Name: Dr. Shay Horovitz **Date:** Feb 2021
Faculty of Exact Sciences
School of Computer Science & Data Science

CURRICULUM VITAE

1. Personal Details

Electronic Address: shay.horovitz@gmail.com

2. Higher Education

A. Undergraduate and Graduate Studies

Hebrew University, School of Computer Science
MSc in Computer Science (as part of the direct track for PhD), 2006

Bar Ilan University, School of Computer Science & Math
BSc in Computer Science & Math (Cum Laude), 2002

B. Doctoral Degree and Post-Doctoral Studies

Hebrew University, School of Computer Science
PhD in Computer Science, Direct Track, 2011
Dissertation: "Utilizing Traffic & User Behavior Patterns in Peer-to-Peer Networks"
Tutor: Prof. Danny Dolev

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Institution and Department	Rank/Position
2007-2020	College of Management - School of Computer Science	Lecturer
2021-	College of Management - School of Computer Science	Senior Lecturer
2018-	Bar-Ilan University - Schools of Information Science, Computer Science	Teacher Part-Time

4. Offices in Academic Administration

Management

Member of Teaching Committee, School of Computer Science, College of Management

Head of Large Scale Internet Architectures & Big Data Track, School of Computer Science (till 2016)

Head of Big Data Lab, School of Computer Science, School of Computer Science (till 2016)

5. Participation in Scholarly Conferences

a. Active Participation

Date	Name of Conference	Subject of Lecture/Discussion	Role
2020	*IEEE TALE 2020*	Boocture: Automatic Educational Videos Hierarchical Indexing with eBooks	Speaker
2020	*EBEE 2020*	Efficient Query-Optimal E-Commerce Pricing Model Discovery using Active Learning	Speaker
2020	*CLOSER 2020*	Online Automatic Characteristics Discovery of Faulty Application Transactions in the Cloud	Speaker
2019	*IEEE Cloud 2019*	Non-Intrusive Cloud Application Transaction Pattern Discovery	Speaker
2018	*GeCon 2018*	FaaStest - Machine Learning based Cost and Performance FaaS Optimization	Speaker
2018	*SCAI 2018*	Adaptabase - Adaptive Machine Learning Based Database Cross-Technology Selection	Speaker
2018	*FiCloud 2018*	Efficient Cloud Auto-Scaling with SLA objective using Q-Learning	Speaker
2009	*MUE 2009*	Maxtream: Stabilizing P2P Streaming by Active Prediction of Behavior Patterns	Speaker
2009	*IEEE WETICE 2009*	Collabrium: Active Traffic Pattern Prediction for Boosting P2P Collaboration	Speaker
2008	*IEEE WETICE 2008*	Collabory: A Collaborative Throughput Stabilizer & Accelerator for P2P Protocols	Speaker
2008	*IPDPS 2008*	LiteLoad: Content Unaware Routing for Localizing P2P Protocols	Speaker

6. Teaching

a. **Courses Taught in Recent Years**

Year	Course Name	Type: Lecture/Seminar/Workshop/ High Learn Course/Introduction	Degree	No. of Students
2019-2021	Deep Learning	Lecture	College of Management, BSc Computer Science	Current semester ~40
2017-2021	Data Science	Lecture	College of Management, BSc Computer Science	Ranging ~40-80
2017-2021	Data Science Seminar	Seminar	College of Management, BSc Computer Science	Ranging ~40-80
2012-2021	Internet Applications Lab Course	Lecture	College of Management, BSc Computer Science	~60
2012-2021	Advanced Internet Applications Lab Course	Lecture	College of Management, BSc Computer Science	~60
2017-2021	AI & Big Data Analysis	Lecture	College of Management, MBA	~60
2020-2020	Machine Learning	Lecture	Bar Ilan University, BSc Computer Science	~40
2019-2020	Data Science	Lecture	Bar Ilan University, BA Information Science	~30
2019-2020	Big Data	Lecture	Bar Ilan University, BA Information Science	~30

2013-2016	Advanced Topics in Large Scale Internet Architectures & Big Data Seminar	Seminar	College of Management, BSc Computer Science	~120
2013-2016	Advanced Topics in Large Scale Internet Architectures & Big Data Course	Lecture	College of Management, BSc Computer Science	~120
2014-2020	Database Systems	Lecture	College of Management, BSc Computer Science	~180
2013-2020	Database Systems Complementary	Lecture	College of Management, BSc Computer Science	~60
2013-2014	Advanced Topics in DB Systems	Lecture	College of Management, BSc Computer Science	~120
2012-2014	Mobile Application Programming	Lecture	College of Management, BSc Computer Science	~40

7. Professional Experience

2014-Present
Chief Research Officer & Co-Founder, Splitty Travel

- ***Innovative solution for splitting and combining deals, increasing the saving for the customer***
- ***Machine learning/Deep Learning based algorithms for automatic management of look-to-book and call limit bounds, with deep analysis of pricing models and optimization of deal suppliers.***
- ***Prediction of deal providers based on historic transactions and learning algorithms***
- ***Managing a research project supported by the Israeli Innovation Authority on novel algorithms for pricing behavior modeling and bid management***

