

# Shai VARDI

ASSISTANT PROFESSOR

*Management*

**Purdue University**

610 Purdue Mall, West Lafayette IN 47907

## PERSONAL

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WEB: [www.shaivardi.com](http://www.shaivardi.com)

## RESEARCH INTERESTS

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**Game theory; market design; fair division; online platforms; dynamic allocations**

## ACADEMIC EMPLOYMENT

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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

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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

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- 2016 – 2018 LINDE POSTDOCTORAL FELLOWSHIP IN ECONOMICS AND COMPUTATION  
Fall 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

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Link to [Google Scholar](#)

1. Yu Su, Shai Vardi, Xiaoqi Ren and Adam Wierman  
COMMUNICATION-AWARE SCHEDULING OF PRECEDENCE-CONSTRAINED TASKS ON RELATED MACHINES  
*Operations Research Letters*, 2023
2. Junjie Qin, Shai Vardi and Adam Wierman  
MINIMIZATION FRACTIONAL PROPHET INEQUALITIES FOR SEQUENTIAL PROCUREMENT  
*Mathematics of Operations Research*, 2023
3. Thomas Kesselheim, Christos-Alexandros Psomas and Shai Vardi  
ON HIRING SECRETARIES WITH STOCHASTIC DEPARTURES  
*Operations Research*, 2023
4. Palma London, Shai Vardi, Reza Eghbali and Adam Wierman  
BLACK-BOX ACCELERATION OF CONVEX PROGRAM SOLVERS  
*Operations Research*, 2022
5. Ben Moseley and Shai Vardi  
THE FAIRNESS-EFFICIENCY BALANCE OF ROUND ROBIN SCHEDULING  
*Operations Research Letters*, 2021
6. Shai Vardi, Alexandros Psomas and Eric Friedman  
DYNAMIC FAIR RESOURCE DIVISION  
*Mathematics of Operations Research*, 2021
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

## OPEDS AND FEATURED

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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

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[Link to Google Scholar](#)

1. Palma London, Shai Vardi and Adam Wierman  
LOGARITHMIC COMMUNICATION FOR DISTRIBUTED OPTIMIZATION IN MULTI-AGENT SYSTEMS  
*SIGMETRICS 2020*
2. Thomas Kesselheim, Christos-Alexandros Psomas and Shai Vardi  
HOW TO HIRE SECRETARIES WITH STOCHASTIC DEPARTURES  
*Conference on Web and Internet Economics (WINE)*, 2019
3. Aleksandr M. Kazachkov and Shai Vardi  
ON TANKING AND COMPETITIVE BALANCE  
*Conference on Algorithmic Decision Theory (ADT)*, 2019
4. Shai Vardi  
RANDOMLY COLORING GRAPHS OF LOGARITHMICALLY BOUNDED PATHWIDTH  
*International Conference on Randomization and Computation (RANDOM)*, 2018
5. Artur Czumaj, Yishay Mansour and Shai Vardi  
SUBLINEAR GRAPH AUGMENTATION FOR FAST QUERY IMPLEMENTATION  
*Workshop on Approximation and Online Algorithms (WAOA)*, 2018
6. 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
7. Palma London, Shai Vardi, Adam Wierman and Hanling Yi  
A PARALLELIZABLE ACCELERATION FRAMEWORK FOR PACKING LINEAR PROGRAMS  
*AAAI Conference on Artificial Intelligence*, 2018
8. Omer Tamuz, Shai Vardi and Juba Ziani  
NON-EXPLOITABLE PROTOCOLS FOR REPEATED CAKE CUTTING  
*AAAI Conference on Artificial Intelligence*, 2018
9. Eric Friedman, Christos-Alexandros Psomas and Shai Vardi  
CONTROLLED DYNAMIC FAIR DIVISION  
*ACM Conference on Economics and Computation (EC)*, 2017
10. Aviad Rubinfeld and Shai Vardi  
SORTING FROM NOISIER SAMPLES  
*ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2017
11. Yishay Mansour, Boaz Patt-Shamir and Shai Vardi  
CONSTANT-TIME LOCAL COMPUTATION ALGORITHMS  
*Workshop on Approximation and Online Algorithms (WAOA)*, 2015

