Sarah Keren, Ph.D.

Curriculum Vitae

PERSONAL DETAILS

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RESEARCH EXPERIENCE

Postdoctoral Fellow- Hebrew University and Harvard University 2020-present
Hebrew University Benin School of Computer Science and Engineering
Harvard University School Of Engineering And Applied Sciences
Harvard Center for Research on Computation and Society (CRCS)
Mentors: Prof. Jeff Rosenschein, Prof. Barbara Grosz and Prof. David Parkes

Postdoctoral Fellow- Harvard University 2018-2020
Harvard University School Of Engineering And Applied Sciences
Harvard Center for Research on Computation and Society (CRCS)
Mentors: Prof. Barbara Grosz and Prof. David 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: Prof. Avigdor Gal & Dr. 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: Prof. Carmel Domshlak

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

WORK EXPERIENCE

Teaching Assistant 2008-2018
Technion- Faculty of Industrial Engineering and Management
Data Structures and Algorithms, Introduction to Artificial Intelligence.

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 Prof. 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.

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:

- 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%`

- 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 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. **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, 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. **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. **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, 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%`

- 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, 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%`

- 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%`

- Anagha Kulkarni, Sarath Sreedharan, Sarah Keren, Tathagata Chakrabort, 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%`

In Workshops:

- 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.

SCHOLARSHIPS AND AWARDS

Excellence Scholarship 1999-2003
Ben-Gurion University, Faculty of Information System Engineering

Outstanding Paper Award Honorable Mention 2014
The International Conference on Automated Planning and Scheduling (ICAPS)

Excellence Scholarship 2015
Technion, Faculty of Industrial Engineering and Management

Excellence Award 2016
Eric and Wendy Schmidt Postdoctoral Award for Women in Mathematical and Computing Sciences

Excellence Scholarship 2016-2017
The Irwin and Joan Jacobs Fellowship

Excellence Award 2017-2018
Weizmann Institute of Science, National Postdoctoral Award for Advancing Women in Science

Best Dissertation Award Honorable Mention 2020
The International Conference on Automated Planning and Scheduling (ICAPS)

SKILLS

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

SERVICE TO THE RESEARCH COMMUNITY

Organization 2017-present
Co-chair of AAAI Plan, Activity, and Intent Recognition(PAIR) workshop

Program Commitee (PC) 2018-present
International Joint Conference on Artificial Intelligence(IJCAI),
Conference of the American Association of Artificial Intelligence (AAAI),
International Conference on Automated Planning and Scheduling (ICAPS)

Journal Reviews 2018-present
Artificial Intelligence(AIJ)
Journal of Artificial Intelligence Research (JAIR)

Journal Track Chair 2020
International Conference on Automated Planning and Scheduling (ICAPS)

TUTORIALS

Plan, Activity, and Intent Recognition 2019
the Conference of the Association for the Advancement of Artificial Intelligence (AAAI)
Goal Recognition Design 2019
International the Conference on Automated Planning and Scheduling (ICAPS)
Goal Recognition Design 2020
the International Joint Conference on Artificial Intelligence (IJCAI)

THESIS SUPERVISION

Senior Thesis 2018-2019
Gopal K. Vashishtha, Harvard College
Thesis Title: Reinforcement Learning Design
(jointly supervised with David Parkes)
Senior Thesis 2020-2021
Kofi Kwapong, Harvard College
Thesis Title: Interpretability of Multi-Agent Reinforcement Learning Solutions
(jointly supervised with David Parkes)

INVITED TALKS

University of Massachusetts Amherst Oct. 2015
Prof. Shlomo Zilberstein's Resource-Bounded Reasoning group
Title: Goal Recognition Design

University of New Hampshire Oct. 2015
Seminar of the computer science department
Title: Goal Recognition Design

Rafael Advanced Defense Systems Ltd. March 2016
Iron Dome project meeting
Title: Goal Recognition Design

University of California, Berkeley Feb. 2017
Prof. Stuart Russell's research group
Title: Goal Recognition Design and Beyond

IBM Research Haifa Dec. 2017
Security and Privacy Research Seminar
Title: Privacy Preserving Plans in Partially Observable Environments

Ben Gurion University Jan. 2018
Seminar of the Department of Information System Engineering
Title: Goal Recognition Design and Beyond

Haifa University March 2018

Seminar of the Department of Information Systems
Title: Goal Recognition Design and Beyond

Tel Aviv University June 2018
Seminar of the Department of Industrial Engineering
Title: Goal Recognition Design and Beyond

Massachusetts Institute of Technology (MIT) Sep. 2018
Prof. Brian Williams MERS group
Title: Utility Maximizing Design

Carnegie Mellon university (CMU) Oct. 2018
Artificial Intelligence Seminar, sponsored by Apple
Title: Utility Maximizing Design

Harvard University Feb. 2019
EconCS Group Seminar
Title: Utility Maximizing Design

Naval Research Laboratory (NRL) Apr. 2019
Navy Center for Applied Research in Artificial Intelligence (NCARAI) Symposium Series
Title: Utility Maximizing Design

University of Toronto June 2019
Seminar of the Department of Computer Science
Title: Utility Maximizing Design

Tel Aviv University Nov. 2019
AI Week
Title: Goal Recognition Design