Shai VARDI

Assistant Professor
Management
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Personal

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Research interests

Game theory; market design; resource allocation; online platforms; analytical creativity

Academic Employment

2018 – present	**Purdue University**, West Lafayette, IN *Management* Assistant Professor
2016 – 2018	**California Institute of Technology**, Pasadena, CA *Social and Information Sciences Laboratory (SISL)* Postdoctoral scholar Mentor: Prof. Adam Wierman
2015 – 2016	**Weizmann Institute of Science**, Israel *Faculty of Applied Mathematics and Computer Science* Postdoctoral scholar Mentor: Prof. Uriel Feige

Education

2011 – 2015	**Tel Aviv University**, Israel PhD, *Computer Science* Thesis: Designing Local Computation Algorithms and Mechanisms. Advisor: Prof. Yishay Mansour
2009 – 2011	**Tel Aviv University**, Israel MSc, *Computer Science*, **with honors** Thesis: Local Computation Algorithms. Advisor: Prof. Ronitt Rubinfeld
2002 – 2005	**Rimon School Of Jazz and Contemporary Music**, Israel Jazz Performance, *Bass*
1998 – 2002	**Tel Aviv University**, Israel BSc, *Computer Science*, **with honors** *On excellence scholarship.*

Distinctions

2020	Masters Outstanding Teacher	– *Purdue University*
2020	Undergraduate Outstanding Teacher	– *Purdue University*
2016 – 2018	Linde Postdoctoral Fellowship in Economics and Computation	
2016	invited fellow	– *Simons Institute for the Theory of Computation*
2015 – 2016	I-CORE in Algorithms Postdoctoral Fellowship	
2015	Outstanding Teaching Assistant in Computer Science	– *Tel Aviv University*
2015	Deutsch Prize in Computer Science	– *Tel Aviv University*
2012 – 2015	Google Europe Fellowship in Game Theory	
2011	Excellence Award for MSc Study and Research	– *Tel Aviv University*
2002	Dean Honors Award	– *Tel Aviv University*
2002	Best Software Project Award	– *Tel Aviv University*

Journal publications

Link to Google Scholar

* indicates corresponding author

1. Thomas Kesselheim, Christos-Alexandros Psomas and Shai Vardi*
   On Hiring Secretaries with Stochastic Departures
   Operations Research, to appear

2. Palma London*, Shai Vardi, Reza Eghbali and Adam Wierman
   Black-box Acceleration of Convex Program Solvers
   Operations Research, 2024

3. Junjie Qin, Shai Vardi* and Adam Wierman
   Minimization Fractional Prophet Inequalities for Sequential Procurement
   Mathematics of Operations Research, 2024

4. Yu Su, Shai Vardi*, Xiaoqi Ren and Adam Wierman
   Communication-Aware Scheduling of Precedence-Constrained Tasks on Related Machines
   Operations Research Letters, 2023

5. Shai Vardi*, Alexandros Psomas and Eric Friedman
   Dynamic Fair Resource Division
   Mathematics of Operations Research, 2022

6. Ben Moseley and Shai Vardi*
   The Fairness-Efficiency Balance of Round Robin Scheduling
   Operations Research Letters, 2022

7. Palma London*, Shai Vardi and Adam Wierman
   Logarithmic Communication for Distributed Optimization in Multi-Agent Systems
   Proceedings of the ACM on Measurement and Analysis of Computing Systems, 2019

8. Yishay Mansour, Boaz Patt-Shamir and Shai Vardi*
   Constant-Time Local Computation Algorithms
   Theory of Computing Systems, 2018, **invited**

9. Avinatan Hassidim, Yishay Mansour and Shai Vardi*
   Local Computation Mechanism Design
   ACM Transactions on Economics and Computation, 2016, **invited**

10. Omer Reingold and Shai Vardi*
    NEW TECHNIQUES AND TIGHTER BOUNDS FOR LOCAL COMPUTATION ALGORITHMS
    Journal of Computer and System Sciences, 2016

PAPERS UNDER SUBMISSION

1. Shai Vardi* and William B. Haskell
   THE PRICE OF FAIRNESS OF SCHEDULING A SCARCE RESOURCE
   Minor revision at Operations Research.