2010-2019
Machine Learning Expert, Senior Researcher, Lead Architect & Project Manager –Huawei Research Center *(a.k.a Toga Networks)*

- *Leading a group of PhD researchers and developers and managing projects in the fields of Machine Learning, Protocol analysis, Big Data, Cloud.*
- *Huawei Public Cloud Application Insights*

- *Autonomic discovery of causal insights for application errors and performance degradations*
- *Utilizing proprietary streaming-based machine learning algorithm for efficiently finding call chain features, values and structures that are correlated with bad traffic (slow response, errors) to assist dissolving application failures, using Spark streaming.*

- *BSDT Project*
  - *Behavioral Signature Discovery Tool for Deep Packet Inspection*
  - *Using machine learning for finding behavioral patterns of applications at the network level, including an automatic blocking mode*
  - *Employed the core of the project for finding common traversal paths of triangulated locations of mobile nodes*
  - *Hierarchical Clustering of sequential data with generic support for features*
- *OnSite Project*
  - *Automatic discovery of Mobile Application activity*
  - *Analysis of mobile application installation files, collection of representative terms and computation of signatures per each application efficiently, without false positives*
  - *Automatic initiation of application actions for collection of application network traffic*
  - *Clustering of application traffic for finding representative signatures*
- *AutoScaler Project*
  - *Automatic Scaling of web applications for Cloud environments under SLA requirements*
  - *Innovative algorithms (5 patents) for adapting Reinforcement Learning to the problem of SLA Auto Scaling, including State space & Action space reduction, Q-Threshold and efficient monitoring of percentile metrics in a distributed environment, including experimentation with Deep Learning based reinforcement learning algorithms*
  - *Designed & Implemented for both VMs (OpenStack) and Containers (Kubernetes)*
- *BlackBox Project*
  - *Automatic discovery of application performance metrics (as part of PaaS APM)*
  - *Machine learning based analysis of highly interleaved application traffic and discovery of Business Transactions along with characteristic Causal Paths*
  - *Sequential representation of application behavior, and the messaging between its different services*
  - *Multiple algorithm instances using Spark, reading streaming traffic from Kafka, metrics collected from Kubernetes*

2007-2008
Analyst, JVP Venture Capital Fund
- *Analyzed start-up companies for investment in JVP Venture Capital's incubator*

2005-2007
CTO, Co-Founder – Cell2Net Inc
- *Co-Founded, Designed and developed innovative virtual calling cards, text messaging and smart callback/call-through systems*

2004-2008
Teaching Assistant – Hebrew University
- *Entrepreneurship Course for Computer Science and MBA students*

2002-2007
SW Consultant – CTV, Seebox Media, Unisor Multisystems, Berale Solutions
- *Developed large scale distributed media systems (CTV, SeeBox)*
- *Developed a control software for computerized irrigation systems (Unisor)*
- *Developed hook drivers for Windows operating system (Berale)*

1999-2002
SW Team Leader – iMesh.Com
- Designed and developed the Peer-to-Peer client of iMesh and directly managed programmers
- Invented distributed file transfer mechanisms (multiple source downloads / swarming, smart source selection)

1995-1999
SW Developer – IDF, Signal Corps
- *Developed control systems, drivers, hooks and embedded software*
- *Designed and characterized future projects*


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PUBLICATIONS

A. Ph.D. Dissertation

B. Articles or Chapters in Scientific Books

(which are not Conference Proceedings)

Published

1. On the Role of Helper Peers in Peer to Peer Networks, S.Horovitz, D.Dolev, A Book Chapter in "Parallel and Distributed Computing", ISBN 978-3-902613-45-5, InTech, 2009.

C. Articles in Conference Proceedings

Published

h eBooks

- *Horovitz. S, Ohayon. Y. To appear in IEEE International Conference on Teaching, Assessment, and Learning for Engineering (IEEE TALE 2020)*

- **2. Efficient Query-Optimal E-Commerce Pricing Model Discovery using Active Learning**
  Horovitz. S, Ezer. A, Paz. D. To appear in 2nd International Conference on E-Business and E-commerce Engineering (EBEE 2020)

- **3. Online Automatic Characteristics Discovery of Faulty Application Transactions in the Cloud**,
  Horovitz, S., Arian, Y., Peretz, N.(2020). In 10th International Conference on Cloud Computing and Services Science (CLOSER 2020)
  Conference ranking – **Qualis B4**

- **4. Non-Intrusive Cloud Application Transaction Pattern Discovery,**
  Horovitz, S., Arian, Y. In - IEEE 12th International Conference On Cloud Computing (IEEE Cloud 2019)
  *Conference ranking – **ERA B***

- **5. Technological Intervention to Improve Eye-contact among Children with Autism (Short Paper),**
  S.Eden, A.Shamir, S.Horovitz, N.Munits, M.Amon, I.Dror, G.Neiman, T.Cohen,In Proceedings of the 14th Chais Conference for the Study of Innovation and Learning Technologies: (CHAIS 2019)

- **6. FaaStest - Machine Learning based Cost and Performance FaaS Optimization**

Horovitz, S., Amos, R., Baruch, O., Cohen, T., Oyar, T. & Deri, A. (2018). In 15th International Conference on the Economics of Grids, Clouds, Systems and Services (GeCon 2018).

