EEC 134 Quarter 1 Competition Guidelines

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During the lab session on March 13th, we will hold a competition for the best radar performance in the Hutchison Intermural Field. The details of the competition are as follows.

Shown in Fig. 1, a group of targets will be set up at various distances and bearing angles in an open field. The targets will be $0.3 \times 0.3\,\mathrm{m}^2$ metal plates mounted on wood stands. The maximum and minimum range of the targets are 50 meters and 5 meters, respectively.

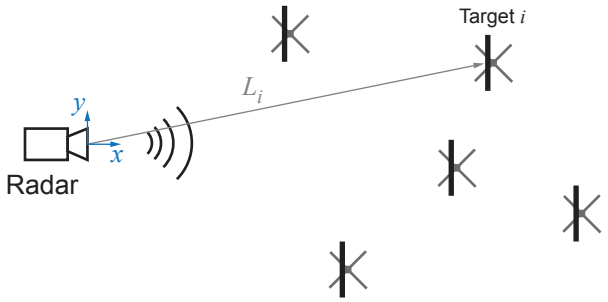

Figure 1: Range competition setup

Your performance is judged based on a score calculated as follows:

$$\text{Score} = \frac{\sum_1^N \left(\frac{\left| \hat{L}_i - L_i \right|}{L_i} \right)}{N},$$

where $\hat{L}_i$ is the measured distance to the ith target, L_i is the actual distance to the ith target, and N is the total number of targets. N will be in the range of 5–10. If you fail to produce a reading for a target, $\hat{L}_i$ will be set to 0, i.e. $\left| \hat{L}_i - L_i \right| / L_i$ will be 1. Obviously, a smaller score means better performance.