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| **Eli Schwartz, PhD – Curriculum Vitae** | | | | | | | | | |
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| [me@eli-schwartz.com](mailto:Eli.shw@gmail.com) | | | +972-505-790959 | | | [Google Scholar](https://scholar.google.com/citations?user=7ttMZRUAAAAJ&hl=en) | | | [LinkedIn](https://www.linkedin.com/in/elischwartz/) |
|  | |  | | | | |  |  | |
| I am an AI Research Scientist with 15 years of tech experience, holding a strong publication record in top-tier conferences such as NeurIPS, CVPR, AAAI, and ICCV. I am dedicated to performing research that has a significant, real-world impact and drives progress in practical applications. My primary research interests are in representation learning and vision and language foundation models. | | | | | | | | | |
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| **Education** |  | | | | | | | | |
| **2019-2023** | **Ph.D. Electrical Engineering, Tel-Aviv University, Israel** | | | | | | | | |
|  | * Advisors – Prof. Raja Giryes (TAU) and Prof. Alex Bronstein (CS@Technion) * Thesis – “**Adaptable Computer Vision Models for Shifting Data Distributions**”, Adapting Deep Learning models to new data distributions with limited data (Few-shot Learning; Domain Adaptation/Generalization; Anomaly Detection). | | | | | | | | |
| **2016-2018** | **M.Sc. Electrical Engineering, Tel-Aviv University, Israel** | | | | | | | | |
|  | * Advisors – Prof. Raja Giryes (TAU) and Prof. Alex Bronstein (CS@Technion) * Thesis – **“Learning an End-to-End Image Processing Pipeline”.** First to show learning of the entire camera’s image processing pipeline in an end-to-end fashion. | | | | | | | | |
| **2007-2011** | **B.Sc. Electrical Engineering, Technion - Israel institute of technology** | | | | | | | | |
|  |  | | | | | | | | |
| **Employment** | | | | | | | | | |
| **2017-Present** | **Research Scientist – IBM Research AI** | | | | | | | | |
|  | * Published and productized research. * Led a customer-facing project, collaborating closely with dev, UX, product, and CS. * Achievements: **11 Papers; 6 Patents; 2 research projects delivered as products.** | | | | | | | | |
| **2015-2017** | **Co-founder & CTO – Inka Robotics** | | | | | | | | |
|  | * Co-founded a startup focused on developing a vision-based autonomous tattooing robot. * Spearheaded the technical team, overseeing the development of software and algorithms. * Successfully transformed the concept into a working prototype, culminating in a tattoo on my own leg. | | | | | | | | |
| **2013-2016** | **Computer Vision Algorithm Developer – Microsoft** | | | | | | | | |
|  | * Contributed to the HoloLens AR Glasses Project in its early days. * Served as a member of an incubation team, rapidly developing PoCs for cutting-edge technologies. * Specialized in developing computer vision algorithms, notably for depth cameras and gaze tracking. | | | | | | | | |
| **2011-2013** | **ASIC Engineer – Qualcomm** | | | | | | | | |
|  | Played a pivotal role as the Formal Verification Technical Lead | | | | | | | | |
| **2008-2011** | **ASIC Engineering Intern – IBM** | | | | | | | | |
|  | Gained hands-on experience in ASIC formal and functional verification | | | | | | | | |
| **Awards** |  | | | | | | | | |
| * The Weinstein Research Institute for Signal Processing’s Outstanding Paper Award, 2023 * IBM PhD Fellowship Award, 2021-2022 * IBM Research Accomplishment Award, 2020 * IBM Invention Plateau Award (for prolific inventors), 2020 * IMVC Best Student Paper, 2019 * Thomas Schwartz Award for outstanding projects (Senior Thesis), 2011 | | | | | | | | | |
| **Languages** Hebrew – native; English – fluent | | | | | **Programing languages** TensorFlow/Pytorch, OpenCV, Python, C++ | | | | |
|  | | | | | | | | | |

Publications [full list on Google Scholar](https://scholar.google.com/citations?user=7ttMZRUAAAAJ&hl=en) \* indicates equal contribution

## Peer-reviewed papers

S. Doveh, A. Arbelle, S. Harary, **E. Schwartz**, R. Herzig, R. Giryes, D. Kim, R. Feris, R. Panda, S. Ullman, L. Karlinsky, “*Teaching Structured Vision & Language Concepts to Vision & Language Models*”, CVPR 2023 [pdf](https://arxiv.org/abs/2211.11733)

D. Lang, **E. Schwartz**, C. Bercea, R. Giryes, J. Schnabel, “*Multispectral 3D Masked Autoencoders for Anomaly Detection in Non-Contrast Enhanced Breast MRI*”, CAPTION Workshop MICCAI 2023 [pdf](https://arxiv.org/abs/2303.05861)

**E. Schwartz**, R. Giryes and A. M. Bronstein, “*ISP Distillation*”, IEEE Open Journal of Signal Processing 2022 [pdf](https://arxiv.org/abs/2101.10203)

