altman, A., Shoham, Y.

- **A Framework for the Quantitative Evaluation of Voting Rules.**
  Munie, M., Tang, P., Shoham, Y.

- **Team Competition.**
  Tang, P., Shoham, Y., Lin, F.

- **Fair Seeding in Knockout Tournaments** *ACM TRANSACTIONS ON INTELLIGENT SYSTEMS AND TECHNOLOGY*
  Thuc Vu, T., Shoham, Y.
  2012; 3 (1)

- **Designing competitions between teams of individuals** *ARTIFICIAL INTELLIGENCE*
  Tang, P., Shoham, Y., Lin, F.
  2010; 174 (11): 749-766

- **Computational Pool: A New Challenge for Game Theory Pragmatics** *AI MAGAZINE*
  Archibald, C., Altman, A., Greenspan, M., Shoham, Y.
  2010; 31 (4): 33-41

- **Multi-Agent Learning II: Algorithms.** *Encyclopedia of Machine Learning*
  Shoham, Y., Powers, R.
  edited by Sammut, C., Webb, G.
  Springer.2010

- **Multi-Agent Learning I: Problem Definition.** *Encyclopedia of Machine Learning*
  Shoham, Y., Powers, R.
  edited by Sammut, C., Webb, G.
  Springer.2010

- **Cause for Celebration, Cause for Concern.** *Heuristics, Probability and Causality: a Tribute to Judea Pearl*
  Shoham, Y.
  edited by Dechter, R., Geffner, H., Halpern, J., Y.
  College Publications.2010

- **Untitled.** *Epistemic Logic: 5 Questions*
  Shoham, Y.
  edited by Hendricks, V., F., Roy, O.
  Automatic Press / VIP.2010

- **Joint Revision of Belief and Intention.**
  Icard, T., Pacuit, E., Shoham, Y.
  2010

- **Logical Theories of Intention and the Database Perspective** *JOURNAL OF PHILOSOPHICAL LOGIC*
  Shoham, Y.
Empirical Hardness Models: Methodology and a Case Study on Combinatorial Auctions  *JOURNAL OF THE ACM*
Leyton-Brown, K., Nudelman, E., Shoham, Y.
2009; 56 (4)

Ranking games  *ARTIFICIAL INTELLIGENCE*
Brandt, F., Fischer, F., Harrenstein, P., Shoham, Y.
2009; 173 (2): 221-239

Multiagent Systems: Algorithmic, Game Theoretic and Logical Foundation
Shoham, Y., Leyton-Brown, K.
Cambridge University Press. 2009

Fault tolerant mechanism design  *ARTIFICIAL INTELLIGENCE*
Porter, R., Ronen, A., Shoham, Y., Tennenholtz, M.
2008; 172 (15): 1783-1799

Computer science and game theory  *COMMUNICATIONS OF THE ACM*
Shoham, Y.
2008; 51 (8): 74-79

Simple search methods for finding a Nash equilibrium  *2nd World Congress of the Game-Theory-Society*
Porter, R., Nudelman, E., Shoham, Y.
ACADEMIC PRESS INC ELSEVIER SCIENCE. 2008: 642–62

Essentials of Game Theory: A Concise, Multidisciplinary Introduction
Leyton-Brown, K., Shoham, Y.

Mechanism Design with Execution Uncertainty  *UAI-02.*
Porter, R., Ronen, A., Shoham, Y., Tennenholtz, M.
2008

A general criterion and an algorithmic framework for learning in multi-agent systems  *MACHINE LEARNING*
Powers, R., Shoham, Y., Vu, T.
2007; 67 (1-2): 45-76

If multi-agent learning is the answer, what is the question?  *ARTIFICIAL INTELLIGENCE*
Shoham, Y., Powers, R., Grenager, T.
2007; 171 (7): 365-377

The Israeli-Palestinian Science Organization  *SCIENCE*
2007; 315 (5808): 39-39

On strictly competitive multi-player games.
Brandt, F., Fischer, F.
2006

Combinatorial Auctions
edited by Cramton, P., Shoham, Y., Steinberg, R.
MIT Press. 2006

Non-cooperative computation: Boolean functions with correctness and exclusivity  *THEORETICAL COMPUTER SCIENCE*
Shoham, Y., Tennenholtz, M.
2005; 343 (1-2): 97-113

