Curriculum Vitae
Dotan Di Castro

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Linkedin Profile:	https://www.linkedin.com/in/dotan-di-castro-b0a99039/
Date of Birth:	August 3rd, 1976 (Haifa, Israel)
Martial Status:	Married + 4 children
Languages:	Hebrew (mother tongue), English (Fluent), Italian
Citizenship:	Israeli, Italian
Date of CV:	December, 2021

Education

2006 – 2010 Ph.D. in Electrical Engineering at the Technion. Advisor: Ron Meir. Thesis title: *Aspects of Actor-Critic Algorithms: Theory and Experiments*

2004 – 2006 Ms.C. in Electrical Engineering at the Technion. Advisor: Ron Meir. Thesis title: *Population Behavior of Neural Networks*

2000 – 2003 Bs.C. (*Cum Laude*) in Electrical Engineering, The Technion

Employment

2018 (July) – **Research Group Manager and Lab Manager, Bosch Center for AI (BCAI), Haifa, Israel.**

- Built from zero and ramped up a new lab and a new group for Bosch-AI in Israel (first time for Bosch in Israel). Group goal is to equally contribute to (1) the academic community and (2) have impact on Bosch advanced products. Currently managing the group and Bosch Haifa lab.
- **Academic focus** include Reinforcement Learning, Computer Vision, General Machine Learning, and Robotics.
- **Internal impact focus** include the following projects:
  1. **Manipulation Robotics** - Applying wide range of Reinforcement Learning methods to manufacturing, logistics, and physical testing problems (grasping & extrication, cable plugging, active perception, robots using tools, etc.)
  2. **Autonomous Dozer** - using Reinforcement Learning and vision to build a system of autonomous dozer operation.
  3. **Scheduling in Manufacturing** - using Reinforcement Learning and Machine Learning to solve hard scheduling problems specifically, and combinatorial problems in general.
  4. **Driving assistance for motorbikes** - Using vision and motorbike ABS/IMU signals to increase rider safety (prediction of hazardous maneuvers and small objects identification on roads).
  5. **Level 3 Decision Making for Automated Driving** (confidential).
  6. **Battery Charging Policies for EVs** (confidential).

2013 – 2018 **Senior Research Scientist, Yahoo! Labs, Haifa, Israel.**
Technical lead of Automatic Extraction. Working mainly in Yahoo Mail and Ads products. Main achievements:

1. **MAchine Generated MAil project** (MAGMA). Extracting data from mail. Data consumed by monetization team and frontend. Specific projects:
   (a) Devised and owned a light and scalable mechanism for automatic annotations in travel, coupons, and purchases messages. *Reached to domain coverage of hundred of millions messages per day* (product, patent, and a paper).
   (b) Devised and owned a novel clustering method based on structure of html (product, patent, and accepted paper).
   (c) Devised new privacy method for auditing in Mail. (product, patent, and an accepted paper).
   (d) Mail signals for ads (Dynamic Product Ads)
2. **Retrospective Spam Filtering**. Developed and owned a spam filtering algorithm for mail in inbox/spam folder. Reducing the spam rate in $\sim 20\%$ while preserving ham level.

General Achievements: Recipient of Labs Excellence Award Program (LEAP; October 2015; mentioned to the CEO); 2015Q4 Exceeds Expectations.
Technologies: Spark, Hadoop, Hive, Tensorflow, Spark, Lucene, Solr

2012 – 2013 **CTO, Modana Ltd. (startup)**
Description: Modana developed a context aware product for mobile sensing using the smartphone. The core technology provides a layer to other software which enables understanding the user context and activity, and transforming this data into natural language description.
Technologies: Android, Amazon AWS, Spring, MongoDB

2011 – 2012 **Post-Doc Researcher in the EE faculty in the Technion**
Researcher in the group of Prof. Shie Mannor. Main research areas: machine learning, reinforcement learning, mobile sensing

2009 – 2012 **Research Scientist, Pulsar Investments Inc.**
Role: Research scientist in an algorithmic trading startup. Main market: CME.
Description: Developing algorithms for autonomous high frequency trading agent

2004 – 2010 **Teaching Assistant, The Technion**
Courses taught: Random Signals and Processes, Biological Neural Networks, Electrical Circuits, and VLSI lab instructor. *Projects supervised:* Vision and Image Science lab, Biological Networks lab, Finance Lab.

2000 – 2004 **Student Apprentice, IBM Research Labs, Haifa, Israel**
VLSI department. Projects: Infiny Band, PCI Express.

