

Sarah Keren, Ph.D.

Curriculum Vitae

PERSONAL DETAILS

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RESEARCH EXPERIENCE

Postdoctoral Fellow- Harvard University and Hebrew University 2020-now
*Center for Research on Computation and Society (CRCS) at the
Harvard School Of Engineering And Applied Sciences (SEAS) &
Hebrew University Benin School of Computer Science and Engineering*
Mentors: Barbara J. Grosz, David C. Parkes and Jeff Rosenschein

Postdoctoral Fellow- Harvard University 2018-2020
*Center for Research on Computation and Society (CRCS) at the
Harvard School Of Engineering And Applied Sciences (SEAS)*
Mentors: Barbara J. Grosz and David C. Parkes

EDUCATION

Ph.D. Information Management Engineering 2014-2018
Technion - Israel Institute of Technology
Artificial Intelligence - Automated Planning and Goal Recognition
Research Title: Goal Recognition Design
Supervisors: Avigdor Gal and Erez Karpas

M.Sc. Information Management Engineering (thesis track) - Cum Laude 2008-2012
Technion - Israel Institute of Technology
Artificial Intelligence - Automated Planning
Thesis title : Tutoring as Sequential Decision Processes
Supervisor: Carmel Domshlak

BSc Information System Engineering Summa Cum Laude 1999-2003
Ben-Gurion University, Israel

WORK EXPERIENCE

Summer Internship Researcher 2015
IBM Research Haifa- Data Security and Privacy group
Analysis of structured logs to detect anomalies and potential security breaches.

Research Assistant 2012-2014
Technion- Research and Development Foundation Ltd.
Working with Avigdor Gal (Faculty of Industrial Engineering and Management) on two main topics: Goal Recognition Design and Complex Event Processing (see Publications).

Software Engineer 2004-2008
Rafael- Advanced Defense Systems Ltd.
Development of real time applications for intelligence gathering and surveillance.

TEACHING EXPERIENCE

Lecturer

2020

Hebrew University School of Computer Science and Engineering

Advanced Topics in Multi-Robot Systems

Teaching Assistant

2008-2018

Technion- Faculty of Industrial Engineering and Management

Data Structures and Algorithms, Introduction to Artificial Intelligence.

PUBLICATIONS

In Journals:

- Sarah Keren, Avigdor Gal, and Erez Karpas. **Goal Recognition Design in Deterministic Environments**. Journal of Artificial Intelligence Research (JAIR), July 2019

In Conferences:

- Anagha Kulkarni, Sarath Sreedharan, Sarah Keren, Tathagata Chakraborty, David Smith and Subbarao Kambhampati. **Designing Environments Conducive to Interpretable Robot Behavior**. In Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), October 2020 (to appear) - **Acceptance rate 47%**
- Sarah Keren, Sara Bernardini, Kofi Kwapong and David Parkes. **Reasoning About Plan Robustness Versus Plan Cost for Partially Informed Agents**. In Proceedings of the International Conference on Principles of Knowledge Representation and Reasoning (KR), September 2020 (to appear) - **Acceptance rate 34%**
- Sarah Keren, Avigdor Gal and Erez Karpas. **Goal Recognition Design - Survey**. In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), July 2020 - **Acceptance rate 30%**
- Christabel Wayllace, Sarah Keren, William Yeoh, Avigdor Gal, and Erez Karpas. **Accounting for Partial Observability in Stochastic Goal Recognition Design: Messing with the Marauder's Map**. In Proceedings of the European Conference on Artificial Intelligence (ECAI 2020), June 2020 - **Acceptance rate 27%**
- Sarah Keren, Haifeng Xu, Kofi Kwapong, David Parkes, and Barbara Grosz. **Information Shaping for Enhanced Goal Recognition of Partially-Informed Agents**. In Proceedings of the Conference of the Association for the Advancement of Artificial Intelligence (AAAI), February 2020 - **Acceptance rate 20%**
- Sarah Keren, Luis Pineda, Avigdor Gal, Erez Karpas, and Shlomo Zilberstein. **Efficient Heuristic Search for Optimal Environment Redesign**. In Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), July 2019 - **Acceptance rate 35%**
- Sarah Keren, Avigdor Gal, and Erez Karpas. **Strong Stubborn Sets for Efficient Goal Recognition Design**. In Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), June 2018 - **Acceptance rate 33%**
- Sarah Keren, Luis Pineda, Avigdor Gal, Erez Karpas, and Shlomo Zilberstein. **Equi-Reward Utility Maximizing Design in Stochastic Environments**. In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), August 2017 - **Acceptance rate 22%**
- Sarah Keren, Avigdor Gal, and Erez Karpas. **Privacy Preserving Plans in Partially Observable Environments**. In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), July 2016 - **Acceptance rate 24%**
- Sarah Keren, Avigdor Gal, and Erez Karpas. **Goal Recognition Design with Non-Observable Actions**. In Proceedings of the Conference of the Association for the Advancement of Artificial Intelligence (AAAI), February 2016 - **Acceptance rate 26%**
- Sarah Keren, Avigdor Gal, and Erez Karpas. **Goal Recognition Design for Non Optimal Agents**. In Proceedings of the Conference of the Association for the Advancement of Artificial Intelligence (AAAI), January 2015 - **Acceptance rate 27%**
- Sarah Keren, Avigdor Gal, and Erez Karpas. **Goal Recognition Design**. In Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), June 2014 - **Outstanding Paper Award Honorable Mention - Acceptance rate 24%**

