Gal A. Kaminka

Full Curriculum Vitae

Computer Science Department
Bar Ilan University
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Research Interests

I am interested in the computational mechanisms that underly intelligent social behavior, and how they fit together in an intelligent agent. Such mechanisms include the ability to understand what others are doing and intend to do, and to generate appropriate coordinated behavior. My research emphasizes both theory and experiments with robots to synthesize social intelligence in the lab, and in real-world applications.

Education

Ph.D., Computer Science University of Southern California 1995–2000
Thesis: *Execution Monitoring in Multi-Agent Environments*
Advisor: Professor Milind Tambe.
Committee members: Profs. George Bekey, Victor Lesser, Daniel O'Leary, Jeff Rickel

B.A. (*Cum Laude*), Computer Science Open University of Israel 1991–1994

Professional Experience

Professor Bar Ilan University 2012–present
I head the MAVERICK group at the Computer Science Department, conducting research in multi-robot systems and artificial intelligence. I am also affiliated with the *Gonda Brain Research Center* and the *Institute for Nanotechnology and Advanced Materials*. Since October 2020, I serve as the Computer Science department chair.

Co-Founder & CTO BladeRanger 2016–present
The company is developing autonomous robots and drones for cleaning solar power installations.

Advisory board member Intuition Robotics 2015–present
Advisory board member Carbyne 2014–present

Radcliffe Fellow Harvard University 2011–2012
On sabbatical at the Radcliffe Institute for Advanced Study, Harvard.

Senior Lecturer Bar Ilan University 2002–2008
Adjunct Assistant Professor Carnegie Mellon University 2002–2005

Post Doctorate Fellow Carnegie Mellon University 2000–2002
Under guidance of Prof. Manuela Veloso.

PhD. Candidate & Research Assistant University of Southern California 1995–2000
Developed systems and theory for monitoring multiple agents in centralized and distributed settings, online and offline. Participated in AAAI and RoboCup competitions 1996–1998.

Programmer Tovna Machine Translation Systems, Ltd. 1993–1995
Developed a system for maintaining file and typesetting formats through translation process, and a report system on statistics used in the translation, assisted in system administration.

Military Service Israel Defense Forces 1990–1993
Non-Commissioned Officer, rank: Sergeant First-Class

Assistant System Administrator Brandeis University Computer Science Department 1989

Programmer Shaham Computerized Educational Services 1986–1987
Converting the SEMEL tutoring system from Commodore 64 computers to Apple II computers.

Honors
Sciences Prizes & Distinctions

Fellow, European Association for AI 2017
The European Association for Artificial Intelligence (EurAI) *Fellows* programme recognises European AI researchers who have made exceptional contributions to the field. The *EurAI Fellows* Program honors only a very small percentage of the total membership of all member societies (up to a maximum of 3%).

Landau Prize in Research and Science 2013
This is a prestigious national prize, awarded annually to 5 scientists, for internationally-recognized contributions and excellence. Award category: Exact Sciences—Robotics.

Radcliffe Fellow 2012
Radcliffe Institute for Advanced Study, Harvard University.

IBM Faculty Award 2004
For research excellence in the area of model-based diagnosis of multi-agent systems.

First Place, International RoboCup Coach League 2001
Third place, International RoboCup soccer simulation league 1997
Second place, AAAI-1996 International Robot Competition 1996

Best Paper Distinctions (1st-tier conferences)

Journal of AAMAS Fast-Track 2019
Co-authored by Alon Zanbar, our extended abstract at the AAMAS 2019 conference, titled "Is Agent Software More Complex than Other Software?" has been invited for fast-track submission to the Journal of Autonomous Agents and Multi-Agent Systems.

Best Challenge Paper Award, AAMAS Conference 2013
The challenge paper titled "Curing Robot Autism: A Challenge" was awarded the best challenge paper award, in the AAMAS "Challenges and Visions" special track. Invited for presentation as part of the AAAI conference "Other Conference Highlights" session for award-winning papers.

Best of ICCM-2009 2009
Co-authored by Natalie Fridman, our paper in the International Conference on Cognitive Modeling (ICCM) was invited for publication in the *best of ICCM 2009* special issue of the journal Cognitive Systems Research.

