Amir Bar

INFORMATION

Postodctoral Researcher
Meta AI Research
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EDUCATION

Tel Aviv University, Tel Aviv, Israel **July 2020 - Aug 2024**
Doctor of Philosophy, Computer Science
Dissertation: From Task-Specific to General Self-Supervised Machine Vision
Advisors: Amir Globerson and Trevor Darrell (UC Berkeley).

UC Berkeley, Berkeley, California **Aug 2021 - Aug 2024**
Visiting PhD Student

Tel Aviv University, Tel Aviv, Israel **Oct 2015 - July 2017**
Master of Science, Computer Science
Advisor: Lior Wolf.

Tel Aviv University, Tel Aviv, Israel **Oct 2012 - July 2015**
Bachelor of Science, Computer Science
Magna Cum Laude

RESEARCH EXPERIENCE

Meta AI Research: Postdoctoral Researcher **Aug 2024 - Now**
380 W 33rd St, New York, NY 10001
Working on self-supervised learning and world modeling.
Host: Professor Yann LeCun, Meta VP and an ACM Turing award laureate.

Meta AI Research: Research Intern **Sep 23 - Feb 24**
1 Hacker Way Menlo Park, CA 94025 US
Worked on learning animal behvaior from egocentric animal video
Paper published in ECCV 2024.
Host: Professor Yann LeCun, Meta VP and an ACM Turing award laureate.

Meta AI Research: Research Intern **June 22 - Feb 23**
380 W 33rd St, New York, NY 10001
Worked on modeling location uncertainties in JEPA models
Paper published in ICML 2024.
Host: Professor Yann LeCun, Meta VP and an ACM Turing award laureate.

Zebra Medical Vision: ML Team leader **Aug 18 - June 22**
2120 University Ave, Berkeley, CA 94704
Founded a new company site in Berkeley.
Supported up to 8 scientists and engineers.
Team goal: automate the reading of CT scans
Four of our algorithms were approved by the US FDA
Authored 3 patents and 7 research papers.

Zebra Medical Vision: Research Scientist **Oct 16 - Aug 18**
Commercial Bldg, Shefayim, Israel
Deep learning research for actue finding diagnosis in CT images
Developed "Zebra Train", a library for training deep neural networks built over Keras.
Authored 1 patent and 1 research paper.

INTERESTS

Visual Prompting, Self-Supervised Learning, Object-Centric models

CONFERENCE PUBLICATIONS

Alberto Hojel, Yutong Bai, Trevor Darrell, Amir Globerson, **Amir Bar**. "Finding Visual Task Vectors". *ECCV*. 2024.

Amir Bar, Arya Bakhtiar, Antonio Loquercio, Jathushan Rajasegaran, Danny Tran, Yann LeCun, Amir Globerson, Trevor Darrell. "EgoPet: A pet's-eye view of the world for learning animal behavior". *ECCV*. 2024.

Amir Bar, Florian Bordes, Assaf Shocher, Mahmoud Assran, Pascal Vincent, Nicolas Ballas, Trevor Darrell, Amir Globerson, and Yann LeCun. "Stochastic positional embeddings improve masked image modeling." *ICML*. 2024.

Yutong Bai, Xinyang Geng, Karttikeya Mangalam, **Amir Bar**, Alan Yuille, Trevor Darrell, Jitendra Malik, Alexei A Efros. "Sequential Modeling Enables Scalable Learning for Large Vision Models". *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. 2024.

Amir Bar*, Yossi Gandelsman*, Trevor Darrell, Amir Globerson, Alexei Efros. "Visual Prompting via Image Inpainting." *In Advances in Neural Information Processing Systems (NeurIPS)*. 2022.

Amir Bar, Xin Wang, Vadim Kantorov, Colorado J Reed, Roei Herzig, Gal Chechik, Anna Rohrbach, Trevor Darrell, and Amir Globerson. "DETReg: Unsupervised Pretraining with Region Priors for Object Detection." *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. 2022.

Elad Ben-Avraham, Roei Herzig, Karttikeya Mangalam, **Amir Bar**, Anna Rohrbach, Leonid Karlinsky, Trevor Darrell, Amir Globerson. "Bringing Image Scene Structure to Video via Frame-Clip Consistency of Object Tokens." *In In Advances in Neural Information Processing Systems (NeurIPS)*. 2022.

Roei Herzig, Elad Ben-Avraham, Karttikeya Mangalam, **Amir Bar**, Gal Chechik, Anna Rohrbach, Trevor Darrell, Amir Globerson. "Object-Region Video Transformers." *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. 2022.

Raouf Muhamedrahimov, **Amir Bar**, and Ayelet Akselrod-Ballin. "Learning Interclass Relations for Intravenous Contrast Phase Classification in CT." *In Medical Imaging with Deep Learning (MIDL)*. 2021.

