

## PROF. OFER M. SHIR

Researcher unique identifier: <https://orcid.org/0000-0002-8257-5160>

Electronic mail: [ofersh@telhai.ac.il](mailto:ofersh@telhai.ac.il)  
[ofers@migal.org.il](mailto:ofers@migal.org.il)

URL for websites: <https://ofersh.github.io/telhai/>  
<https://www.migal.org.il/Ofer-Shir>



### • HIGHER EDUCATION

- 2008-2010 Princeton University, Department of Chemistry, Postdoctoral Research Associate. Host: **Prof. Herschel Rabitz**. Project title: Optimization, learning and search in quantum control theory and experiments.
- 2004-2008 Leiden University, Leiden Institute of Advanced Computer Science, PhD, Computer Science. Advisors: **Prof. Thomas Bäck** and **Prof. Marc Vrakking** (Amolf/FOM), Thesis title: “Niching in Derandomized Evolution Strategies and its Applications in Quantum Control” [ISBN: 978-90-6464-256-2]
- 2003-2004 Leiden University, Leiden Institute of Advanced Computer Science, MSc, Computer Science. Advisor: **Prof. Thomas Bäck**, Thesis title: “Niching in Evolution Strategies”.
- 2000-2003 Hebrew University of Jerusalem, BSc, Physics and Computer Science

### • CURRENT POSITIONS

- 2022 – Technion – Israel Institute of Technology, Faculty of Mathematics, Visiting Associate Professor
- 2020 – Tel-Hai College, Computer Science Department, Associate Professor
- 2013 – The Galilee Research Institute - Migal, Computational Sciences, Principal Investigator

### • PREVIOUS POSITIONS

- 2019 – 2022 Tel-Hai College, Computer Science Department Head
- 2012 – 2020 Tel-Hai College, Computer Science Department, Lecturer and Senior Lecturer
- 2010 – 2013 IBM Research, Software and Services, Research Scientist

### • SELECTED PEER-REVIEWED PUBLICATIONS

- ★ **Shir, O.M.**, Israeli, A., Caftory, A., Zepko, G., Bloch, I.: Algorithmically-guided discovery of viral epitopes via linguistic parsing: Problem formulation and solving by soft computing. *Applied Soft Computing* **129** (2022) 109509
- ★ **Shir, O.M.**, Yazmir, B., Israeli, A., Gamrasni, D.: Algorithmically-Guided Postharvest by Experimental Combinatorial Optimization. In: Proceedings of the Genetic and Evolutionary Computation Conference Companion, GECCO-2022, New York, NY, USA, ACM Press (2022) 2027–2035
- ★ Kocaman, V., **Shir, O.M.**, Bäck, T.: Improving Model Accuracy for Imbalanced Image Classification Tasks by Adding a Final Batch Normalization Layer: An Empirical Study. In: Proceedings of the 25th International Conference on Pattern Recognition, ICPR2020 (2021) 10404–10411
- ★ **Shir, O.M.**, Xi, X., Rabitz, H.: Multi-level evolution strategies for high-resolution black-box control. *Journal of Heuristics* **27**(6) (2021) 1021–1055
- ★ **Shir, O.M.**, Yehudayoff, A.: On the covariance-Hessian relation in evolution strategies. *Theoretical Computer Science* **801** (2020) 157–174
- ★ Doerr, C., Ye, F., Horesh, N., Wang, H., **Shir, O.M.**, Bäck, T.: Benchmarking Discrete Optimization Heuristics with IOHprofiler. *Applied Soft Computing* **88** (2020) 106027
- ★ Horesh, N., Bäck, T., **Shir, O.M.**: Predict or Screen Your Expensive Assay? DoE vs. Surrogates in Experimental Combinatorial Optimization. In: Proceedings of the Genetic and Evolutionary Computation Conference, GECCO-2019, NY, USA, ACM Press (2019) 274–284
- ★ Israeli, A., Emmerich, M., Litaor, M., **Shir, O.M.**: Statistical Learning in Soil Sampling Design Aided by Pareto Optimization. In: Proceedings of the Genetic and Evolutionary Computation Conference, GECCO-2019, NY, USA, ACM Press (2019) 1198–1205
- ★ Calvo, B., **Shir, O.M.**, Ceberio, J., Doerr, C., Wang, H., Bäck, T., Lozano, J.A.: Bayesian Performance Analysis for Black-Box Optimization Benchmarking. In: Proceedings of the Genetic and Evolutionary Computation Conference Companion, GECCO-2019, NY, USA, ACM Press (2019) 1789–1797
- ★ **Shir, O.M.**, Yehudayoff, A.: On the Statistical Learning Ability of Evolution Strategies. In: Proceedings of the workshop on Foundations of Genetic Algorithms, FOGA-2017, NY, USA, ACM Press (2017) 127-138
- ★ Nanda, V., Belure, S.V., **Shir, O.M.**: Searching for the Pareto frontier in multi-objective protein design. *Biophysical Reviews* **9**(4) (2017) 339–344
- ★ **Shir, O.M.**, Roslund, J., Whitley, D., Rabitz, H.: Efficient Retrieval of Landscape Hessian: Forced Optimal Covariance Adaptive Learning. *Physical Review E* **89**(6) (2014) 063306
- ★ **Shir, O.M.**: Niching in Evolutionary Algorithms. In: Handbook of Natural Computing: Theory, Experiments, and Applications. Springer-Verlag, Berlin-Heidelberg, Germany (2012) 1035–1069
- ★ **Shir, O.M.**, Emmerich, M., Bäck, T.: Adaptive Niche-Radii and Niche-Shapes Approaches for Niching with the CMA-ES. *Evolutionary Computation* **18**(1) (2010) 97–126