Best of ICMAS-2000 2000
Co-authored by Milind Tambe, David V. Pynadath, Nicholas Chauvat, and Abhimanyu Das, our paper in the International Conference on Multi-Agent Systems (ICMAS) was invited for publication in the *best of ICMAS 2000* special issue of the journal Autonomous Agents and Multi-Agent Systems.

Best of Agents-1999 1999
Co-authored by Stacy C. Marsella, Jafar Adibi, Yaser Al-Onaizan, Ion Muslea, Marcello Tallis, and Milind Tambe, our paper titled "On being a teammate: Experiences acquired in the design of RoboCup teams" in the International Conference on Autonomous Agents was invited for publication in the *best of Agents 1999* special issue of the journal Autonomous Agents and Multi-Agent Systems.

Best Paper Distinctions (2nd-tier conferences)

Best Paper Award, IMMM Conference 2013
Co-authored with Ariella Richardson and Sarit Kraus, our paper "REEF: Resolving Length Bias in Frequent Sequence Mining" won the best paper award at the third international conference on advances in information mining and management (IMMM 2013).

Best Paper Award, Cooperative Information Agents (CIA) 2007
Co-authored with Avi Rosenfeld, Claudia V. Goldman, and Sarit Kraus, our paper in the CIA conference won the best paper award.

Service and Institutional Recognition

Rector's Innovative Science Award Bar Ilan University 2017
With Dr. Noa Agmon, selected for our joint work on programming molecular robots.

Nominated for Best Senior Program Committee Member, AAMAS Conference 2006, 2012
For "reviews, discussions, and feedback that stood out as being particularly helpful, both to the authors, and to program chairs".

Meritorious Service Award University of Southern California 1997
Presented for outstanding contributions to the success of the USC's Information Sciences Institute (USC/ISI) robots in international competitions.

Funding

Basic Science

Lead PI (Project Coordinator), Swarm Smarts Center of Excellence ISF 2018–2022
Co-PIs: Prof. Amir Ayali (Tel Aviv University), Dr. Noa Agmon (Bar Ilan University), Prof. Alfred Bruckstein (Technion). The Swarm Smarts center of excellence studies individual decision making in biological (locust) and synthetic (robot) swarms.

Co-PI, Decentralized Active Goal Recognition BSF-NSF 2018–2021
Co-PI: Prof. Christopher Amato (Boston University). Investigation of decentralized methods for goal and plan recognition, in particular emphasizing active decision-making to enable recognition. Funded by the *United States-Israel Binational Science Foundation* joint program with the *U.S. National Science Foundation* (BSF-NSF), in particular with the Information and Intelligence Systems (IIS) division.

PI, Plan Recognition by Mirroring Israel Science Foundation (ISF) 2016–2018
Investigating a novel approach to plan, activity, and intent recognition (PAIR), inspired by the primate mirroring neuron system. Terminated early due to ISF requirements, upon winning ISF *Swarm Smarts* Center-of-Excellence grant above.

PI, An exploration of plan recognition in cybersecurity BIU Cybersecurity Center 2016–2017
Preliminary identification of the potential for plan recognition in cybersecurity applications.

PI, Game-Theory, Reinforcement Learning, and Emergent Behavior in Robots and Agents Israel Science Foundation (ISF) 2012–2016
Investigating the game-theoretic properties (including rationality) of multi-robot swarm behaviors.

PI, A Spectrum of Social Models in Theory and Robots Israel Science Foundation (ISF) 2007–2012
Secondary PI: Prof. Sarit Kraus (Bar Ilan University). Development of advanced logic theory and practical algorithms for controlling cooperative groups of autonomous robots, beyond teams.

Co-PI, "Mind reading" of the visual content from population responses in the visual cortex of behaving monkeys Center for Complexity Science 2007–2008
Co-PI: Dr. Hamutal Slovin (Bar Ilan University). Development and application of machine learning techniques for decoding neuron population responses in the visual cortex.

Co-PI, National Infrastructure Program in Robotics Ministry of Science and Technology 2005–2007
Co-PIs: Profs. Ehud Rivlin, Alfred Bruckstein (Technion); Sarit Kraus (Bar Ilan University); Eyal Shimony, Ariel Felner (Ben Gurion University). Development of canonical tasks and solutions for multi-robot systems, of multiple scales.