On cheating in sealed-bid auctions  *4th ACM Conference on Electronic Commerce (EC'03)*
Porter, R., Shoham, Y.
ELSEVIER SCIENCE BV. 2005: 41–54
• New Criteria and a New Algorithm for Learning in Multi-Agent Systems.
Powers, R., Shoham, Y.
2005

• Fast and Compact: A Simple Class of Congestion Games *AAAI-2005.*
Ieong, S., McGrew, R., Nudelman, E., Shoham, Y.
2005

• The structural basis of the thermostability of SP1, a novel plant (Populus tremula) boiling stable protein *JOURNAL OF BIOLOGICAL CHEMISTRY*
2004; 279 (49): 51516-51523

• Fair imposition *JOURNAL OF ECONOMIC THEORY*
Porter, R., Shoham, Y., Tennenholtz, M.
2004; 118 (2): 209-228

• SATzilla: An Algorithm Portfolio for SAT *In conjunction with SAT 2004.*
Nudelman, E., Devkar, A., Shoham, Y., Leyton-Brown, K., Hoos, H.
2004

• Addressing the Free-Rider Problem in File-Sharing Systems: A Mechanism-Design Approach
McGrew, R., Shoham, Y.
2004

• Incentive mechanisms for smoothing out a focused demand for network resources *COMPUTER COMMUNICATIONS*
Leyton-Brown, K., Porter, R., Prabhakar, B., Shoham, Y., Venkataraman, S.
2003; 26 (3): 237-250

• On Cheating in Sealed-Bid Auctions.
Porter, R., Shoham, Y.
2003

• Towards a General Theory of Non-Cooperative Computing.
McGrew, R., Porter, R., Shoham, Y.
2003

• Truth revelation in approximately efficient combinatorial auctions *JOURNAL OF THE ACM*
Lehmann, D., O'Callaghan, L. I., Shoham, Y.
2002; 49 (5): 577-602

Leyton-Brown, K., Nudelman, E., Shoham, Y., Vetsikas, Y., Bejar, R., Gomes, C.
2002

• Smoothing Out Focused Demand for Network Resources *Short version presented at the 2001 ACM Conference on Electronic Commerce (EC’01); also presented at ITCom 2001. Full version to be published in ACM Computer Communications Review*
Leyton-Brown, K., Porter, R., Venkataraman, S., Prabhakar, B.
2002

• On rational computability and communication complexity *GAMES AND ECONOMIC BEHAVIOR*
Shoham, Y., Tennenholtz, M.
2001; 35 (1-2): 197-211

• Rational Computation and the Communication Complexity of Auctions *Games and Economic Behavior*
Shoham, Y., Tennenholtz, M.
2001; 35

• Towards a Universal Test Suite for Combinatorial Auctions.
Leyton-Brown, K., Pearson, M., Shoham, Y.
2000
• Bidding Clubs: Institutionalized Collusion in Auctions.
  Leyton-Brown, K., Tennenholtz, M., Shoham, Y.
  2000

• On the knowledge requirements of tasks ARTIFICIAL INTELLIGENCE
  Brafman, R. I., Halpern, J. Y., Shoham, Y.
  1998; 98 (1-2): 317-349

• Agent Oriented Programming. Reading in Agents
  Shoham, Y.
  edited by Huhns, M., N., Singh, M., P.
  Morgan-Kaufmann.1998

• Reasoning about Change: Time and Causation from the Standpoint of Artificial Intelligence
  Shoham, Y.
  MIT Press.1998

• Conditional, Hierarchical Multi-Agent Preferences.
  Mura, P., La, Shoham, Y.
  1998

• From Belief Revision to Belief Fusion.
  Maynard-Reid II, P., Shoham, Y.
  1998

• Applications of a logic of knowledge to motion planning under uncertainty JOURNAL OF THE ACM
  Brafman, R. I., Latombe, J. C., Moses, Y., Shoham, Y.
  1997; 44 (5): 633-668

• On the emergence of social conventions: Modeling, analysis, and simulations ARTIFICIAL INTELLIGENCE
  Shoham, Y., Tennenholtz, M.
  1997; 94 (1-2): 139-166

• Economic principles of multi-agent systems ARTIFICIAL INTELLIGENCE
  Boutilier, C., Shoham, Y., Wellman, M. P.
  1997; 94 (1-2): 1-6

• Fab: Content-based, collaborative recommendation COMMUNICATIONS OF THE ACM
  Balabanovic, M., Shoham, Y.
  1997; 40 (3): 66-72

