



# DISC 2013

The 27<sup>th</sup> International Symposium on Distributed Computing

The Menachem Begin Heritage Center  
6 S. U. Nahon St., Jerusalem, 94110

DISC is held in cooperation with:



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Danny Dolev ( <b>Co-Chair</b> )	Hebrew Univ., Israel
Suzie Eid ( <i>Administrative support</i> )	Technion, Israel
Seth Gilbert ( <i>Tutorials/Workshops</i> )	NUS, Singapore
Idit Keidar ( <b>Co-Chair</b> )	Technion, Israel

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David Peleg ( <b>previous PC Chair</b> )	Weizmann Institute, Israel
Sergio Rajsbaum ( <b>Chair</b> )	UNAM, Mexico

# Full Program at a Glance

## Monday 14 Oct – Workshops Day 1, Tutorial, and Welcome Reception

	<i>Lecture Hall &amp; Lobby 3<sup>rd</sup> Floor (entry level)</i>	<i>Seminar Room 4<sup>th</sup> floor</i>	<i>Classroom 1<sup>st</sup> floor</i>
8:30-10:30	WTTM	ADGA	BDA
10:30-11:00	Coffee Break		
11:00-13:00	WTTM	ADGA	BDA
13:00-14:30	Lunch		
14:30-15:30	WTTM	ADGA	BDA
15:30-16:00	Coffee Break		
16:00-18:00	WTTM	<b>SDN Tutorial</b>	
18:00-18:30		<b>Love &amp; Fear in the Lab (talk &amp; guitar session)</b>	
18:30-20:30	<b>Welcome reception</b>		

## Tuesday 15 Oct – DISC Day 1

*Auditorium - 2<sup>nd</sup> floor (below entry level)*

8:30-10:25	Session 1a: Invited Lecture and Graph Problems in Message Passing
10:25-10:45	Coffee Break
10:45-12:57	Session 1b: Topology, Leader Election, and Spanning Trees
13:00-14:15	Lunch - <i>3<sup>rd</sup> floor restaurant</i>
14:15-16:10	Session 1c: Software Transactional Memory
16:10-16:30	Coffee Break
16:30-17:41	Session 1d: Shared Memory Executions
17:41-18:00	Happy Hour
18:00-19:45	Business Meeting

## Wednesday 16 Oct – DISC Day 2

*Auditorium - 2<sup>nd</sup> floor (below entry level)*

8:30-10:20	Session 2a: Dijkstra Prize Ceremony and Invited Lecture
10:20-10:40	Coffee Break
10:40-13:00	Session 2b: Shared Memory Tasks and Data Structures
13:00-14:20	Lunch - <i>3<sup>rd</sup> floor lobby</i>
14:20-15:05	Session 2c: Replication and Consensus
15:05-15:30	Coffee Break
15:30-19:30	Tour of the Old City (departs from 3 <sup>rd</sup> floor lobby, ends at banquet venue)
19:30-22:30	Banquet and Award Ceremony - <i>Eucalyptus restaurant</i>

## Thursday 17 Oct – DISC Day 3

*Auditorium - 2<sup>nd</sup> floor (below entry level)*

8:30-10:10	Session 3a: Wireless networks
10:10-10:30	Coffee Break
10:30-12:56	Session 3b: Crypto, Trust and Influence
13:00-14:00	Lunch - <i>3<sup>rd</sup> floor lobby</i>
14:00-15:40	Session 3c: Networking I
15:40-16:00	Coffee Break
16:00-17:05	Session 3d: Networking II
17:05-17:30	Coffee Break
17:30-19:30	DISC Event on Networking - <i>3<sup>rd</sup> Floor Lecture Hall</i>

## Friday 18 Oct – Workshops Day 2

	<i>3<sup>rd</sup> Floor Lecture Hall &amp; Lobby</i>	<i>Seminar Room 4<sup>th</sup> floor</i>
8:30-13:00	TADDS	FOMC