PI, Teamwork in Theory and Robots Israel Science Foundation (ISF) 2004–2007
Secondary PI: Prof. Sarit Kraus (Bar Ilan University). Development of logic theory and practical algorithms for controlling teams of autonomous robots.

Co-PI, Principled Design and Control of Robot Teams Binational Science Foundation (BSF) 2004–2007
Co-PIs: Prof. Manuela Veloso, Dr. Brett Browning (Carnegie Mellon University). Development of tools for design and deployment of coordinated robot teams.

Co-PI, GameBots USC/Information Sciences Institute 2000
Co-PI: Sheila Tejada (University of Southern California/Information Sciences Institute). High-risk/high-visibility funding for developing infrastructure for research using PC game environments. This was the only funded proposal by graduate students.

Applied

PI, Learning Behaviors for Computer-Generated Forces MAFAT 2019–
Use machine learning to mine logs of human and agent behaviors, to bootstrap the capabilities of computer generated forces. Joint work with the IDF Battle Laboratory.

PI, ROBIL2: A robotics consortium MAFAT 2013–2018
Multi-organization consortium to build and evaluate generic robotics technologies in ROS. Our areas: decision-making and shared world modeling in multi-robot teamwork. Other partner organizations include Ben Gurion University, Technion, Cogniteam, IAI.

Co-PI, ROBIL: Israel's entry to the DARPA Robotics Challenge MAFAT, DARPA 2012
Lead PI: Prof. Hugo Guterman, Ben Gurion University (BGU). Multi-organization consortium to build a team to compete in the DARPA Robotics Challenge (in addition to Bar Ilan University: Ben Gurion University, Technion, Cogniteam, IAI). My areas: decision-making and complex behaviors.

PI, Improving Walking in Legged Robots MAFAT 2009, 2011
Using machine learning and other techniques to improve stability and speed of quadruple walking robots.

PI, Groups of Autonomous Marine Surface Vehicles MAFAT 2010–2012
Support and advise a MAFAT-funded project at University of Texas, building autonomy control modules for marine surface vehicles.

PI, Modeling Crowd Behavior MAFAT 2005–2012
Using cognitive architectures and other AI tools to model crowd behavior.

PI, Diagnosis and Decision-Support for UAVs MAFAT 2007–2010
Development of a multivariate monitoring system for detecting and diagnosing failures.

PI, Cooperation in Robotic Ground Platform MAFAT 2005–2009
Algorithms and control systems for teams of physical robots in security tasks.

PI, Social Comparison in Crowds U.S. Air Force Office of Scientific Research 2009,2011
Investigation of social comparison mechanisms in crowds.

PI, RoboSweep MAFAT 2004–2005
Robotic teams for efficient and robust area coverage.

Co-PI, Recognizing Anomalous Behavior Ministry of Commerce 2004–2007
Co-PI: Prof. Sarit Kraus (Bar Ilan University). Development of algorithms for recognizing anomalous and suspicious behavior based on evidence from observations. MAGNET program.

Industry and Tech-Transfer

PI, Crowd behavior in homeland security simulation Ministry of Commerce 2015–2017
Research and technology transfer of crowd behavior modeling algorithms, applied to homeland security and disaster response simulations, for training and decision-support. MEIMAD program. Commercial partner: El-Tel, Ltd.

Co-PI, AIDL Boeing Research and Technology Europe 2014
Enabling higher levels of autonomy. Main PI: Dr. Noa Agmon, Bar Ilan University.

PI, PointBots MAFAT 2010–2013
Multirobot semi-autonomous exploration and mapping. A technology transfer and accelerated research and development program. Commercial partner: Cogniteam, Ltd.

PI, Autonomous robot mapping RAFAEL 2009
Demonstration of autonomous mapping capabilities by robots.

PI, Multi-Robot Formations with a Single Operator Ministry of Commerce 2007–2009
MAGNETON program. Commercial partner: Elbit Systems, Ltd.

PI, Research in multi-agent systems Samsung Telecommunications Research, Israel 2006–2007

PI, Teamwork in Computer Generated Forces Elbit Systems, Ltd. 2005–2006
Using the Soar architecture to model CGF teams.