• Qualitative Reasoning about Perception and Belief.
  Val, A., Del, Shoham, Y., Maynard-Reid II, P.
  1997

• Agent Oriented Programming: a survey. Software Agents
  Shoham, Y.
  edited by Bradshaw, J., M.
  MIT Press.1997

• Two Senses of Conditional Utility.
  Shoham, Y.
  1997

• Information agents: A new challenge for AI IEEE EXPERT-INTELLIGENT SYSTEMS & THEIR APPLICATIONS
  Koller, D., Shoham, Y.
  1996; 11 (3): 8-10

• Logics of Knowledge and Robot Motion Planning Journal of the ACM
  Brafman, R., Latombe, J. C., Moses, Y., Shoham, Y.
• **PROVABLY CORRECT THEORIES OF ACTION** *Journal of the Association for Computing Machinery*
  Lin, F. Z., Shoham, Y.
  1995; 42 (2): 293-320

• **ON SOCIAL LAWS FOR ARTIFICIAL AGENT SOCIETIES - OFF-LINE DESIGN** *Artificial Intelligence*
  Shoham, Y., Tennenholtz, M.
  1995; 73 (1-2): 231-252

• **Adaptive Load Balancing: a study of multi-agent learning** *Journal of Artificial Intelligence Research 2*
  Schaefer, A., Shoham, Y., Tennenholtz, M.
  1995: 475-500

• **Nonmonotonic Temporal Reasoning.** *The Handbook of Login in Artificial Intelligence and Logic Programming*
  Sandwall, E., J., Shoham, Y.
  edited by Gabbai, D.
  Elsevier.1995

• **Artificial Intelligence Techniques in Prolog**
  Shoham, Y.
  Morgan Kaufman Publishers. 1994

• **Logics of Mental Attitudes in AI.** *Advances in Knowledge Representation and Reasoning*
  Shoham, Y., Cousins, S., B.
  edited by Lakeneyer, G., Mebel, B.
  Springer-Verlag.1994

• **Applying Knowledge to Motion Planning Under Uncertainty.**
  Brafman, R., I., Latombe, J. C., Moses, Y., Shoham, Y.
  1994

• **A Unified View of Belief Revision and Update** *Journal of Logic and Computation*
  Val, A., Del, Shoham, Y.
  1994

• **BELIEF AS DEFEASIBLE KNOWLEDGE** *Artificial Intelligence*
  Moses, Y., Shoham, Y.
  1993; 64 (2): 299-321

• **AGENT-ORIENTED PROGRAMMING** *Artificial Intelligence*
  Shoham, Y.
  1993; 60 (1): 51-92

• **Deriving Properties of Belief Update from Theories of Action II.**
  Val, A., Del, Shoham, Y.
  1993

• **Agent Oriented Programming, The Encyclopedia of Computer Science and Technology**
  Shoham, Y., Thomas, B.
  edited by Kent, A., Williams, J., G.
  Marcel Dekkar, Inc..1993

• **Agent Oriented Programming** *Journal of Artificial Intelligence*
  Shoham, Y.
  1993; 1 (60): 51-92

• **A LOGIC OF KNOWLEDGE AND JUSTIFIED ASSUMPTIONS** *Artificial Intelligence*
  Lin, F. Z., Shoham, Y.
  1992; 57 (2-3): 271-289
• **On Traffic Laws for Mobile Robots (abstract only)**
  Shoham, Y., Tennenholz, M.
  1992

• **On the Synthesis of Useful Social Laws.**
  Shoham, Y., Tennenholz, M.
  1992

• **A Mechanism for Reasoning about Time and Belief.**
  Isozaki, H., Shoham, Y.
  1992

• **Emergent Conventions in Multi-Agent Systems.**
  Shoham, Y., Tennenholz, M.
  1992

• **Deriving Properties of Belief Update from Theories of Action.**
  Val, A. D., Shoham, Y.
  1992

• **Agent Oriented Programming: an overview and summary of recent research.**
  Shoham, Y.
  1992

• **Concurrent Actions in the Situation Calculus.**
  Lin, F., Shoham, Y.
  1992

• **A PROPOSITIONAL MODAL LOGIC OF TIME INTERVALS.** *JOURNAL OF THE ACM*
  Halpern, J. Y., Shoham, Y.
  1991; 38 (4): 935-962

• **PRELIMINARY THOUGHTS ON AN AGENT DESCRIPTION LANGUAGE.** *INTERNATIONAL JOURNAL OF INTELLIGENT SYSTEMS*
  Thomas, B., Shoham, Y., Schwartz, A., Kraus, S.
  1991; 6 (5): 497-508

• **NONMONOTONIC REASONING AND CAUSATION - REPLY.** *COGNITIVE SCIENCE*
  Shoham, Y.

