

MECHANICAL ENGINEERING SEMINAR

Monday, November 9, 2026 at 14:30, D. Dan & Betty Kahn Building, Auditorium 1

Online: <https://technion.zoom.us/j/97996598472>

From Rigid MEMS to Soft Microsystems: A Pathway Toward Adaptive Mechanical Interfaces

Shai Shmulevich, Ph.D.

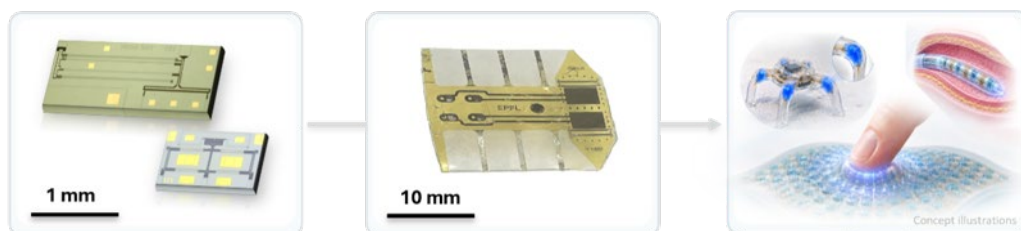
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Hosted by: Prof. Alon Wolf

Mechanical function at small scales is essential for localized and distributed interaction in haptics, robotics, and biomedical devices. Conventional MEMS offer precision, speed, and scalable fabrication but are limited in deformation and compliant interaction. Soft systems offer large deformation and compliance, yet their miniaturization and integration remain challenging.

This seminar explores two complementary approaches to expanding mechanical functionality at small scales. The first focuses on conventional MEMS, demonstrating how understanding and tailoring nonlinear behavior can extend their operating range and enhance mechanical response. The second turns to soft milli- and microsystems, addressing the challenges of miniaturizing electrohydraulic actuation and demonstrating its realization through wafer-level microfabrication.

The seminar concludes with a research vision for scalable soft microsystem platforms capable of localized and distributed mechanical interaction, opening new opportunities in haptics, robotics, and biomedical interfaces.



Shai Shmulevich received his Ph.D. from the Technion, where his research focused on MEMS, nonlinear dynamics, and electromechanical transduction. He later joined the LMTS laboratory at EPFL as a Scientist, working on soft milli- and microsystems, wafer-level microfabrication, and robotic devices. Alongside his academic career, he spent more than two decades in multidisciplinary R&D in the IDF Intelligence Technology Unit, leading research teams and technological projects and serving as CTO of a major department. His current research focuses on scalable soft microsystems for adaptive mechanical interfaces in robotics, haptics, and biomedical applications.