Patents

Robotic Cooperative Systems Pending, 2016
Gal A. Kaminka, Assaf Friedler, Ari Yakir, Dan Erusalimchik, Yehuda Elmaliach. International application #PCT/IL2016/051163. US provisional filed 2015.

Location-Based Image Retrieval **Granted**, 2014
Shahar Kosti, Gal A. Kaminka, and David Sarne. US Patent 14/767,368.

Anomaly Detection Methods, Devices and Systems **Granted**, 2012
Eliyahu Khalastchi, Gal A. Kaminka, Raz Lin, and Meir Kalech. US Patent 9,218,232.

Flexible Computer Vision **Granted**, 2011
Gal A. Kaminka and Eran Sadeh-Or. US Patent 8,965,130.

Voting by Peers with Limited Resources **Granted**, 2007
Meir Kalech, Sarit Karus, Gal A. Kaminka, and Claudia V. Goldman-Shenhar. US Patent 8,038,061.

A Method and a System for Matching between Network Nodes **Granted**, 2007
Victor Shufrun, Gal A. Kaminka, Sarit Kraus, and Claudia V. Goldman-Shenhar. US Patent 7,808,909.

Invited Talks and Panels

Professional

Heterogeneous Swarms are Better Swarms 2020
RSS Workshop on Heterogeneous Multi-Robot Task Allocation and Coordination.

Lazy is Efficient (in Plan Recognition!) 2020
Invited keynote talk at the AAAI workshop on Plan, Activity and Intent Recognition (PAIR).

Many for One for Many: Challenges for Artificial Intelligence and Robotics 2017
Biomed TLV: 16th National Life sciences and Technology Week.

On the Importance of Failure & Other Lessons Learned 2017
Invited keynote talk at the AAMAS Doctoral Consortium.

Programming Nanobot Swarms for Biomedical Applications 2017
Invited keynote talk at the AAMAS workshop on Autonomous Robots and Multirobot Systems (ARMS), Ben Gurion University ABC Robotics Initiative.

Teams, Swarms, Crowds and Collectives: Special Cases? 2016
Invited keynote talk at the AAAI workshop on multiagent interaction without prior coordination.

No Robot is an Island, No Team an Archipelago 2015, 2016
Tel Aviv University, Ben Gurion University ABC Robotics Initiative. Invited keynote talk at the 2016 Robotics Systems and Science (RSS) workshop on online decision making for multiple robots.

No Robot is an Island: Translational Psychomimetic Research 2015
An invited talk at the BrainTech 2015 Conference, Israel.

Doctoral Mentoring Panel 2015
A panel at the AAMAS conference doctoral consortium and mentoring program, on career management and PhD advice.

The Aleph-Bet of Robotics 2014
An invited talk at an invitation-only workshop on commercialization, investment, and business in the area of Internet-of-Things. Organized by VC firm Aleph.

Curing Robot Autism: A Challenge to the Community 2014
An invited talk at workshop on Interactive Intelligence, Lorentz Center, the Netherlands.

Forward the architecture: Integrated AI through robotics 2013
Invited talk at BISFAI 2013 (Israel).

Curing Robot Autism: A Challenge 2013
An invited presentation (short version) of the above-titled award-winning paper, at the AAAI conference special session highlighting research from other conferences.

Reusable Teamwork in Multi-Robot Teams 2012, 2013
Carnegie Mellon University, University of Texas at Austin, University of Massachusetts at Amherst, Massachusetts Institute of Technology, Georgia Institute of Technology, Harvard University, University of Massachusetts at Lowell, Ninth International Workshop on Foundations on Mobile Computing.

Modeling Crowds: Psycho-history Reinvented 2012
An invited talk at the Crowds 2012 workshop.

Modeling Human Crowds and Robot Swarms: Two Different Approaches 2012
University of Southern California.

This is Not a Game: Old and New Challenges in Adversarial Reasoning 2011
Invited talk at the AARM (Applied Adversarial Reasoning and Modeling) workshop, at AAAI.

Use-Inspired Research in Robotics 2011
Invited talk at the CARE (Collaborative Agents—Research and Development) workshop, University of Southern California workshop on Use-Inspired Research.

Unsupervised Data-Mining and Anomaly Detection 2011
Invited talk at the ADMI (Agents and Data Mining Interaction) workshop.

