PURDUE UNIVERSITY | Elmore Family School of Electrical and Computer Engineering

Faculty Candidate Seminar – Physical AI

Roi Herzig

Postdoctoral Researcher
University of California, Berkeley

Wednesday, February 18th, 2026
Presentation: 10:30 A.M. – 11:30 A.M.
Q & A: 11:30 A.M. – 12:00 P.M.
MSEE 112

Towards Structured Physical AI Models

Abstract: Current AI systems can synthesize videos, pass the bar exam, and write code. Despite these advances, robots still struggle with basic physical tasks, like folding a shirt, that humans perform effortlessly. The main reason is the Robotic Data Gap: Robotics has no internet. While digital AI trains on billions of hours of web data, robot learning relies on small, costly datasets that are difficult to standardize and highly heterogeneous. In contrast, humans are remarkably data-efficient, generalizing effortlessly from limited experience. This raises a key research question: Can we bridge this gap by building Physical AI systems that perceive, reason, and adapt to the physical world, driving data efficiency and scalable generalization?

In this talk, Roei Herzig will present recent efforts in Physical AI to integrate physical inductive biases, allowing robots to generalize beyond their limited training data. He will highlight ongoing work that incorporates structured representations, such as particles, objects, symmetries, and affordances, into learning-based models. His work demonstrates, across platforms ranging from manipulation arms to humanoids, that this structure is the key to unlocking Embodied AI despite the constraints of real-world data scarcity.

Bio: Roei Herzig is a Postdoctoral Scholar at UC Berkeley and a Research Scientist at the MIT-IBM Watson AI Lab. At Berkeley, he is advised by Professor Trevor Darrell and works closely with Professors Jitendra Malik, Shankar Sastry, and Deva Ramanan. Roei earned his PhD from Tel Aviv University under the supervision of Professor Amir Globerson. His research has been recognized with several distinctions, including the 2023 Dissertation Award for the best AI thesis in Israel and the Israeli Excellence in Data Science Postdoctoral Fellowship.

Zoom: https://purdue-edu.zoom.us/j/92992160584 - Meeting ID: 929 9216 0584

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