GTIIT MECHANICAL ENGINEERING STUDENT SEMINAR

Thursday 8th, January, 2026, at 10:00 am (Israel time),
Online: https://gtiit.zoom.us/j/6167757378

Closed-Loop Motion Control Combining Magnetic Actuation and Visual Feedback

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This research aims to develop an integrated methodology for closed-loop position control that combines electromagnetic actuation and visual feedback. A novel approach is leveraged to visualize (using machine vision) and actively manipulate (using an electromagnetic field) a solid object big enough to perturb the field significantly. This mechatronics research combines fundamental physical identification, modeling, control design, and experimental validation. In particular, two setups were developed to track the motion of a steel ball suspended from a low-stiffness spring: a cost-effective version and an improved variant that still uses affordable equipment. The motion control results confirmed that this approach is feasible and were encouraging, with a submillimetric RMS position error during dynamic tests. Thus, this methodology paves the way for several applications in biomedical engineering, robotics, and high-heat-flux cooling, where moving small metal objects in environments otherwise inaccessible is required.

Note: the seminar will be given in English

Seminars Coordinator: Prof. Sefi Givli