Teamwork in Robots: Applying Lessons from Humans 2011
Invited talk at the annual Taiwan AI Forum (Taipei).

Towards Rapid Prototyping of Socio-Cognitive Simulations 2011
An invited talk at the 711 Human Performance Wing, Wright-Patterson Air Force Base.

Challenges in Robot and Human-Robot Teamwork 2010
A keynote presentation for *HART* (Human-Agent-Robot Teamwork) 5-day focused workshop.

A Cognitive Modeling Approach to Crowd Simulations 2009–2010
An invited talk at University of Southern California's TEAMCORE group, at the 711 Human Performance Wing, Wright-Patterson Air Force Base, at Singapore Management University (School of Information Sciences).

RoboCup and Lessons for Science Competitions 2007, 2009
An invited talk at the AAAI 2007 Workshop on Evaluation of Architectures, and the AAMAS 2009 Workshop on Agent Design: Adapting from Practice to Theory (ADAPT).

Distributed Multi-Agent Robotics 2008
An invited talk at the 2008 IEEE International Conference on Distributed Human-Machine Systems.

Robots are Agents, Too! 2007
An invited talk at the International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS). Also given at Hebrew University of Jerusalem.

10 Years of Situated Teamwork 2006–2007
University of Trento and ITC-irst, University of Southern California, Ben Gurion University of the Negev National Seminar in AI, EPFL Switzerland Summer Research Institute.

Single Operator, Multiple Robots: The Case of Coordinated Robots 2004–2005
University of Southern California Computer Science Department, NASA/JPL, Natanya College, University of Pittsburgh HCI group.

Teamwork in Autonomous Systems 2003
El-Op, Ltd. industry day, MAFAT robotics day.

GameBots: A Research Testbed 2002
University of Pittsburgh HCI group.

Monitoring Teams by Overhearing 2002
University of Massachusetts—Amherst computer science department, Carnegie Mellon University RETSINA group, Interdisciplinary Center in Hertzelia (Israel), Bar Ilan University computer science department.

Teamwork and Coordination panel member 2001
A simulation league panel at the International RoboCup 2001 event.

Teamwork and Coordination panel member 2001
First NASA workshop on Radical Agent Concepts.

Multi-Agent Modeling 2001
Ben Gurion University, Hebrew University of Jerusalem, Tel-Aviv University, Technion: Israel Institute of Technology.

If I'm OK, and You're OK, are We OK? 1999
Carnegie Mellon University CORAL Group, Ben-Gurion University, Hebrew University of Jerusalem.

Teamwork and Learning in the ISIS RoboCup Team 1998
Japan Elctro-Technical Laboratory (ETL)—now AIST.

Popular Science

AI in Sci-Fi meets AI in Science 2019
A popular science panel with science fiction authors and editors, discussing how AI science reality meets (or does not meet) AI in science fiction literature, TV, and movies.

Programmable Nano-robots for Medical Applications 2016
A popular-science talk discussing recent advances in nanobots, and how they might be programmed. Bar Ilan University "Science Night", September.

We, Robots 2013
An invited popular-science talk contrasting science fiction literature and culture views of robots, with the commercial and scientific reality; a discussion of Asimov's three laws of robotics and their significance. Presented at the Israeli conference on science fiction and fantasy (ICON).

The Robots are Here! 2013
A popular-science talk on the current and future prospects of robotics. Part of "Mada La'am" series organized by Israel's Ministry of Science and Technology.

Pets, Slaves, or Companions: Robots in Human Society 2012
A panel, part of a mini-symposium on *Robots in Human Society*. Moderated by Dr. Guy Hoffman. Other panelists include Prof. Ken Goldberg, Dr. Roey Tzezana.

The Present and Future of Robotics 2012
An invited popular science talk at the ICON TLV international sci-fi and fantasy festival (Hebrew). Available at http://www.youtube.com/watch?v=0QQHc-B-btM

Panel on the Technological Singularity: Fashionable Hysteria or a Certain Future? 2012
Moderated by Yael Dan, the other panel members included Dr. Immanuel Lotem, and Yanki Margalit.

No robot is an island: On the role of multi-robot technology in commercial robotics An invited talk at the World Innovation Summit 2009.