Amir Bar*, Herzig, Roei*, Xiaolong Wang, Anna Rohrbach, Gal Chechik, Trevor Darrell, and Amir Globerson. "Compositional Video Synthesis with Action Graphs." *Proceedings of the 38th International Conference on Machine Learning (ICML)* 2021.

Herzig, Roei*, **Amir Bar***, Huijuan Xu, Gal Chechik, Trevor Darrell, and Amir Globerson. "Learning Canonical Representations for Scene Graph to Image Generation." *In European Conference on Computer Vision (ECCV)*. 2020.

David Chettrit, Tomer Meir, Hila Lebel, Mila Orlovsky, Ronen Gordon, Ayelet Akselrod-Ballin, **Amir Bar**. "3D Convolutional Sequence to Sequence Model for Vertebral Compression Fractures Identification in CT." *In Medical Image Computing and Computer Assisted Intervention (MICCAI)*. 2020.

Ginosar Shiry*, **Amir Bar*** , Gefen Kohavi, Caroline Chan, Andrew Owens, and Jitendra Malik. "Learning Individual Styles of Conversational Gesture." *In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. 2019.

Amir Bar, Michal Mauda Havakuk, Yoni Turner, Michal Safadi, and Eldad El-

nekave. "Improved ich classification using task-dependent learning." *In IEEE 16th International Symposium on Biomedical Imaging (ISBI)*. 2019.

Ofir Press*, **Amir Bar***, Ben Bogin*, Jonathan Berant and Lior Wolf. "Language generation with recurrent generative adversarial networks without pre-training." *In the 1st Workshop on Learning to Generate Natural Language (ICMLW)*. 2017.

Amir Bar, Lior Wolf, Orna Bergman Amitai, Eyal Toledano and Eldad Elnekave. "Compression fractures detection on CT." *In Proceedings of SPIE Medical Imaging*. 2017.

JOURNAL PUBLICATIONS

Jiarui Xu, Yossi Gandelsman, **Amir Bar**, Jianwei Yang, Jianfeng Gao, Trevor Darrell, Xiaolong Wang. "IMProv: Inpainting-based Multimodal Prompting for Computer Vision Tasks". *Transactions on Machine Learning Research (TMLR)*. 2024.

Muhamedrahimov, Raouf, **Amir Bar**, Jonathan Laserson, Ayelet Akselrod-Ballin, and Eldad Elnekave. "Using machine learning to identify intravenous contrast phases on computed tomography." *In Computer Methods and Programs in Biomedicine 215*. 2022.

Noa Dagan, Eldad Elnekave, Noam Barda, Orna Bergman-Amitai, **Amir Bar**, Mila Orlovsky, Eitan Bachmat, Ran D. Balicer. "Automated opportunistic osteoporotic fracture risk assessment using computed-tomography scans to aid in FRAX underutilization". *In Nature Medicine*. 2020.

Krishnaraj, Arun, Spencer Barrett, Orna Bregman-Amitai, Michael Cohen-Sfady, **Amir Bar**, David Chettrit, Mila Orlovsky, and Eldad Elnekave. "Simulating dual-energy X-ray absorptiometry in CT using deep-learning segmentation cascade." *In Journal of the American College of Radiology*. 2019.

PATENTS

Amir Bar. "Systems and methods for automated detection of visual objects in medical images.". *U.S. Patent*. 2023.

Amir Bar. "Identification of a contrast phase depicted in a medical image ". *U.S. Patent*. 2023.

Amir Bar, Raouf Muhamedrahimov, and Rachel Wities. "Cross modality training of machine learning models". *U.S. Patent*. 2023.

INVITED TALKS

Visual Prompting: Guiding Models to Perform Tasks With Pixels
Brown University, November 2024
The Hebrew University of Jerusalem, July 2024
Vision and AI Seminar, Weizmann Institute of Science, July 2024

From Task-Specific to General Machine Vision
Meta AI, June 2024
NVIDIA AI, June 2024
ByteDance, June 2024

***M**asked **I**mage **M**odeling is Awesome*
Winter Computer Vision Workshop, Berkeley AI Research, December 2023

Compositional Video Synthesis with Action Graphs
Structured Representations for Video Understanding Workshop, ICCV 2021

Unsupervised Pretraining with Region Priors for Object Detection
Learning from Limited and Imperfect Data Workshop, CVPR 2021

Challenges for AI in Radiology
Hebrew University of Jerusalem, 2019
Medical Machine Learning Israel, 2019

AWARDS

Winner of the Ego4D PNR Temporal Localization Challenge, CVPR 2022
Award for Outstanding Academic Achievements, TAU CS (top 5%). 2016
Award for Outstanding Academic Achievements, TAU CS (top 5%). 2015

SERVICE

Organizing Committee:

- Primary Organizer - First Workshop on Visual Prompting at CVPR 2024
- Assistant Program Chair - NeurIPS 2023

Reviewer: CVPR, NeurIPS, ICML, ICCV, ECCV, TPAMI.
Admission Committee: UC Berkeley, 2023.