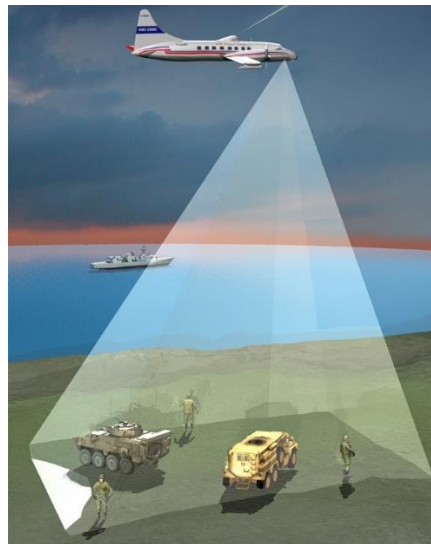


Project for Excellent Students**Sub-Nyquist Space-Time Adaptive Processing (STAP)****Supervisor**Dr. Kumar Vijay Mishra ([mishra@ee.technion.ac.il](mailto:mishra@ee.technion.ac.il))**Project description**

A radar mounted on an airborne platform transmits short pulses and collects the returned echo from the targets on the ground. The received signal contains the returns from the targets-of-interest as well as the illuminated ground surface. The latter is undesirable interference commonly termed as clutter. For a ground-based radar, the clutter is stationary and occupies the low-frequency part of the signal spectrum. It can, therefore, be easily filtered using a notch filter at low frequencies. However, this filtering method cannot be extended to airborne radars as the relative motion of the aircraft spread the clutter in all directions and Doppler frequencies.

Space-Time Adaptive Processing (STAP) techniques have been proposed to filter the radar signal in both the angular and Doppler domains. The goal of this project is to formulate and devise STAP algorithms for sub-Nyquist radars. We will make use of the existing theoretical advances to integrate STAP in the sub-Nyquist processing framework.

**Required background**

Signal and systems (essential), Mavlas (essential), Random signals (desirable)

**Environment**

MATLAB