Multi-Robot Systems 2006–2009
An annual talk at the *Computer Science, Academy, and Industry* educational program for exceptional high-school students at Weizmann Institute of Science.

Robotics: Present and Future 2005
Bar Ilan Science Day keynote speech.

Robotics: Technological and Educational Challenge for Israel 2004
Haifa University robotics competition, keynote address.

Service

Professional Societies

Board Member International Foundation for Autonomous Agents and Multi-Agent Systems (IFAAMAS) 2008–2014
Member, Executive Committee RoboCup Federation 2010–2013
Member, Executive Council Association for Advancement of Artificial Intelligence (AAAI) 2008–2011

Journal Editing

Associate Editor Communications of the ACM (Robotics) 2014–Present
Coordinating Editor Journal of Autonomous Agents and Multi-Agent Systems 2007–Present
Associate Editor Journal of Artificial Intelligence Research (JAIR) 2013–2016
Associate Editor (Robotics) Annals of Mathematics and Artificial Intelligence (AMAI) 2008–2013
International Scientific Committee Journal of Physical Agents (JOPHA) 2010–2014
Guest Editor Annals of Mathematics and Artificial Intelligence: Special Issue 2009
BISFAI 2007. Co-edited with Sarit Kraus.
Guest Editor Annals of Mathematics and Artificial Intelligence: Special Issue 2008
Multi-Robot Coverage, Search, and Exploration. Co-edited with Amir Shapiro.

Conference Organization

Chair, BISFAI 2019
Member, IJCAI 2019 Advisory Committee **2018 Co-Chair, AAMAS Workshop Program** 2018
Co-Chair, ICAPS Doctoral Mentoring Program 2018
Program Co-Chair, ECAI 2016
Co-Chair, MATES (German Conference on Multiagent System Technologies) 2015
Robotics Track Co-Chair, AAMAS 2015
Integrated Systems Track Co-Chair, AAAI 2015
Program Co-Chair, AAMAS 2010
Chair, AAMAS Workshop Program 2009
Co-Chair, AAMAS Doctoral Mentoring Program and Symposium 2008
Program Co-Chair, BISFAI 2007
Chair, AAMAS Doctoral Mentoring Program and Symposium 2004
Co-Chair, RoboCup Symposium 2002
Chair, RoboCup Soccer Simulation World Cup 2001
Chair, RoboCup Soccer Simulation Evaluation Sessions 1998–2001
Member, RoboCup Soccer Simulation Technical Committee 1998–2002

Workshop Organization

Founder & Co-Chair, ARMS (Autonomous Robots and Multirobot Systems) Workshop 2011–
Co-Chair, AAAI Workshop on Evaluating Architectures for Intelligence 2007
Program Co-Chair, EUMAS Workshop 2005
Founder & Chair/Co-Chair, MOO (Modeling Others from Observations) Workshop 2004–2006

Program Committee

Served as **program committee member** (PC), **senior program committee member** (SPC), **area chair**, and **reviewer** for various conferences: AAAI, AAMAS, IJCAI, ICRA, IROS, and others.1999–present.

External Ph.D. Examiner

Daniel Claes University of Liverpool, UK 2018
Decentralised multi-robot system towards coordination in real-world settings.

Michal Čáp Czech Technical University in Prague, Czech Republic 2017
Centralized and Decentralized Algorithms for Multi-Robot Trajectory Coordination.

Joana Dimas Couto Silva Universidade de Lisboa, Instituto Superior Técnico 2016
When "I" becomes "We": Creating Agents with Dynamic Identity.

Matthew Johnson Delft University of Technology, Netherlands 2014
Coactive Design: Designing Support for Interdependence in Human-Robot Teamwork.

Aris Valtazanos University of Edinburgh, UK 2013
Decision Shaping and Strategy Learning in Multi-Robot Interactions.

Boštjan Kaluža Jožef Stefan International Postgraduate School, Slovenia 2013
Detection of Anomalous and Suspicious Patterns from Spatio-Temporal Agent Traces.

Nicola Basilico Politecnico di Milano, Italy 2010
Navigation Strategies for Exploration and Patrolling with Autonomous Mobile Robots.

Lavindra de Silva RMIT University, Australia 2009
Planning in BDI Agent Systems.