# Detailed Program

Monday, October 14, 2013

## 2<sup>nd</sup> Workshop on Advances on Distributed Graph Algorithms (ADGA)

8:30 Distributed Algorithms on a Congested Clique  
Christoph Lenzen

9:30 Communication Complexity and Graph Algorithms  
Rotem Oshman

10:30-11:00 **Coffee Break**

11:00 Distributed Algorithms for Graph Coloring  
Michael Elkin

12:00 Distributed Load Balancing on Graphs  
Thomas Sauerwald

13:00-14:30 **Lunch**

14:30 Distributed Graph Algorithms and Very Large Scale Integrated Circuits  
Danny Dolev

15:30-16:00 **Coffee Break**

## Tutorial, Guitar, and Reception

16:00 **Tutorial:** The Evolution of SDN and How Your Network Is Changing  
Teemu Koponen - Nicira/VMWare

18:00 "Love and Fear in the Lab" – a guitar and discussion session  
Uri Alon

18:30 **Welcome reception**

# 1<sup>st</sup> Workshop on Biological Distributed Algorithms (BDA)

Monday, October 14, 2013

## 8:30-10:30 Session 1

Chair: Yuval Emek

- 8:35 Executable Biology: Successes and Challenges. (**Invited Talk**)  
J. Fisher (Microsoft Research UK and Univ. of Cambridge)
- 9:05 Firefly Synchronization with Asynchronous Wake-up.  
D. Alistarh, A. Cornejo, M. Ghaffari, N. Lynch
- 9:30 Synaptic Pruning: An Algorithmic Perspective. (**Invited Talk**)  
S. Navlakha (USA, CMU)
- 10:00 Integrating Theoretical Algorithmic Ideas in Empirical Biological Study. (**Invited Talk**)  
A. Korman (France, CNRS and Univ. of Paris Diderot)

## 10:30-11:00 **Coffee Break**

## 11:00-12:55 Session 2

Chair: Amos Korman

- 11:00 Fighting noise with limited resources: an ant colony perspective. (**Invited Talk**)  
O. Feinerman (Israel, Weizmann Institute)
- 11:30 Robust computing over networks: Lessons from nature. (**Invited Talk**)  
Z. Bar-Joseph (USA, CMU)
- 12:00 The Power of Pheromones in Ant Foraging.  
C. Lenzen and T. Radeva
- 12:25 Distributed computing on the (fruit) fly. (**Invited Talk**)  
Y. Emek (Zurich, ETH)

## 12:55-14:30 **Lunch**

## 14:30-15:50 Session 3

Chair: Ziv Bar-Joseph

- 14:30 Evolutionary tradeoffs and the geometry of phenotype space  
U. Alon (Israel, Weizmann Institute)
- 15:20 Ameba-inspired self-organizing particle systems  
S. Dolev, R. Gmyr, A. W. Richa, C. Scheideler

## 15:45-15:50 **Closing remarks**

# 5<sup>th</sup> Workshop on the Theory of Transactional Memory Transform/EuroTM (WTTM 2013)

Monday, October 14, 2013

9:05 **Welcome**

9:10 A Programming Language Perspective on Transactional Memory Consistency

**Keynote: Hagit Attiya**

## Session: TM Semantics

09:45 Write-observation and Read-preservation TM Correctness Invariants

Mohsen Lesani and Jens Palsberg

10:00 Specifying Transactional Memories with Nontransactional Operations

Mohsen Lesani, Victor Luchangco and Mark Moir

10:15 On the Relationship Between Delaying Operators and Language-Level Semantics

Wenjia Ruan, Yujie Liu and Michael Spear

10:30-11:00 **Coffee Break**

11:00 STM contention management: from multiprocessors to distributed systems

**Keynote: Danny Hendler**

11:35 Transactional memory schedulers for diverse distributed computing environment

