



סמינר מחלקתי – הנדסת חומרים

הנכם מוזמנים בזאת לסמינר מחלקתי
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Simulation, Recording and analyzing high resolution electrophysiological data
from freely behaving humans

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Electroencephalography (EEG) and surface electromyography (sEMG) are powerful tools for the interrogation of human physiology, yet contemporary methods are notoriously cumbersome. Typical setups may involve bulky electrodes, dandling wires, and a large amplifier unit. The wide adaptation of these technologies in numerous applications has been accordingly limited to the laboratory. Thanks to the availability of printed electronics technologies, it is now possible to dramatically simplify the form factor of these techniques. Electrode arrays with unprecedented performances can be readily produced, eliminating the need to handle multiple electrodes and wires. Combined with miniature electronics and advanced data analysis tools, wearable electrophysiology can be used for a wide range of investigations of freely behaving humans. Customizing electrode array designs and implementation of blind source separation methods, can also improve recording resolution, reduce variability between individuals and minimizing signal cross-talk between nearby electrodes. In this presentation I will discuss how printed soft electronics can be harnessed in neurological applications, focusing on the implementation of various materials to make devices with better performances. In particular, the detection of REM sleep without atonia (RSWA) at home, mapping facial expressions and finger gesture recognition.