A. Alfassy\*, A. Arbelle\*, O. Halimi, S. Harary, R. Herzig, **E. Schwartz**, R. Panda, M. Dolfi, C. Auer, K. Saenko, P. Staar, R. Feris, L. Karlinsky\*, “*FETA: Towards Specializing Foundation Models for Expert Task Applications*”, NeurIPS 2022 [pdf](https://arxiv.org/abs/2209.03648)

S. Harary\*, **E. Schwartz\***, A. Arbelle, P. Staar, S. Abu-Hussein, E. Amrani, R. Herzig, A. Alfassy, R. Giryes, H. Kuehne, D. Katabi, K. Saenko, R. Feris, L. Karlinsky\*, “*Unsupervised Domain Generalization by Learning a Bridge Across Domains*”, CVPR 2022 (Oral) [pdf](https://arxiv.org/abs/2112.02300)

[**E. Schwartz**](https://arxiv.org/search?searchtype=author&query=Schwartz%2C+E)**\***, [L. Karlinsky](https://arxiv.org/search?searchtype=author&query=Karlinsky%2C+L)\*, [R. Feris](https://arxiv.org/search?searchtype=author&query=Feris%2C+R), [R. Giryes](https://arxiv.org/search?searchtype=author&query=Giryes%2C+R) and [A. Bronstein](https://arxiv.org/search?searchtype=author&query=Bronstein%2C+A+M), *“Baby steps towards few-shot learning with multiple semantics*”, Pattern Recognition Letters 2022 [pdf](https://arxiv.org/pdf/1906.01905)

A. Arbelle\*, S. Doveh\*, A. Alfassy\*, J. Shtok, G. Lev, **E. Schwartz**, H. Kuehne, H. Barak Levi, P. Sattigeri, R. Panda, C. Chen, A. Bronstein, K. Saenko, S. Ullman, R. Giryes, R. Feris, L. Karlinsky, *“Detector-Free Weakly Supervised Grounding by Separation”*, ICCV 2021 (Oral) [pdf](https://arxiv.org/abs/2104.09829)

C. Baskin\*, N. Liss\*, T.Rozen\*, Y. Chai, E. Zheltonozhskii, **E. Schwartz**, R. Giryes, A. Mendelson and A. M. Bronstein, “*NICE: Noise Injection and Clamping Estimation for Neural Network Quantization*”, Mathematics 2021 [pdf](https://arxiv.org/abs/1810.00162)

G. Bukchin, **E. Schwartz**, K. Saenko, O. Shahar, R. Feris, R. Giryes\*, L. Karlinsky\* “*Fine-grained Angular Contrastive Learning with Coarse Labels*”, CVPR 2021 (Oral, 3.5% acceptance rate) [pdf](https://arxiv.org/abs/2012.03515)

S. Doveh\*, **E. Schwartz\***, C. Xue, R. Feris, A. Bronstein, R. Giryes, L. Karlinsky “*MetAdapt: Meta-Learned Task-Adaptive Architecture for Few-Shot Classification*”, Pattern Recognition Letters 2021 [pdf](https://arxiv.org/abs/1912.00412)

[L. Karlinsky](https://arxiv.org/search/cs?searchtype=author&query=Karlinsky%2C+L)\*, [J. Shtok](https://arxiv.org/search/cs?searchtype=author&query=Shtok%2C+J)\*, [A. Alfassy](https://arxiv.org/search/cs?searchtype=author&query=Alfassy%2C+A)\*, [M. Lichtenstein](https://arxiv.org/search/cs?searchtype=author&query=Lichtenstein%2C+M)\*, [S. Harary](https://arxiv.org/search/cs?searchtype=author&query=Harary%2C+S), [**E. Schwartz**](https://arxiv.org/search/cs?searchtype=author&query=Schwartz%2C+E), [S. Doveh](https://arxiv.org/search/cs?searchtype=author&query=Doveh%2C+S), [P. Sattigeri](https://arxiv.org/search/cs?searchtype=author&query=Sattigeri%2C+P), [R. Feris](https://arxiv.org/search/cs?searchtype=author&query=Feris%2C+R), [A. Bronstein](https://arxiv.org/search/cs?searchtype=author&query=Bronstein%2C+A), [R. Giryes](https://arxiv.org/search/cs?searchtype=author&query=Giryes%2C+R), “*StarNet: towards weakly supervised few-shot detection and explainable few-shot classification*”, AAAI 2021 [pdf](https://arxiv.org/abs/2003.06798)

C. Baskin\*, **E. Schwartz\***, E. Zheltonozhskii, N. Liss, R. Giryes, A. M. Bronstein and A. Mendelson, “*UNIQ: Uniform Noise Injection for the Quantization of Neural Networks*”, ACM Transactions on Computer Systems, 2020 [pdf](https://arxiv.org/abs/1804.10969)

