

MECHANICAL ENGINEERING STUDENT SEMINAR

Wednesday, December 20 2023 at 13:30, D. Dan and Betty Kahn Building, Room 217.

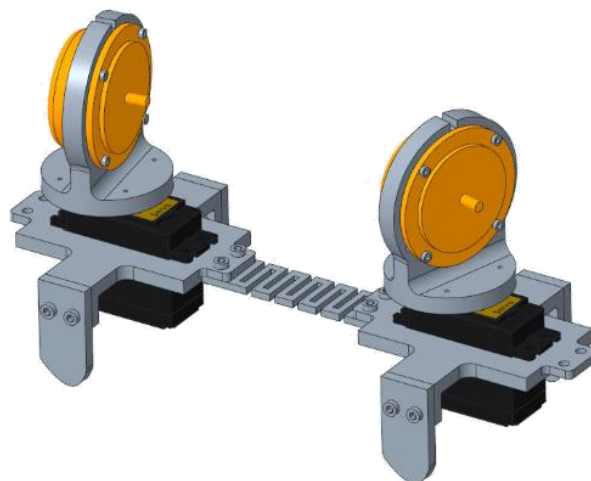
Online: <https://technion.zoom.us/j/3213230849>

GYROSCOPIC ACTUATION OF A WALKING ROBOT

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Adviser: Prof. Izhak Bucher

This research presents a new method for a flexible robot to walk and turn using gyroscopic actuators and inertial forces. The robot's elastic properties are utilized to produce synchronized motion. The study investigates the development of a new walking robot called GAWAR, using analytical models, numerical simulations, and an experimental system. The analytical models use hybrid dynamics and Lagrange equations with constraints to describe the system's dynamics. A simulation is built to investigate the impact of input signals on the robot's kinematics, progress, turning capabilities, and synchronization between different links. The simulation analyzes the movement of a single link and a pair of links and compares them. The results of the analytical models and numerical simulations are validated by an experimental system of the GAWAR model. The study demonstrates the potential of using gyroscopic actuators for operating walking robots.



Note: the seminar will be given in Hebrew