LED emergency vehicle lights offer a wide range of patterns, colors, and intensities, but on-road and road-side collisions have not decreased with the advent of this new technology. MSU is involved in research to quantify the effect of patterns, colors, and intensities as a means to determine the optimal combination which improves approaching vehicle behavior. To support this research, you will design and build a “mechanism” which keeps a rear-looking radar mounted on a snowplow dump box at the proper angle with respect to the roadway. The mechanism includes a mechanical frame, an actuator, a single board computer (Raspberry Pi or Beaglebone), GPS, sensors to determine the proper pitch angle of the radar, and the radar itself, for which you will write the program to collect data on the single board computer, and (possibly) an interface to an LED emergency light system. The project involves mechanical design, programming, and field work to validate the design.