

CSCE 274 Fall 2022

Homework 2 (3% over the final grade)

Assigned: October 09, 2022

Due: October 17, 2022

Instructions

Read the following questions carefully and make sure to give the answers asked for. Don't give a beautiful answer to the wrong question. If you have any doubts, please let me know.

The document containing the answers should be uploaded on the CSE Moodle (<http://dropbox.cse.sc.edu>) and should have the following characteristics:

1. Header with the code of the class, the semester and year, the homework number, and your name.
e.g., CSCE 274 Section 1 Fall 2021 – Homework 4 – Ibrahim Salman
2. Your answers, clearly identifying the answered assignments.
3. The name of the file should be in the following format:
csce274_fall2022_<hw#>_<last_name>.pdf
e.g., csce274_fall2022_hw2_salman.pdf

Question

Given a differential drive robot starting in $(1m, 1m, 0^\circ)$ depicted with a triangle in the figure with the following characteristics

- $l=30cm$
- $v_l \in [-50cm/s, 50cm/s]$
- $v_r \in [-50cm/s, 50cm/s]$

Provide a sequence of motions to get to the goal in $(3m, 3m, 90^\circ)$, For each motion, specify the velocity of left and right wheels v_l and v_r in m/s, the amount of time Δt , and the resulting state (x, y, θ) .

show your work.