Interests

Machine Learning, Reinforcement Learning and Markov Decision Processes, Big Data, Vision Systems and Robotics, Deep Learning, Algorithmic Trading

Publications

Peer-reviewed journal papers

1. O. Spector, D. Di Castro. *InsertionNet-A Scalable Solution for Insertion.* IEEE Robotics and Automation Letters 6 (3), 5509-5516
2. A. Tamar, D. Di Castro, S. Mannor, *Learning the Variance of the Reward To Go.* Journal of Machine Learning Research (JMLR), 2016.
3. D. Soudry, D. Di Castro, A. Gal, A. Kolodny, S. Kvatinsky *Hebbian Learning Rules with Memristors.* IEEE Trans. on Neural Networks and Learning Systems, 2015.
4. A. Tamar, D. Di Castro, and R. Meir, *Integrating a Partial Model into Model Free Reinforcement Learning*, vol. 13, pages 1927–1966, 2012.
5. D. Di Castro and R. Meir *A Convergent Online Single Time Scale Actor Critic Algorithm*, Journal of Machine Learning Research (JMLR), vol. 10, pages 2777-2820, 2010.
6. D. Di Castro, R. Meir, and I. Yavne *Delays and Oscillations in Networks of Spiking Neurons - a Two Time Scale Analysis*, Neural Computation, vol. 21, no. 4, pages 1100-1124, 2009.

Conference publications (peer-reviewed)

7. E. Kosman, D. Di Castro. *GraphVid: It Only Takes a Few Nodes to Understand a Video.* ECCV, 2022.
8. V. Tchuiev, Y. Miron, D. Di Castro. *DUQIM-Net: Probabilistic Object Hierarchy Representation for Multi-View Manipulation.* IROS 2022.
9. Y. Miron, C. Ross, Y. Goldfracht, C. Tessler, D. Di Castro. *Towards Autonomous Grading In The Real World.* IROS 2022.
10. S. Di Castro Shashua, S. Mannor, D. Di Castro. *Analysis of Stochastic Processes through Replay Buffers.* ICML, 2022.
11. O. Spector, V. Tchuiev, D. Di Castro. *InsertionNet 2.0: Minimal Contact Multi-Step Insertion Using Multimodal Multiview Sensory Input.* ICRA 2022.
12. S. Di Castro Shashua, S. Mannor, D. Di Castro. *Sim and Real: Better Together.* NuerIPS 2021.
13. J. Oren, C. Ross, M. Lefarov, F. Richter, A. Taitler, Z. Feldman, D. Di Castro, C. Daniel. *SOLO: Search Online, Learn Offline for Combinatorial Optimization Problems.* Proceedings of the International Symposium on Combinatorial Search 2021.
14. O. Spector, D. Di Castro. *InsertionNet-A Scalable Solution for Insertion.* IEEE IROS, 2021.
15. D. Di Castro, I. Gamzu, L. Lewin-Eytan, A. Pundir, N. Sahoo, M. Viderman and I. Zuyeb-Grabovich. *Automated Extractions for Machine Generated Mail.* BIG Web, 2018
16. S. Chen, D. Di Castro, Z. Karnin, L. Lewin-Eytan, J. Naor, R. Schwartz, *Metric Multi-Labeling.* ICALP 2017
17. N. Avigdor-Elgrabli, M. Cwalinski, D. Di Castro, I. Gamzu, I. Grabovitch-Zuyev, L. Lewin-Eytan, Y. Maarek, *Structural Clustering of Machine-Generated Mail.* CIKM, 2016.

18. D. Di Castro, Z. Karnin, L. Lewin-Eytan, Y. Maarek *Actionables Emails - You've got mail and here is what you can do with it!*. International Conference on Web Search and Data Mining (WSDM) 2016
19. D. Di Castro, E. Zohar, L. Lewin-Eytan, Y. Maarek, R. Wolf . International Conference on Web Search and Data Mining (WSDM) 2016
20. A. Hallak, D. Di Castro, and S. Mannor, *Model Selection in Markovian Procsses*, Proceedings of the 19th Conference on Knowledge, Discovery, and Data Mining (KDD), Chicago IL, 2013.
21. A. Tamar, D. Di Castro, and S. Mannor, *Temporal Difference Methods for the Variance of the Reward To Go*, Proceedings of the 30th International Conference on Machine Learning (ICML), 2013.
22. A. Tamar, D. Di Castro, and S. Mannor, *Policy Gradients with Variance Related Risk Criteria*, Proceedings of the 29th International Conference on Machine Learning (ICML), 2012.
23. A. Tamar, D. Di Castro, and R. Meir, *Integrating Partial Model Knowledge in Model Free RL Algorithms*, Proceedings of the 28th International Conference on Machine Learning (ICML), 2011.
24. D. Di Castro and S. Mannor *Adaptive Q-learning*, Proceedings of Conference on Decision and Control (CDC), Atlanta USA, December, 2010.
25. D. Di Castro and S. Mannor *Tutor Learning Using Linear Constraints in Approximate Dynamic Programming*, invited paper. IEEE Allerton Conference, 2010.
26. D. Di Castro and S. Mannor *Adaptive Bases for Reinforcement Learning*, accepted to European Conference of Machine Learning (ECML-PKDD), September 2010.
27. D. Di Castro, D. Volkinstein, R. Meir, *Temporal Difference Based Actor Critic Algorithms - Single Time Scale Convergence and Neural Implementation*, Advances in Neural Information Processing Systems Conference 21 (NIPS), 385–392, 2008.