**Keynote: Costas Busch**

## Session: Contention Management: From multiprocessor to distributed TMs

12:10 Distributed Optimistic Concurrency Considered Optimistic

Christopher Rossbach and Jean-Philippe Martin

12:35 Abort Free SemanticTM by Dependency Aware Scheduling of Transactional Instructions

Shlomi Dolev, Panagiota Fatourou and Eleftherios Kosmas

13:00 **Lunch**

14:30 Hybrid implementations of concurrent objects

**Keynote: Michel Raynal**

## Session: Hybrid TM

15:05 Reduced Hardware Transactions: A Hybrid NOREC

Alex Matveev and Nir Shavit

15:20 Composable Partitioned Transactions

Lingxiang Xiang and Michael Scott

15:35 **Coffee Break**

## Session: Parallelism

16:00 Snapshot Isolation Does Not Scale Either

Victor Bushkov, Dmytro Dziurma, Panagiota Fatourou and Rachid Guerraoui

16:15 Wait-Free Universal Constructions that ensure Timestamp-Ignoring Disjoint-Access Parallelism

Faith Ellen, Panagiota Fatourou, Eleftherios Kosmas, Alessia Milani and Corentin Travers

## Session: Multiversion Transactional Memories

16:30 Input Acceptance of Time-Warping Transactional Memory

Nuno Diegues and Paolo Romano

16:45 Multiversion Conflict Notion

Priyanka Kumar and Sathya Peri

## Tuesday, October 15, 2013 – DISC Day One

### 8:30-10:25 **Session 1a: Invited Lecture & Graph Problems in Message Passing**

Chair: Yehuda Afek

8:30 Opening remarks

8:35 **Invited Lecture:** Adventures in Parallel Dimensions. **Ravi Rajwar – Intel**

9:35 Distributed Minimum Cut Approximation (**Best Paper**). Mohsen Ghaffari, Fabian Kuhn

10:00 When Distributed Computation is Communication Expensive. David Woodruff, Qin Zhang

### 10:25-10:45 **Coffee Break**

### 10:45-12:58 **Session 1b: Topology, Leader Election, and Spanning Trees**

Chair: Michael Elkin

10:45 Use knowledge to learn faster: Topology recognition with advice. Emanuele Guido Fusco, Andrzej Pelc, Rossella Petreschi

11:10 An  $O(vn)$  Space Bound for Obstruction-Free Leader Election. George Giakkoupis, Maryam Helmi, Lisa Higham, Philipp Woelfel

11:35 Distributed Protocols for Leader Election: a Game-Theoretic Perspective. Ittai Abraham, Danny Dolev, Joseph Halpern

12:00 Compact Deterministic Self-Stabilizing Leader Election: The Exponential Advantage of Being Talkative. Lélia Blin, Sébastien Tixeuil

12:25 Time Optimal Synchronous Self Stabilizing Spanning Tree. Alex Kravchik, Shay Kutten

12:50 Brief Announcement:

Distributed MST in Core-Periphery Networks. Chen Avin, Michael Borokhovich, Zvi Lotker, David Peleg

### 13:00-14:15 **Lunch**

### 14:15- 16:10 **Session 1c: Software Transactional Memory**

Chair: Victor Luchangco

14:15 Proving Non-opacity. Mohsen Lesani, Jens Palsberg

14:40 Exploiting Locality in Lease-Based Replicated Transactional Memory via Task Migration. Danny Hendler, Alex Naiman, Sebastiano Peluso, Francesco Quaglia, Paolo Romano, Adi Suissa

15:05 Generic Multiversion STM. Li Lu, Michael L. Scott

15:30 Practical Parallel Nesting for Software Transactional Memory. Nuno Diegues, João Cachopo

15:55 Brief Announcements:

Time-warp: lightweight abort minimization in Transactional Memory. Nuno Diegues, Paolo Romano