2. Shai Vardi* and Vidyanand Choudhary
   A RANDOM WALK MODELING FRAMEWORK FOR BOOSTING THE CREATIVITY OF HUMANS AND AI
   Major revision at Information Systems Research.
       - *SSRN's Top Ten download list for: PsychRN: Thinking, Reasoning & Decision Making (June 2024)*
       - *To be presented at Wharton's 2nd Annual Business & Generative AI Workshop (September 2024)*

3. Chris Parker and Shai Vardi*
   EX-POST EQUILIBRIUM MARKET RECOMMENDATIONS
   Submitted to Operations Research.
       - *Presented at Twenty-Fifth ACM Conference on Economics and Computation (EC), 2024.*

OPEDS AND FEATURED

1. A bipartisan solution to fix the electoral college (OpEd)
   The Hill, 04/02/2019

2. Expanding the Battleground: A competitive approach to presidential election reform
   Krannert Journal Spring 2019

REFEREED CONFERENCE PUBLICATIONS

Link to Google Scholar

1. Thành Nguyen, Alexander Teytelboym and Shai Vardi
   EFFICIENT COMBINATORIAL ASSIGNMENT
   7th International Workshop on Matching Under Preferences (Match-up), 2024

2. Chris Parker and Shai Vardi
   EX-POST EQUILIBRIUM MARKET RECOMMENDATIONS
   Twenty-Fifth ACM Conference on Economics and Computation (EC), 2024

3. Palma London, Shai Vardi and Adam Wierman
   LOGARITHMIC COMMUNICATION FOR DISTRIBUTED OPTIMIZATION IN MULTI-AGENT SYSTEMS
   SIGMETRICS 2020

4. Thomas Kesselheim, Christos-Alexandros Psomas and Shai Vardi
   HOW TO HIRE SECRETARIES WITH STOCHASTIC DEPARTURES
   Conference on Web and Internet Economics (WINE), 2019

5. Aleksandr M. Kazachkov and Shai Vardi
   ON TANKING AND COMPETITIVE BALANCE
   Conference on Algorithmic Decision Theory (ADT), 2019

6. Shai Vardi
   RANDOMLY COLORING GRAPHS OF LOGARITHMICALLY BOUNDED PATHWIDTH
   International Conference on Randomization and Computation (RANDOM), 2018

7. Artur Czumaj, Yishay Mansour and Shai Vardi
   SUBLINEAR GRAPH AUGMENTATION FOR FAST QUERY IMPLEMENTATION
   Workshop on Approximation and Online Algorithms (WAOA), 2018

8. Uriel Feige, Boaz Patt-Shamir and Shai Vardi
   ON THE PROBE COMPLEXITY OF LOCAL COMPUTATION ALGORITHMS
   International Colloquium on Automata, Languages, and Programming (ICALP), 2018

9. Palma London, Shai Vardi, Adam Wierman and Hanling Yi
   A PARALLELIZABLE ACCELERATION FRAMEWORK FOR PACKING LINEAR PROGRAMS
   AAAI Conference on Artificial Intelligence, 2018

10. Omer Tamuz, Shai Vardi and Juba Ziani
    NON-EXPLOITABLE PROTOCOLS FOR REPEATED CAKE CUTTING
    AAAI Conference on Artificial Intelligence, 2018

11. Eric Friedman, Christos-Alexandros Psomas and Shai Vardi
    CONTROLLED DYNAMIC FAIR DIVISION
    ACM Conference on Economics and Computation (EC), 2017

12. Aviad Rubinstein and Shai Vardi
    SORTING FROM NOISIER SAMPLES
    ACM-SIAM Symposium on Discrete Algorithms (SODA), 2017

13. Yishay Mansour, Boaz Patt-Shamir and Shai Vardi
    CONSTANT-TIME LOCAL COMPUTATION ALGORITHMS
    Workshop on Approximation and Online Algorithms (WAOA), 2015

14. Eric Friedman, Christos-Alexandros Psomas and Shai Vardi
    DYNAMIC FAIR DIVISION WITH MINIMAL DISRUPTIONS
    ACM Conference on Economics and Computation (EC), 2015