David Poutakidis RMIT University, Australia 2008
Debugging Multi-Agent Systems with Design Documents.

Nikolaus Correll École Polytechnique Fédérale de Lausanne (EPFL), Switzerland 2007
Coordination Schemes for Distributed Boundary Coverage with a Swarm of Miniature Robots: Analyses and Experimental Validation.

Eric Platon Laboratoire dínformatique de Paris 6, Université Pierre et Marie Curie 2007
Modeling Exception Management in Multi-Agent Systems.

Silvia Rossi University of Trento, Italy 2006
Communication and Overhearing for Modelling and Monitoring Group Interactions

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Teaching

University Courses

I have been teaching academic courses in computer science, at the undergraduate and graduate levels. Repeating titles include *Introduction to Multi-Robot Systems*, *Introduction to Intelligent Systems*, *Computer Structure and Organization*, *Agents in Physical Systems*, *Seminar in Plan- and Goal- Recognition*, and *Empirical Methods in Computer Science*.

Tutorials

I have given a number of tutorials at international summer schools and conferences, on *Agent Modeling from Observations*, *Robot Teamwork*, and other topics.

Students

Graduated Total 13 PhDs, 27 MSc.

Current Ph.D.

Teddy Lazebnik Ph.D. student
Programmable Molecular Robot Swarms (Nanobots). Co-advised by Dr. Chana Weitman, Bar Ilan University.

Eyal Weiss Ph.D. student
Task and Motion Planning in Continuous Environments.

Current M.Sc.

Rivka Vizen M.Sc. student (Hebrew University)
Human identification of candidate spatial goals. Co-advised by Jeff Rosenschein, Hebrew University of Jerusalem.

Alon Zanbar M.Sc. student
Empirical investigation (using software metrics) of the differences between AI and general software.

Idan Arye M.Sc. student
Bio-Inspired Multi-Robot Coverage. Co-advised by Luca Giuggioli, University of Bristol, UK.

Micha Molko M.Sc. student
Smart plan execution for task planners.

Eden Hartman M.Sc. student
Rational locust behavior.

Elad Naor M.Sc. student
Adversarial Foraging.

Nadav Yakar M.Sc. student
Integrated plan recognition and goal recognition via mirroring.

Alumni Ph.D.

Roi Yehoshua Ph.D. 2018
Robotic Adversarial Coverage. Co-advised by Noa Agmon, Bar Ilan University. *Now faculty at Northeastern University, USA.*

Mor Vered Ph.D. 2018
Mirroring: A General Approach to Plan and Goal Recognition. Winner of the IAAI (Israel Association for AI) *Outstanding Dissertation* Award. *Now faculty at Monash University, Australia.*

Sharon Yalov-Handzel Ph.D. 2016
Stable Humanoid Whole Body Motion Generation. *Now faculty at Afeka Tel-Aviv College of Engineering.*

Natalie Fridman Ph.D. 2013
Modeling Crowd Behavior. *Now V.P. of Research and Innovation at ImageSat International.*

Elisheva Bonchek-Dokow Ph.D. 2012
Cognitive Modeling of Human Intention Recognition. *Now faculty at Ashkelon College.*

Ariella Richardson Ph.D. 2011
Mining and Classification of Multivariate Sequential Data. Co-advised by Sarit Kraus, Bar Ilan University. *Now faculty at Jerusalem College of Technology.*

Noa Agmon Ph.D. 2009
Models and Algorithmic Approaches for Cooperative Multi-Robot Systems. Co-advised by Sarit Kraus, Bar Ilan University. Dissertation was recognized specifically as a runner-up to the *IFAAMAS Victor Lesser Best Dissertation* Award. *Now faculty at Bar Ilan University, Israel.*

Yehuda Elmaliach Ph.D. 2009
Multi-Robot Frequency-Based Patrolling. *Now Dean of the School of Computer Science at the College of Management Academic Studies, and founder of Cogniteam, Ltd.*

Dorit Avrahami-Zilberbrand Ph.D. 2009
Efficient Hybrid Algorithms for Plan Recognition and Detection of Suspicious and Anomalous Behavior.