ParMarkSplit: A Parallel Mark-Split Garbage Collector Based on a Lock-Free Skip-List. Nhan Nguyen, Philippas Tsigas, Håkan Sundell

### 16:10- 16:30 **Coffee Break**

### 16:30- 17:41 **Session 1d: Shared Memory Executions**

Chair: Michel Raynal

16:30 Asynchronous Resilient Linearizability. Sagar Chordia, Sriram Rajamani, Kaushik Rajan, Ganesan Ramalingam and Kapil Vaswani

16:55 Fair Synchronization. Gadi Taubenfeld

17:20 Brief Announcements:

The Topology of Asynchronous Byzantine Colorless Tasks. Hammurabi Mendes, Maurice Herlihy, Christine Tasson

Revisiting Dynamic Distributed Systems. Carlos Gómez-Calzado, Alberto Lafuente, Mikel Larrea, Michel Raynal

What Can Be Computed in the Presence of Concurrent Solo Executions. Sergio Rajsbaum, Michel Raynal, Julien Stainer

### 17:41-18:00 **Happy Hour**

### 18:00-19:45 **DISC 2013 Business Meeting**

## Wednesday, October 16, 2013 – DISC Day Two

### 8:30-10:20 **Session 2a: Dijkstra Prize Ceremony and Invited Lecture**

Chair: Gadi Taubenfeld

8:30 **Invited Lecture:** Simplicial complexes – Much more than a trick for concurrent computation lower bounds.

**Nati Linial– The Hebrew University**

9:30 Gossip Protocols for Renaming and Sorting. George Giakkoupis, Anne-Marie Kermarrec, Philipp Woelfel

9:55 Faster Rumor Spreading: Breaking the  $\log n$  Barrier. Chen Avin, Robert Elsässer

10:20-10:40 **Coffee Break**

### 10:40-13:00 **Session 2b: Shared Memory Tasks and Data Structures**

Chair: Dan Alistarh

10:40 Lock-Free Data Structure Iterators. (**Best Student Paper**) Erez Petrank, Shahar Timnat

11:05 Practical Non-blocking Unordered Lists. Kunlong Zhang, Yujiao Zhao, Yajun Yang, Yujie Liu, Michael Spear

11:30 Atomic snapshots in expected  $O(\lceil \log n \rceil^3)$  steps using randomized helping. James Aspnes, Keren Censor-Hillel

11:55 Adaptive Register-Allocation with a linear number of registers. Carole Delporte-Gallet, Hugues Fauconnier, Eli Gafni, Leslie Lamport

12:20 An Optimal Implementation of Fetch-and-Increment. Faith Ellen, Philipp Woelfel

12:45 Brief Announcements:

A Concurrent Lock-Free Red-Black Tree. Aravind Natarajan and Neeraj Mittal

A General Technique for Non-blocking Trees. Trevor Brown, Faith Ellen, Eric Ruppert.

13:00-14:20 **Lunch**

### 14:20- 15:05 **Session 2c: Replication and Consensus**

Chair: Rotem Oshman

14:20 On barriers and the gap between active and passive replication. Flavio Junqueira, Marco Serafini

14:45 Brief Announcements:

Silence is Golden: Communication-Efficient Consensus Without a Common Clock. Danny Dolev, Christoph Lenzen

Consistency and Complexity Tradeoffs for Highly-Available Multi-Cloud Store. Gregory Chockler, Dan Dobre, Alexander Shraer

BFT Storage with  $2t+1$  Data Replicas. Christian Cachin, Dan Dobre, Marko Vukolić