15. Shai Vardi
    THE RETURNING SECRETARY
    Symposium on Theoretical Aspects of Computer Science (STACS), 2015

16. Avinatan Hassidim, Yishay Mansour and Shai Vardi
    LOCAL COMPUTATION MECHANISM DESIGN
    ACM Conference on Economics and Computation (EC), 2014

17. Yishay Mansour and Shai Vardi
    A LOCAL COMPUTATION APPROXIMATION SCHEME TO MAXIMUM MATCHING
    Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2013

18. Yishay Mansour, Aviad Rubinstein, Shai Vardi and Ning Xie
    CONVERTING ONLINE ALGORITHMS TO LOCAL COMPUTATION ALGORITHMS
    International Colloquium on Automata, Languages, and Programming (ICALP), 2012

19. Noga Alon, Ronitt Rubinfeld, Shai Vardi and Ning Xie
    SPACE-EFFICIENT LOCAL COMPUTATION ALGORITHMS
    ACM-SIAM Symposium on Discrete Algorithms (SODA), 2012

20. Ronitt Rubinfeld, Gil Tamir, Shai Vardi and Ning Xie
    FAST LOCAL COMPUTATION ALGORITHMS
    Innovations in Theoretical Computer Science (ITCS), 2011

Working papers

1. Thành Nguyen, Alexander Teytelboym and Shai Vardi
   EFFICIENT COMBINATORIAL ASSIGNMENT
   In preparation.

2. Thành Nguyen, Alexander Teytelboym and Shai Vardi
   DYNAMIC COMBINATORIAL ASSIGNMENT
   In preparation.

3. Shai Vardi and Vidyanand Choudhary
   IS DETECTING FAKE REVIEWS WORTH THE EFFORT?
   In Preparation.

4. Shai Vardi and Weilong Wang
   ON THE DESIGN OF WEIGHTED LOTTERIES
   In Preparation.

5. Parinaz Naghizadeh, Thành Nguyen and Shai Vardi
   THE IMPACTS OF PREDICTION TECHNOLOGIES ON RELATIONAL CONTRACTS
   In Preparation.

Selected invited talks

Ex-Post Equilibrium Market Recommendations

July 2024	**ACM Conference on Economics and Computation (EC)**
July 2022	**Israel Association for Information Systems (ILAIS) Conference**
Dec 2020	**Workshop on Information Systems and Economics (WISE)**

Random Combinatorial Assignment

| Aug 2023 | **YishayFest** |

Is detecting fake reviews worth the effort?

| Apr 2023 | **Theory in Economics of Information Systems (TEIS)** |

The Impact of Intermediaries on Online Sequential Sales

| Oct 2022 | **Conference on Information Systems and Technology (CIST)** |
| June 2022 | Tel Aviv University |

The Impacts of Prediction Technologies on Relational Contracts

| July 2020 | Indiana University |
| Dec 2019 | **Workshop on Information Systems and Economics (WISE)** |

How to Hire Secretaries with Stochastic Departures

Dec 2019	**Conference on Web and Internet Economics (WINE)**
Oct 2019	**INFORMS Annual Meeting**
Sep 2019	Purdue CS Theory seminar

Non-Exploitable Protocols for Repeated Cake Cutting

| Oct 2018 | **INFORMS Annual Meeting** |
| Apr 2018 | **Bellairs Workshop on Algorithmic Game Theory** |

Meeting the Challenges of Massive Networks and Systems (Job talk)

Dec 2017	Tel Aviv University
Dec 2017	Ben Gurion University
Dec 2017	Bar Ilan University
Dec 2017	Haifa University
Dec 2017	IDC Herzelia
Nov 2017	Purdue University

Dynamic Fair Resource Division

Apr 2019	SCOM seminar, Purdue University

Stepwise Presidential Election Reform

May 2018	Caltech SISL seminar

A Parallelizable Acceleration Framework for Packing Linear Programs

Feb 2018	**Information Theory and Applications Workshop**
Dec 2017	**Simons Institute Algorithms and Uncertainty Reunion**