In Workshops:

- Sarah Keren and Gerard Canal and Daniele Magazzeni and Michael Cashmore **Task-Aware Waypoint Sampling for Planning Robots**. In the ICAPS Workshop on Planning and Robotics (PlanRob-ICAPS)-October 2020 (to appear).
- Anagha Kulkarni, Sarath Sreedharan, Sarah Keren, Tathagata Chakraborti, David E. Smith, and Subbarao Kambhampati **Design for Explicability**. In the IJCAI-PRICAI 2020 Workshop on Explainable Artificial Intelligence (XAI)- TBD 2020.
- Sarah Keren, Gopal K. Vashishtha, and David Parkes. **Reinforcement Learning Design**. In the ICAPS Workshop on Reasoning about Actions and Processes: Highlights of Recent Advances (RAC-ICAPS), July 2019.
- Anagha Kulkarni, Sarath Sreedharan, Sarah Keren, Tathagata Chakraborti, and Subbarao Kambhampati **Design for Interpretability**. In the ICAPS Workshop on Explainable Planning (XAIP-ICAPS), July 2019.

Under Review / Revision:

- Reuth Mirsky, Sarah Keren, and Christopher Geib. **Introduction to Symbolic Plan and Goal Recognition**. Revision phase - Synthesis Lectures on Artificial Intelligence and Machine Learning, Morgan & Claypool Publishers (book).
- Sarah Keren, David Parkes, and Barbara Grosz. **Helpful Information Shaping**. Revision phase - Journal of Artificial Intelligence Research (JAIR).
- Sarah Keren and Gerard Canal and Daniele Magazzeni and Michael Cashmore **Task-Aware Waypoint Sampling for Planning Robots**. Under review for the Conference of the Association for the Advancement of Artificial Intelligence (AAAI), 2021.

SCHOLARSHIPS AND AWARDS

Rising Stars in EECS Workshop Participant <i>University of California, Berkeley (online event)</i>	2020
Best Dissertation Award Honorable Mention <i>The International Conference on Automated Planning and Scheduling (ICAPS)</i>	2020
Excellence Award <i>Weizmann Institute of Science, National Postdoctoral Award for Advancing Women in Science</i>	2017-2018
Excellence Scholarship <i>The Irwin and Joan Jacobs Fellowship</i>	2016-2017
Excellence Award <i>Eric and Wendy Schmidt Postdoctoral Award for Women in Mathematical and Computing Sciences</i>	2016
Excellence Scholarship <i>Technion, Faculty of Industrial Engineering and Management</i>	2015
Outstanding Paper Award Honorable Mention	2014

The International Conference on Automated Planning and Scheduling (ICAPS)

Excellence Scholarship

1999-2003

Ben-Gurion University, Faculty of Information System Engineering

SERVICE TO THE RESEARCH COMMUNITY

Organization

2017-now

Co-chair of AAAI Plan, Activity, and Intent Recognition (PAIR) workshop

Program Committee (PC)

2018-now

*International Joint Conference on Artificial Intelligence (IJCAI),
Conference of the American Association of Artificial Intelligence (AAAI),
International Conference on Automated Planning and Scheduling (ICAPS),
ICAPS Workshop on Planning for Financial Services (FinPlan).*

Senior Program Committee (SPC)

2021

International Joint Conference on Artificial Intelligence (IJCAI)

Journal Reviews

2018-now

*Artificial Intelligence (AIJ)
Journal of Artificial Intelligence Research (JAIR)*