15:05-15:30 **Coffee Break**

15:30-19:30 **Excursion: Old City of Jerusalem Sight Seeing**

19:30-22:30 **DISC 2013 Banquet**



## Thursday, October 17, 2013 – DISC Day Three

### 8:30-10:35 **Session 3a: Wireless Networks**

Chair: Chen Avin

- 8:30 Conflict Resolution and Membership Problem in Beeping Channels. Bojun Huang, Thomas Moscibroda  
8:55 Frequency Hopping against a Powerful Adversary. Yuval Emek, Roger Wattenhofer  
9:20 Sleeping Experts in Wireless Networks. Johannes Dams, Martin Hoefer, Thomas Kesselheim  
9:45 Distributed Broadcast in SINR Models. Sebastian Daum, Seth Gilbert, Tomasz Jurdzinski, Dariusz Kowalski, Fabian Kuhn, Calvin Newport, Grzegorz Stachowiak, Michal Rozanski

### 10:10-10:30 **Coffee Break**

### 10:30-12:56 **Session 3b: Crypto, Trust and Influence**

Chair: Dahlia Malkhi

- 10:30 Unconditionally Secure Asynchronous Multiparty Computation with Linear Communication Complexity. Ashish Choudhury, Martin Hirt, Arpita Patra  
10:55 Secure end-to-End Communication with Optimal Throughput and Resilient Against Malicious Adversary. Paul Bunn, Rafail Ostrovsky  
11:20 On the Communication Complexity of Distributed Name-Independent Routing Schemes. Cyril Gavoille, Christian Glacet, Nicolas Hanusse, David Ilcinka  
11:45 Convergence in (Social) Influence Networks. Silvio Frischknecht, Barbara Keller, Roger Wattenhofer  
12:10 On trustful population protocols. Olivier Bournez, Jonas Lefèvre, Mikael Rabie  
12:35 Brief Announcements:  
Private-Channel Models in Multi-Party Communication Complexity. Faith Ellen, Rotem Oshman, Toni Pitassi, Vinod Vaikuntanathan  
Certified impossibility results for Byzantine-tolerant mobile robots. Cédric Auger, Zohir Bouzid, Pierre Courtieu, Sébastien Tixeuil, Xavier Urbain  
Distributed Compressed Sensing for Sensor Networks. Yonina Eldar, Idit Keidar, Stacy Patterson

### 12:56-14:00 **Lunch**

### 14:00- 15:40 **Session 3c: Networking I**

Chair: Dmitri Perelman

- 14:00 Prudent Opportunistic Cognitive Radio Access Protocols. Erez Kantor, Israel Cidon, Shay Kutten  
14:25 Braess's Paradox in Wireless Networks: The Danger of Improved Technology. Michael Dinitz, Merav Parter  
14:50 Fast Structuring of Radio Networks for Multi-Message Communications. Mohsen Ghaffari, Bernhard Haeupler  
15:15 In-Network Analytics for Ubiquitous Sensing. Ittay Eyal, Idit Keidar, Stacy Patterson, Raphael Rom

### 15:40- 16:00 **Coffee Break**

### 16:00- 17:05 **Session 3d: Networking II**

Chair: Yuval Emek

- 16:00 A super-Fast Distributed Algorithm for Bipartite Metric Facility Location. James Hegeman, Sriram Pemmaraju  
16:25 CONE-DHT: A distributed self-stabilizing algorithm for a heterogeneous storage system. Sebastian Kniesburges, Andreas Koutsopoulos, Christian Scheideler  
16:50 Brief Announcements:  
Towards Distributed and Reliable Software Defined Networking. Marco Canini, Petr Kuznetsov, Dan Levin, Stefan Schmid  
Dynamic Forwarding Table Aggregation without Update Churn: The Case of Dependent Prefixes. Marcin Bienkowski, Nadi Sarrar, Stefan Schmid, Steve Uhlig

### 17:05-17:30 **Coffee Break**

### 17:30-19:00 **DISC Event on Networking** (see program below)

Thursday, October 17, Afternoon

### DISC Event on Networking

- 17:30 **Welcome Remarks**
- 17:40 Resource Placement Under Stochastic Demands in Networked Topologies  
Hanoch Levy, Tel Aviv University
- 18:10 Efficient multi-pattern matching on Compressed HTTP traffic  
Yaron Koral, Tel Aviv University and the Hebrew University
- 18:40 Some Open Questions on the Borderline of Networking and Distributed Computing.  
Michael Schapira, the Hebrew University