Workshop Papers

28. E. Kosman, D. Di Castro. *Vision-Guided Forecasting–Visual Context for Multi-Horizon Time Series Forecasting*. arXiv preprint arXiv:2107.12674
29. D. Di Castro, J. Oren, S. Mannor *Practical Risk Measures in Reinforcement Learning*, NeurIPS-2019 Workshop on Safety and Robustness in Decision Making, https://arxiv.org/abs/1908.08
30. D. Di Castro, *Freeing the Exponents - Schemes for Estimating Generalized Value Functions*, Planning and Learning Workshop 2018 (PAL-18), ICML, Stockholm, 2018.
31. A. Hallak, D. Di Castro and S. Mannor, *Model Selection in Markovian Processes*, SYSID-ICML, Atlanta, 2013.
32. A. Tamar, D. Di Castro, and S. Mannor, *Policy Gradients with Variance Related Risk Criteria*, European Workshop on Reinforcement Learning (EWRL), Edinburgh, 2012.

Technical Reports and Arxiv

33. A. Botach, Y. Feldman, Y. Miron, Y. Shapiro, D. Di Castro. *BIDCD-Bosch Industrial Depth Completion Dataset*. arXiv preprint arXiv:2108.04706

34. E. Kosman, D. Di Castro. *Vision-Guided Forecasting–Visual Context for Multi-Horizon Time Series Forecasting*. arXiv preprint arXiv:2107.12674
35. Y. Feldan, Y. Shapiro, D. Di Castro*Depth Completion with RGB Prior*, arXiv:2008.07861, 2020.
36. Y. David, D. Di Castro, Z. Karnin, *Submodular MDPs and Recommendation Systems*, arXiv:1439478, 2016.
37. A. Hallak, D. Di Castro, S. Mannor *Contextual MDPs* 2015.
38. D. Soudry, D. Di Castro, A. Gal, A. Kolodny, and S. Kvatinsky, *Hebbian Learning Rules with Memristors*, CCIT Technical Report #840, September 2013.
39. D. Di Castro, C. Gentile, and S. Mannor, *Bandits with an Edge*, http://arxiv.org/abs/1109.2296, 2011.
40. D. Di Castro and Shie Mannor, *Financialization Framework for the Power Market*, 2011.
41. I. Steinberg, T. London, and D. Di Castro, *Hand Gesture Recognition in Images and Video*, CCIT Report #763, EE Pub No. 1720, March 2010.

Theses

42. D. Di Castro, *Aspects of Actor-Critic Algorithms*, PhD. Thesis, Technion, 2010.
43. D. Di Castro, *Population Behavior of Neural Networks*, MsC. Thesis, Technion, 2006.

Patents (Issued and Filled)

Issued:

1. I. Zuyev-Grabovitch, D. Di Castro, U. Patel, I. McCarthy *Computerized System and Method for Digital Content Extraction and Propagation in HTML Messages*, US Patent 10,616,161, 2020.
2. I. Zuyev-Grabovitch, A. Pundir, N. Avigdor-Elgrabli, D. Di Castro, I. Gamzu, L Lewin-Eytan *Automatic Electronic Message Content Extraction Method and Apparatus*, US Patent 10,977,289, 2020.
3. D. Di Castro, E. Zohar, L. Lewin-Eytan, Y. Maarek, R. Wolf *Enforcing K-Anonymity in Web Mail Auditing*, US Patent 10,558,822, 2020.
4. D. Di Castro, Z. Karnin, L. Lewin-Eytan, Y. Maarek, *Method and Apparatus for Predicting Unwanted Electronic Message for a User*, US Patent 10,374,995, 2019
5. D. Di Castro, S. Ktavinsky, A. Gal, A Kolodny, *Analog Multiplier Using a Memristive Device and Method for Implemening Hebbian Learning Rules Using Memrisor Arrays*, US 20140289179 A1, 2013.