Avi Rosenfeld Ph.D. 2007
Adaptive coordination for multi-robot and multi-agent teams. Co-advised by Sarit Kraus, Bar Ilan University. *Now faculty at Jerusalem College of Technology.*

Yael Termin Ph.D. 2007
Perception of a 3D Colored Image from One Colored and One Gray-Scale Images. Co-advised by Ari Zivotofsky, Bar Ilan University.

Meir Kalech Ph.D. 2007
Diagnosing Coordination Faults in Multi-Agent Systems. *Now faculty at Ben Gurion University, Israel.*

Gery Gutnik Ph.D. 2006
Monitoring large-scale multi-agent systems using overhearing.

Alumni M.Sc. (thesis)

Mika Barkan M.Sc. 2020
Predictive Execution Monitoring in Layered Recipes.

Yinon Douchan M.Sc. 2018
Reinforcement Learning in Multi-Robot Swarms (Mechanical Engineering, Tel Aviv University). Co-advised by Avraham Seifert, Tel Aviv University.

Inbal Wiesel-Kapah M.Sc. 2016
Rule-based programming of molecular nano-robots. Co-advised by Ido Bachelet and Noa Agmon at Bar Ilan University.

Ilan Lupu M.Sc. 2015
Optimal Construction of Control Graphs in Multi-Robot Systems. Co-advised by Noa Agmon, Bar Ilan University.

Shahar Kosti M.Sc. 2013
Single Operator Control of Multiple Robots in Exploration. Co-advised by David Sarne, Bar Ilan University.

Limor Marciano (Bagizada) M.Sc. 2013
CPNP: Colored Petri-Net Plans for Single and Multiple Robots.

Matan Kedar M.Sc. 2012
Fast Frontier Detector for Robot Exploration.

Meytal Traub M.Sc. 2011
Topics in Multi-Robot Teamwork.

Eliyahu Khalastchi M.Sc. 2010
Anomaly detection and diagnosis in robots and unmanned vehicles. Co-advised by Meir Kalech, and by Raz Lin

Asaf Shiloni M.Sc. 2010
Robot *Ants* and *Elephants*: Computational multi-robot systems. Co-advised by Noa Agmon and Ariel Felner.

Igor Vainer M.Sc. 2009
Obtaining Scalable and Accurate Classification in Large Scale Spatiotemporal Domains. Co-advised by Sarit Kraus, Bar Ilan University.

Dan Erusalimchik M.Sc. 2009
Adaptive multi-robot coordination based on resource spending velocity.

Victor Shafran M.Sc. 2008
Multilateral distributed matchmaking, and hybrid multi-robot coverage. Co-advised by Sarit Kraus, Bar Ilan University.

Niron Cohen-Nov-Slapak M.Sc. 2008
On Integrated Multi-Agent Intention Recognition Systems.

Ari Yakir M.Sc. 2007
Soaring Higher: Advanced Teamwork and Development Environment for Computer-Generated Forces.

Gilad Armon-Kest M.Sc. 2007
Supporting Collaborative Activity. Co-advised by Sarit Kraus, Bar Ilan University.

Natalie Fridman M.Sc. 2007
Modeling Crowd Behavior Based On Social Comparison Theory.

Ido Ikar M.Sc. 2007
Area Coverage by a Multi-Robot System.

Einat Marhasev (Haifa University, Computer Science) M.Sc. 2007
Recognition of Duration-Based Behavioral Patterns with Hidden Semi Markov Models. Co-advised by Meirav Hadad.

Edi Shmukler M.Sc. 2006
Anytime Fuzzy Control.

Eran Shoham (Technion, Industrial Engineering) M.Sc. 2006
Multi-Agent Coalition Reformation and League Ranking. Co-advised by Onn Shehory, IBM Research and the Technion.

Inna Frenkel M.Sc. 2005
Flexible Teamwork in Behavior-Based Robots

Danny Shimony M.Sc. 2005
A tool for multi-user, multi-application modeling.

Noam Hazon M.Sc. 2005
Robust and efficient multi-robot coverage.

Ruti Glick M.Sc. 2005
Robust multi-robot formations.

Yehuda Elmaliach M.Sc. 2004
Single operator control of tightly-coordinated multi-robot teams.

Dorit Avrahami M.Sc. 2004
Symbolic behavior recognition.

Publications

Books, Edited Books, Proceedings, and Dissertation

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