Friday, October 18, Morning

### 5<sup>th</sup> Workshop on Theoretical Aspects of Dynamic Distributed Systems (TADDS)

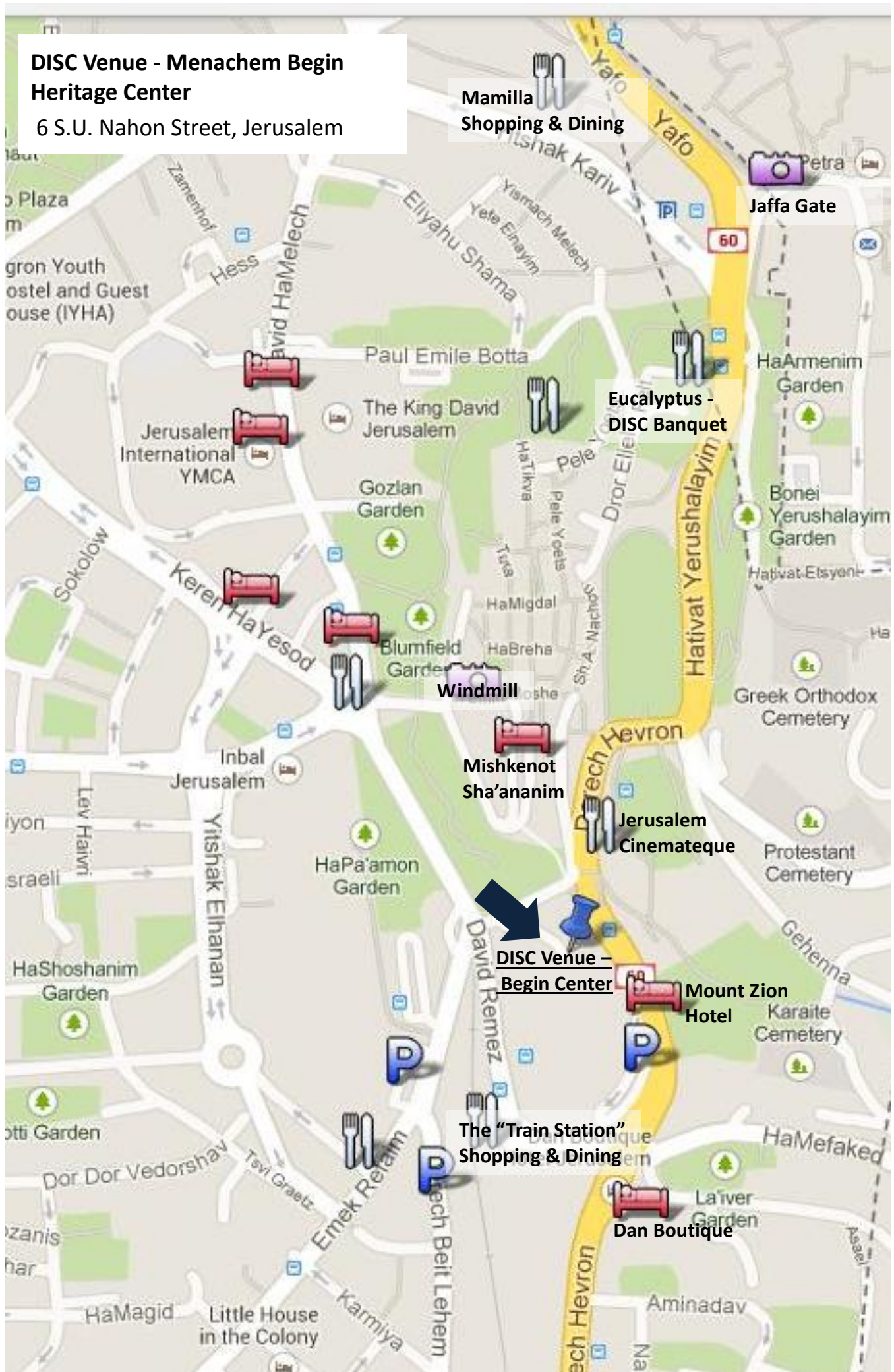
- 08:30 **Welcome & Opening**
- 08:35 Computing on Anonymous Dynamic Networks. Merav Parter
- 09:20 Quantitative evaluation of self-stabilizing algorithms using probabilist model-checking and simulation  
Sébastien Tixeuil
- 10:05 **Coffee Break**
- 10:25 Self-stabilizing and self-optimizing distributed datastructures. Stefan Schmid
- 11:10 Computing on Anonymous Dynamic Networks. Roberto Baldoni
- 11:55 **Coffee Break**
- 12:15 Title: to be announced. Shay Kutten