Filled:

6. Y. Miron, C. Ross, C. Tessler, Y. Goldfracht, D. Di Castro *Privileged learning with Image Augmentation for off road vehicles - AGPNet2.0* Application Filled DE, 2022.
7. O. Spector, V. Tchuiev, D. Di Castro *Adj-Net: Transformer-Based Object Hierarchy Detection* Application Filled DE, 2022.
8. Y. Miron, C. Ross, C. Tessler, Y. Goldfracht, D. Di Castro *Hybrid simulation event and time driven* Application Filled DE, 2022.

9. Y. Miron, C. Ross, C. Tessler, D. Di Castro *Active Realistic Imitation Learning* Application Filled DE, 2021.
10. O. Spector, V. Tchuiev, D. Di Castro *Multi step insertion solution* Application Filled DE, 2021.
11. O. Spector, V. Tchuiev, D. Di Castro *one shot learning for insertion tasks* Application Filled DE, 2021.
12. O. Spector, V. Tchuiev, D. Di Castro *Utilizing unlabeled data in insertion tasks* Application Filled DE, 2021.
13. O. Spector, V. Tchuiev, D. Di Castro *Minimal Contact Insertion* Application Filled DE, 2021.
14. C. Ross, Y. Miron, D. Di Castro *Student-Teacher method for Autonomous Dozer self-supervised training* Application Filled DE, 2021.
15. V. Tchuiev, Y. Miron, D. Di Castro *Object Hierarchy Based Robotic Manipulation* Application Filled DE, 2021.
16. C. Ross, Y. Miron, D. Di Castro *AGPNet - Autonomous Grading Poicy net* Application Filled DE, 2021.
17. E. Kosman, D. Di Castro *Graph Vid - A Consice Representation of Vidoes.* Application Filled DE, 2021.
18. E. Kosman, D. Di Castro *Locality Sensitive Pruning.* Application Filled DE, 2021.
19. Y. Miron, C. Ross, D. Di Castro *Simplified Granular Simulation for RL Training.* Application Filled DE, 2021.
20. C. Ross, Y. Miron, D. Di Castro *Digital Twin for RL & Planning Based on Real World Scenarios for Off-Road Vehicles.* Application Filled DE, 2021.
21. E. Kosman, D. Di Castro *Vision Guided Forecasting for 2 and 4 wheelers* Application Filled DE, 2021.
22. Z. Feldman, H. Ziesche, NA. Vien, D. Di Castro *A Hybrid Approach for Learning to Shift and Grasp with Elaborate Motion Primitives.* Application Filled DE, 2021.
23. Spector, Di Castro *First-Backward learning.* Application Filled DE, 2021.
24. Spector, Di Castro *Formulating insertion problem in regression form.* Application Filled DE, 2021.
25. O. Spector, D. Di Castro *Device and Method for Controlling a Robot to Inset Object into an Insertion.* Application Filled DE, 2021.
26. O. Spector, D. Di Castro *Device and Method for Training a Neural Network for Controlling a Robot for Inseting Task.* Application Filled DE, 2021.
27. A. Taitler, C. Daniel, M. Lefarov, J. Oren, Z. Feldman, N. Manafzadeh, D. Di Castro, F. Richter *Search Online Learn Offline system for Combinatorial Problems*, Inforce, CN, DE & US, 2021.

Fellowships and Academic Honors

2010 Receiver of the Viterbi post-doctoral fellowship for encouragement of future faculty members ($15,000).

2010	Recipient of the Eliahu I. and Joyce Jury Award for Ph.D. Excellence in systems and related fields for 2010 (single recipient; $500).
2000 – 2003	Bs.C. Electrical Engineering Dean's Excellency.

Referee and review activities

Area Chair

NeurIPS 2020, AISTATS 2022

Program Committees

ICML (2010, 2016, 2017, 2019, 2020), NIPS (2010, 2011, 2016, 2017), AAAI (2016), COLT (2012), RLDM (2015), ICANN (2011), INFOCOM (2011), ICLR (2017)

Program Chair

IEEE SmartGridComm 2011 Symposium on Smart/Virtual Metering,

Journals refereed

Journal of Machine Learning Research, Mathematics of Operation Research, IEEE Trans. Automatic Control

Supervised Interns Yahel David (Yahoo!), Adi Omari(Yahoo!), Ben Ya Halevi (Afeka Collegue), Ayal Taitler (Bosch), Or Rivlin (Bosch), Eitan Kosman (Bosch), Oren Spector (Bosch), Shirli Di Castro Shashua (Bosch), Esther Dorman (Bosch), Chen Tessler (Bosch)

Computer Skills*Programming:* Java (strong), Scala (strong), Python (strong), C/C++
Deep Learning Frameworks: Pytorch (strong), Keras, TensorFlow
Big Data: Spark (strong), Hadoop (strong), Hive (strong)
Platforms: Linux (strong), Mac (strong), Android (strong)
Web Frameworks: Amazon AWS, Tomcat Server, Apache Server