• **A LOGIC OF RELATIVE DESIRE.** *LECTURE NOTES IN ARTIFICIAL INTELLIGENCE*
  Doyle, J., Shoham, Y., Wellman, M. P.
  1991; 542: 16-31

• **Implementing the Intentional Stance.** *Philosophy and Artificial Intelligence*
  Shoham, Y.
  edited by Cummins, R., Pollock, J.
  MIT Press.1991

• **Remarks on Simon's Comments.** *Journal of Cognitive Science*
  Shoham, Y.
  1991; 2 (15): 301-303

• **AGENTO: a simple agent language and its interpreter**
  Shoham, Y.
  1991

• **NONMONOTONIC REASONING AND CAUSATION.** *COGNITIVE SCIENCE*
  Shoham, Y.
  1990; 14 (2): 213-252
• On the Complexity of Inheritance Networks and Roles.
  Hemerely, A., Guerreiro, R., Shoham, Y.
  1990

• Time for Action.
  Shoham, Y.
  1989

• Belief as Defeasible Knowledge.
  Shoham, Y., Moses, Y.
  1989

• EFFICIENT REASONING ABOUT RICH TEMPORAL DOMAINS JOURNAL OF PHILOSOPHICAL LOGIC
  Shoham, Y.
  1988; 17 (4): 443-474

• CHRONOLOGICAL IGNORANCE - EXPERIMENTS IN NONMONOTONIC TEMPORAL REASONING ARTIFICIAL INTELLIGENCE
  Shoham, Y.
  1988; 36 (3): 279-331

• PROBLEMS IN FORMAL TEMPORAL REASONING ARTIFICIAL INTELLIGENCE
  Shoham, Y., McDermott, D.
  1988; 36 (1): 49-61

• Problems in Nonmonotonic Temporal Reasoning Journal of Artificial Intelligence
  Shoham, Y., McDermott, D.
  1988; 1 (36): 49-61

• Temporal Reasoning in AI Exploring Artificial Intelligence
  Shoham, Y., Goyal, N.
  Morgan-Kaufmann.1988: 419–438

• Temporal Logics in AI Journal of Artificial Intelligence
  Shoham, Y.
  1987; 1 (33): 89-104

• Chronological Ignorance: time, knowledge, nonmonotonicity, and casual theories. Readings in Nonmonotonic Reasoning
  Shoham, Y.
  edited by Ginsberg, M.
  Morgan-Kaufmann.1987: 396–409

• Temporal Reasoning. The Encyclopedia of Artificial Intelligence
  Shoham, Y., McDermott, D., V.
  edited by Shapiro, S., C.

• Nonmonotonic Logics: meaning and utility.
  Shoham, Y.
  1987

• A Semantical Approach to Nonmonotonic Logics.
  Shoham, Y.
  1987

• Reified Temporal Logics: semantical and ontological considerations.
  Shoham, Y.
  1986

• Chronological Ignorance: time, knowledge, nonmonotonicity and casual theories.
  Shoham, Y.
1986

- **A Propositional Modal Logic of Time Intervals (short version).**
  Halpern, J., Y., Shoham, Y.
  1986

- **Naive Kinematics: One Aspect of Shape.**
  Shoham, Y.
  1985

- **Ten Requirements from a Theory of Change** *Journal of New Generation Computing 3*(4), 467-477, special issue on knowledge representation
  Shoham, Y.
  1985

- **Reasoning about Causation in Knowledge-Based Systems.**
  Shoham, Y.
  1985

- **Temporal Notation and Causal Terminology.**
  Shoham, Y., Dean, T.
  1985

- **Prolog Predicates as Denoting Directed Relations.**
  Shoham, Y., McDermott, D., V.
  1984

- **FAME: A Prolog Program That Solves Problems in Combinatorics.**
  Shoham, Y.
  1984

- **Knowledge Inversion.**
  Shoham, Y., McDermott, D., V.
  1984