### 9<sup>th</sup> International Workshop on Foundations of Mobile Computing

- 8:30: **Invited Talk:** Dealing with Uncertainty in Wireless Communication. Fabian Kuhn
- 9:30: Distributed Queuing in Dynamic Networks. Gokarna Sharma and Costas Busch
- 9:55: Relative Throughput – Measuring the Impact of Adversarial Errors on Packet Scheduling Strategies.  
Antonio Fernandez Anta, Chryssis Georgiou, Dariusz R. Kowalski, Joerg Widmer and Elli Zavou
- 10:20: **Coffee Break**
- 10:35: **Invited Talk:** Reusable Teamwork for Multi-Robot Teams. Gal Kaminka
- 11:35: Message and time efficient multi-broadcast schemes. Liron Levin, Dariusz R. Kowalski and Michael Segal
- 12:00: Robust Leader Election in a Fast-Changing World. John Augustine, Tejas Kulkarni, Paresh Nakhe and Peter Robinson
- 12:25: Jamming-Resistant Learning in Wireless Networks. Johannes Dams, Martin Hoefer and Thomas Kesselheim
- 12:50: **Break**
- 1:00-1:30: **FOMC Business Meeting**

**DISC Venue - Menachem Begin  
Heritage Center**

6 S.U. Nahon Street, Jerusalem



Mamilla  
Shopping & Dining

Jaffa Gate

Eucalyptus -  
DISC Banquet

Windmill

Mishkenot  
Sha'ananim

Jerusalem  
Cinemateque

DISC Venue -  
Begin Center

Mount Zion  
Hotel

The "Train Station"  
Shopping & Dining

Dan Boutique

## **Parking**

There is no parking available at the Begin Heritage Center. Nearby free parking is annotated as **P** on the map above.

At HaPa'amon Garden, there is one metered lot and one free parking lot.

On Derech Hevron, there is a free parking lot across the street from Mt. Zion Hotel.

On Derech Beit Lechem, there is free parking along the street and on crossing streets.

Metered parking is also available at Mishkenot Sha'ananim.

Note: a blue and white curb indicates that parking is metered. Parking is free along an unpainted curb.

## **Shopping and Dining**

The nearby historical "Train Station" (HA'RAKEVET) area on Remez St. features a food bazaar, restaurants, and cafes.

Restaurants can be found at the Jerusalem Cinemateque, along Emek Refaim St., on King David (David Hamelech) St., and more.

The Mamilla shopping area offers fashion, souvenirs, and art shops, as well restaurants.

## **DISC Banquet**

The banquet will take place at 19:30, Wednesday 16 Oct, at the Eucalyptus Restaurant.

The tour of the Old City will begin at the DISC venue and conclude at the banquet venue.

Address: 14 Hativat Yerushalayim, Artist Colony, Jerusalem, Israel.

Free parking is available on 4th Dror Alial St.