Journal Track Co-Chair

2020

International Conference on Automated Planning and Scheduling (ICAPS)

Doctoral Consortium Co-Chair

2021

International Conference on Automated Planning and Scheduling (ICAPS)

Summer School Co-Chair

2022

International Conference on Automated Planning and Scheduling (ICAPS)

Thesis Committee

2020

Kevin C. Gall - Department of Computer Science University of New Hampshire

TUTORIALS

Plan, Activity, and Intent Recognition

2019

Conference of the Association for the Advancement of Artificial Intelligence (AAAI)

Goal Recognition Design

2019

International Conference on Automated Planning and Scheduling (ICAPS)

Goal Recognition Design

2020

THESIS SUPERVISION

Senior Thesis <i>Gopal K. Vashishtha, Harvard College</i> <i>Thesis Title: Reinforcement Learning Design</i> <i>(jointly supervised with David Parkes)</i>	2019-2020
Senior Thesis <i>Kathryn Wantlin, Harvard College</i> <i>Thesis Title: Economic Models for Multi-Robot Control</i> <i>(jointly supervised with David Parkes)</i>	2020-2021
M.Sc. Thesis <i>Mira Finkelstein, Hebrew University</i> <i>Thesis Title: TBD</i> <i>(jointly supervised with Jeff Rosenchein)</i>	2020-
M.Sc. Thesis <i>Elad Gershon, Hebrew University</i> <i>Thesis Title: TBD</i> <i>(jointly supervised with Jeff Rosenchein)</i>	2020-
M.Sc. Thesis <i>Ofir Abu, Hebrew University</i> <i>Thesis Title: TBD</i> <i>(jointly supervised with Jeff Rosenchein)</i>	2020-

INVITED TALKS

University of Massachusetts Amherst <i>Prof. Shlomo Zilberstein's Resource-Bounded Reasoning group</i> <i>Title: Goal Recognition Design</i>	Oct. 2015
University of New Hampshire <i>Seminar of the computer science department</i> <i>Title: Goal Recognition Design</i>	Oct. 2015
Rafael Advanced Defense Systems Ltd. <i>Iron Dome project meeting</i> <i>Title: Goal Recognition Design</i>	March 2016
University of California, Berkeley <i>Prof. Stuart Russell's research group</i> <i>Title: Goal Recognition Design and Beyond</i>	Feb. 2017
IBM Research Haifa <i>Security and Privacy Research Seminar</i> <i>Title: Privacy Preserving Plans in Partially Observable Environments</i>	Dec. 2017
Ben Gurion University <i>Seminar of the Department of Information System Engineering</i> <i>Title: Goal Recognition Design and Beyond</i>	Jan. 2018
Tel Aviv University <i>Seminar of the Department of Industrial Engineering</i> <i>Title: Goal Recognition Design and Beyond</i>	June 2018
Massachusetts Institute of Technology (MIT) <i>Prof. Brian Williams MERS group</i> <i>Title: Utility Maximizing Design</i>	Sep. 2018

Carnegie Mellon university (CMU) <i>Artificial Intelligence Seminar, sponsored by Apple</i> <i>Title: Utility Maximizing Design</i>	Oct. 2018
Harvard University <i>EconCS Group Seminar</i> <i>Title: Utility Maximizing Design</i>	Feb. 2019
Naval Research Laboratory (NRL) <i>Navy Center for Applied Research in Artificial Intelligence (NCARAI) Symposium Series</i> <i>Title: Utility Maximizing Design</i>	Apr. 2019
University of Toronto <i>Seminar of the Department of Computer Science</i> <i>Title: Utility Maximizing Design</i>	June 2019
Tel Aviv University <i>AI Week</i> <i>Title: Goal Recognition Design</i>	Nov. 2019
AAAI Fall Symposium <i>Cognitive Systems for Anticipatory Thinking</i> <i>Title: Multi-Agent Environment Design</i>	TBD 2020
ICAPS workshop Planning for Financial Services (FinPlan) <i>Title: Goal Recognition Design</i>	Oct. 2020
The Hebrew University Executive Innovation and Entrepreneurship Program <i>Title: Multi-Agent Environment Design</i>	Nov. 2020

LANGUAGES AND TOOLS

<i>Languages</i>	Hebrew (mother tongue), English(mother tongue) and French (proficient)
<i>Software</i>	JAVA, PYTHON, C, C++, SQL, ROS