N. Diamant\*, D. Zadok\*, C. Baskin, **E. Schwartz** and A. M. Bronstein, “*Beholder-GAN: Generation and Beautification of Facial Images with Conditioning on Their Beauty Level*”, ICIP 2019 [pdf](https://arxiv.org/abs/1902.02593)

[L. Karlinsky](https://arxiv.org/search?searchtype=author&query=Karlinsky%2C+L)\*, [J. Shtok](https://arxiv.org/search?searchtype=author&query=Shtok%2C+J)\*, [S. Harary](https://arxiv.org/search?searchtype=author&query=Harary%2C+S)\*, [**E. Schwartz**](https://arxiv.org/search?searchtype=author&query=Schwartz%2C+E)**\***, [M. Marder](https://arxiv.org/search?searchtype=author&query=Marder%2C+M), [S. Pankanti](https://arxiv.org/search?searchtype=author&query=Pankanti%2C+S), [R. Feris](https://arxiv.org/search?searchtype=author&query=Feris%2C+R), [A. Kumar](https://arxiv.org/search?searchtype=author&query=Kumar%2C+A), [R. Giryes](https://arxiv.org/search?searchtype=author&query=Giryes%2C+R) and [A. Bronstein](https://arxiv.org/search?searchtype=author&query=Bronstein%2C+A+M), “*RepMet: Representative-based metric learning for classification and one-shot object detection*”, CVPR 2019 [pdf](https://arxiv.org/abs/1806.04728)

[**E. Schwartz**](https://arxiv.org/search?searchtype=author&query=Schwartz%2C+E)**\***, [L. Karlinsky](https://arxiv.org/search?searchtype=author&query=Karlinsky%2C+L)\*, [J. Shtok](https://arxiv.org/search?searchtype=author&query=Shtok%2C+J), [S. Harary](https://arxiv.org/search?searchtype=author&query=Harary%2C+S), [M. Marder](https://arxiv.org/search?searchtype=author&query=Marder%2C+M), [R. Feris](https://arxiv.org/search?searchtype=author&query=Feris%2C+R), [A. Kumar](https://arxiv.org/search?searchtype=author&query=Kumar%2C+A), [R. Giryes](https://arxiv.org/search?searchtype=author&query=Giryes%2C+R) and [A. Bronstein](https://arxiv.org/search?searchtype=author&query=Bronstein%2C+A+M), “*Delta-encoder: an effective sample synthesis method for few-shot object recognition*”, NeurIPS 2018 (Spotlight, 3% acceptance rate) [pdf](https://arxiv.org/abs/1806.04734)

**E. Schwartz**, R. Giryes and A. M. Bronstein, “*DeepISP: Learning End-to-End Image Processing Pipeline*”, IEEE Transactions on Image Processing, 2018 [pdf](https://arxiv.org/abs/1801.06724)

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N. Shabtay\*, **E. Schwartz\***, R. Giryes, “*Positional-Encoding Image Prior*”, 2022 [pdf](https://arxiv.org/abs/2211.14298)

**E. Schwartz**, A. Arbelle, L. Karlinsky, S. Harary, F. Scheidegger, S. Doveh, R. Giryes, “*MAEDAY: MAE for few and zero shot AnomalY-Detection*”, 2022 [pdf](https://arxiv.org/abs/2211.14307)

# Patents

E. Schwartz, L. Karlinsky, R. Feris, “*System and method for augmenting few-shot object classification with semantic information from multiple sources.*” US Patent 11,263,488.

E. Schwartz, L. Karlinsky, S. Doveh, “*Task-Adaptive Architecture for Few-Shot Classification.*” US patent application No. 17/106114.

O. K. Fabian, G. Adler, L. Y. Chertkow, E. Schwartz, R. Danon, J. Nes-El, “*Automated Tattooing System and Method*.” WO/2020/178818

L. Karlinsky, J. Shtok, E. Schwartz, “*TAFSSL: Task Adaptive Feature Sub-Space Learning for few-shot learning.*” US patent application No. 17/000,319.

L. Karlinsky, E. Schwartz, J. Shtok, M. Marder and S. Harary, “*Representative-Based Metric Learning for Classification and Few-Shot Object Detection*.” US patent application No. 16/240,927.

L. Karlinsky, M. Marder, E. Schwartz, J. Shtok and S. Harary, “*Out-of-sample generating few-shot classification networks*.” US patent application No. 16/206,528.

C. Baskin, E. Schwartz, E. Zheltonozhskii, N. Liss, R. Giryes, A. M. Bronstein and A. Mendelson, “*System and method for emulating quantization noise for a neural network.*” US provisional patent application No. 62/661,016.

E. Schwartz, R. Giryes and A. M. Bronstein, “*Method and system for end-to-end image processing*.” U.S. Patent Application No. 16/251,123.

E. Shalev, S. Katz, and E. Schwartz. "*Imaging devices and methods for authenticating a user*." U.S. Patent Application No. 14/995,025.

# Community Service

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* Program Chair – Multimodal Foundation Models Workshop, ICCV 2023
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