BRADLEY UNIVERSITY
Electrical and Computer Engineering
ECE443/543 — Project

Consider the differential-drive mobile robot with the following kinematic model

$$\dot{x}_i = v_i \cos\theta_i, \quad \dot{y}_i = v_i \sin\theta_i, \quad \dot{\theta}_i = \omega_i$$

where (x_i, y_i, θ_i) are robot configuration coordinates, v_i driving velocity, and ω_i angular velocity.

- Design a cooperative control via input/output linearization to make all robots follow the desired trajectory. There are four robots in the group.

$$x_d(t) = \sin\left(\frac{t}{10}\right), \quad y_d(t) = \sin\left(\frac{t}{20}\right), t \in [0, T]$$

  where $T = 2\pi \times 20 \approx 125s$.

- The report should include design description, simulation figures and matlab code.