*Appears in **Lecture Notes in Computer Science - LNCS 11113 "Economics of Grids, Clouds, Systems, and Services**",2018 Springer*

- **7. Adaptabase - Adaptive Machine Learning Based Database Cross-Technology Selection**

  Horovitz, S., Ben-Lavi, A., Auerbach, R., Brownshtein, B. Hamdani, C. & Yona, O. (2018). . In 7th International Conference on Soft Computing, Artificial Intelligence and Applications (SCAI 2018).

  *Appears in the proceedings of "**Computer Science & Information Technology**", 2018, AIRCC Publishing*

- **8. Efficient Cloud Auto-Scaling with SLA objective using Q-Learning,**

  S.Horovitz, Y.Arian, 2018 IEEE 6th International Conference on Future Internet of Things and Cloud (FiCloud 2018)

- **9. Maxtream: Stabilizing P2P Streaming by Active Prediction of Behavior Patterns**,

  S.Horovitz, D.Dolev, In 2009 Third International Conference on Multimedia and Ubiquitous Engineering, MUE 2009

  Conference Ranking – **MSAR 7**

- **10. Collabrium: Active Traffic Pattern Prediction for Boosting P2P Collaboration**,

  S.Horovitz, D.Dolev, IEEE WETICE 5th International Workshop on Collaborative Peer-to-Peer Information Systems (COPS), 2009

- **11. On the Role of Helper Peers in Peer to Peer Networks**,

  S.Horovitz, D.Dolev, A Book Chapter in "Parallel and Distributed Computing", ISBN 978-3-902613-45-5, In-Tech

- **12. Collabory: A Collaborative Throughput Stabilizer & Accelerator for P2P Protocols**,

  S.Horovitz, D.Dolev, In IEEE WETICE 4th International Workshop on Collaborative Peer-to-Peer Information Systems (COPS)

- **13. LiteLoad: Content Unaware Routing for Localizing P2P Protocols**,

  S.Horovitz, D.Dolev, In IPDPS, Fifth International Workshop on Hot Topics in Peer-to-Peer Systems (Hot-P2P)

D. Other Publications (Patents)

- Shay Horovitz, Yair Arian, Miao Zheng WO2018127297A1

- **State to Action Identity Mapping - Adaptive and Dynamical State Space for Cloud Auto**

  Shay Horovitz, Yair Arian, Miao Zheng PCT/CN2016/108312

- **Q-Learning Convergence Boosting for Adaptive Resource Automated Scaling**

  Shay Horovitz, Yair Arian, Miao Zheng PCT/CN2016/083082

- **An efficient method for aggregating and monitoring in large scale distributed systems**
  Shay Horovitz, Yair Arian, Wenliang Wu WO2018103839A1

- **Q-Learning Based Resource Scheduling Method and Device**
  Shay Horovitz, Yair Arian, Zheng Miao, WO/2017/201662

- **Method for automatically deploying application, and cloud management node**
  Shay Horovitz, Dmitry Meytin, ZhouYue Liu, WeiWang, WO2017143548A1, US20180300116A1

- **Feature Extraction Apparatus, and Network Traffic Identification Method, Apparatus and System**
  Shay Horovitz, PeiSong Li, Yair Arian; 20140219101

- **System and method for optimizing utilization of a population of underutilized physical facilities such as tourist facilities**
  Shay Horovitz, Eran Shust, Avraham Wortzel WO2016103265A1

- **Systems, methods and computer program products for optimization of travel technology target functions, including when communicating with travel technology suppliers under technological constraints**
  Shay Horovitz, Eran Shust, Avraham Wortzel WO2019145952A1

- **Split vacation deal generating server and efficient split deal generating methods**
  Shay Horovitz, Eran Shust, Avraham Wortzel WO2017017674A1

- **Method and Apparatus for Managing Communications**,
  Shay Horovitz, Danny Dolev; US Patent Application 20080028055

- **A Flexible Messaging System for Mobile Phone Users**,
  Yehosuha Sapir, Bezalel Finkelstein, Oren Aviram, Shay Horovitz; WO/2007/135676

- **Method and System for Efficient Call Initiation in Internet-based Mobile Telephony Systems**,
  Yehosuha Sapir, Bezalel Finkelstein, Shay Horovitz; WO/2007/113816

- **A System That Routes Communication Channels From Different Domains**,
  Yehosuha Sapir, Shay Horovitz; WO/2005/003881

E. Summary of My Research Activities and Future Plans

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- Mainly focused on Machine/Deep Learning based behavioral aspects of systems & networks, including cloud systems, databases and applications


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