Object Tracker using FM-CW and Image acquisition

The objective of this project is to design and implement FMCW systems and track an object by using the data given by these systems followed by image acquisition by reducing the effects of oscillator phase noise and reflected power.

Frequency Modulated Continuous Wave (FMCW) systems operate using the homodyne principle, i.e., a CW in which the oscillator serves as both the transmitter and local oscillator. The CW signal is modulated in frequency to produce a linear chirp which is radiated toward a target through an antenna. The echo received (Tb) seconds later is mixed with a portion of the transmitted signal to produce a beat signal at a frequency (fb), this is proportional to the round-trip time Tp and the data is processed using a image processing algorithm.

Tools: MATLAB, HFSS, CST Microwave Studio