12. Eric Friedman, Christos-Alexandros Psomas and Shai Vardi  
DYNAMIC FAIR DIVISION WITH MINIMAL DISRUPTIONS  
*ACM Conference on Economics and Computation (EC), 2015*
13. Shai Vardi  
THE RETURNING SECRETARY  
*Symposium on Theoretical Aspects of Computer Science (STACS), 2015*
14. Avinatan Hassidim, Yishay Mansour and Shai Vardi  
LOCAL COMPUTATION MECHANISM DESIGN  
*ACM Conference on Economics and Computation (EC), 2014*
15. Yishay Mansour and Shai Vardi  
A LOCAL COMPUTATION APPROXIMATION SCHEME TO MAXIMUM MATCHING  
*Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2013*
16. Yishay Mansour, Aviad Rubinfeld, Shai Vardi and Ning Xie  
CONVERTING ONLINE ALGORITHMS TO LOCAL COMPUTATION ALGORITHMS  
*International Colloquium on Automata, Languages, and Programming (ICALP), 2012*
17. Noga Alon, Ronitt Rubinfeld, Shai Vardi and Ning Xie  
SPACE-EFFICIENT LOCAL COMPUTATION ALGORITHMS  
*ACM-SIAM Symposium on Discrete Algorithms (SODA), 2012*
18. Ronitt Rubinfeld, Gil Tamir, Shai Vardi and Ning Xie  
FAST LOCAL COMPUTATION ALGORITHMS  
*Innovations in Theoretical Computer Science (ITCS), 2011*

## WORKING PAPERS

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1. Shai Vardi and William B. Haskell  
THE PRICE OF FAIRNESS OF SCHEDULING A SCARCE RESOURCE  
*Under Revision.*
2. Thành Nguyen and Alexander Teytelboym and Shai Vardi  
DYNAMIC COMBINATORIAL ASSIGNMENT  
*Submitted.*
3. Shai Vardi  
IS DETECTING FAKE REVIEWS WORTH THE EFFORT?  
*In Preparation.*
4. Shai Vardi and Weilong Wang  
ON THE DESIGN OF WEIGHTED LOTTERIES  
*In Preparation.*
5. Chris Parker and Shai Vardi  
EX-POST EQUILIBRIUM MARKET RECOMMENDATIONS: IMPLICATIONS FOR INDIAN AGRICULTURE  
*Under Submission.*
6. Parinaz Naghizadeh, Thành Nguyen and Shai Vardi  
THE IMPACTS OF PREDICTION TECHNOLOGIES ON RELATIONAL CONTRACTS  
*In preparation.*



## SELECTED INVITED TALKS

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*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

*Ex-Post Equilibrium Market Recommendations: Implications for Indian Agriculture*

July 2022 | **Israel Association for Information Systems (ILAIS) Conference**

Dec 2020 | **Workshop on Information Systems and Economics (WISE)**

*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 | <b>Workshop on Local Algorithms (WoLA)</b> |

### *Controlled Dynamic Fair Division*

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

### *Sublinear Graph Augmentation for Fast Query Implementation*

|          |                                       |
|----------|---------------------------------------|
| Mar 2018 | <b>Workshop on Data Summarization</b> |
| 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 | <b>Sublinear Algorithms Workshop</b>           |
| Oct 2016 | TAU Theory seminar                             |
| May 2015 | Weizmann Institute of Science Theory seminar   |
| May 2015 | Ben Gurion University Theory seminar           |

### *The Returning Secretary*

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|----------|--------------------------|
| Mar 2015 | STACS                    |
| Jan 2015 | TAU Algorithms seminar   |
| Sep 2014 | <b>China Theory Week</b> |

### *Introduction to Local Computation Algorithms*

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

## PATENTS

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Shai Vardi and Rachel Cummings

NEEDLESTACK—A METHOD FOR PROTECTING BROWSING PRIVACY

*provisional patent, filed 2017*

## SERVICE

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|--------------------------|---|
| <b>Program Committee</b> | ACM Conference on Economics and Computation (EC) 2017, 2018, 2020, 2021;<br>Conference on Information Systems and Technology (CIST) 2022, 2023  |
| <b>Reviewer (J)</b>      | Management Science, Mathematics of Operations Research, Operations Research,<br>Journal of Economic Theory, INFORMS Journal on Computing,<br>Transactions on Network Science and Engineering (TNSE), Algorithmica,<br>Journal of Computer and System Sciences (JCSS), Distributed Computing (DIST),<br>Information Systems Research (ISR), Theory of Computing Systems (TOCS),<br>SIAM Journal on Computing (SICOMP) Theoretical Computer Science (TCS) . |
| <b>Reviewer (C)</b>      | ICIS, CIST, STOC, FOCS, SODA, ICALP, ITCS, SPAA, ESA, DISC, PODC, STAC  |

## TEACHING

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- 2020 – **Computing for Analytics**, *Purdue University*  
MASTER’S 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  
TEACHING EVALUATIONS: *typically top 10% in overall assessment*
- 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

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