Local Computation Mechanism Design

Oct 2017	**INFORMS Annual Meeting**
Jun 2014	ACM Conference on Economics and Computation (EC)
Jun 2014	**6th Israeli Game Theory conference**
Feb 2014	UC Berkeley EconCS seminar
Feb 2014	Microsoft Research, Silicon Valley
Jan 2014	TAU EconTheory seminar
Nov 2013	**Dagstuhl seminar on Electronic Markets and Auctions**

Local Computation Algorithms on High Degree Graphs

Oct 2018	Purdue CS Theory seminar
Oct 2017	UCSD Theory seminar
May 2017	UW Theory seminar
Jan 2017	USC Theory lunch
Dec 2016	Caltech Theory seminar
Oct 2016	**Workshop on Local Algorithms (WoLA)**

Controlled Dynamic Fair Division

Jul 2017	**Conf. of the Int. Fed. of Operational Research Societies (IFORS)**
Jun 2017	ACM Conference on Economics and Computation (EC)
Apr 2017	Caltech SISL seminar
Nov 2016	**SoCal. Symp. on Network Economics and Game Theory (NEGT)**

Sublinear Graph Augmentation for Fast Query Implementation

Mar 2018	**Workshop on Data Summarization**
Oct 2017	Caltech Theory seminar

New Techniques and Tighter Bounds for Local Computation Algorithms

Feb 2016	University of Wisconsin–Madison Theory seminar
Feb 2016	CMU Theory seminar
Jan 2016	**Sublinear Algorithms Workshop**
Oct 2016	TAU Theory seminar
May 2015	Weizmann Institute of Science Theory seminar
May 2015	Ben Gurion University Theory seminar

The Returning Secretary

Mar 2015	STACS
Jan 2015	TAU Algorithms seminar
Sep 2014	**China Theory Week**

Introduction to Local Computation Algorithms

May 2014	**French-Israeli Workshop on Foundations of Computer Science (FILOFOCS)**
Feb 2014	UC Berkeley Theory lunch
May 2013	Technion Operations Research and Statistics seminar

PATENTS

Shai Vardi and Rachel Cummings
NEEDLESTACK—A METHOD FOR PROTECTING BROWSING PRIVACY
provisional patent, filed 2017

SERVICE

Program Committee	Conference on Information Systems and Technology (CIST) 2022, 2023, 2024; ACM Conference on Economics and Computation (EC) 2017, 2018, 2020, 2021;
Discussant	Decision Sciences Institute (DSI) Conference, 2020; Theory in Economics of Information Systems (TEIS), 2024.
Reviewer (J)	Management Science, Information Systems Research (ISR), Mathematics of Operations Research, Operations Research, Journal of Economic Theory, INFORMS Journal on Computing, Transactions on Network Science and Engineering (TNSE), Algorithmica, Journal of Computer and System Sciences (JCSS), Distributed Computing (DIST), Theory of Computing Systems (TOCS), SIAM Journal on Computing (SICOMP) Innovations in Theoretical Computer Science (ITCS).
Reviewer (C)	ICIS, CIST, WINE, STOC, FOCS, SODA, ICALP, ITCS, SPAA, ESA, DISC, PODC, STACS, SAGT.

TEACHING

2020 –	**Computing for Analytics**, *Purdue University* MASTERS OUTSTANDING TEACHER, 2020
2019 –	**Introduction to Management Information Systems**, *Purdue University* UNDERGRADUATE OUTSTANDING TEACHER, 2020
2018	**Advanced Topics in MIS** - PhD Doctoral Seminar, *Purdue University*
2011 – 2015	Teaching assistant, **Algorithms**, *Tel Aviv University* OUTSTANDING TEACHING ASSISTANT IN COMPUTER SCIENCE, 2015
2014	Teaching assistant, **Algorithmic Game Theory**, *Tel Aviv University*
2010	Teaching assistant, **Data Structures and Algorithms**, *Tel Aviv University*
2008 – 2010	Bass and Music Theory, *Ramat Efal Conservatory of Music*
2005 – 2007	Music Theory and Jazz, *Arison School of The Arts, Tel Aviv*

OTHER

2005 – 2010	Composer, performer and educator of Jazz music.