

# CSCE 274 Fall 2021

## Homework 4 (3% over the final grade)

Assigned: October 05, 2021

Due: October 12, 2021

### Instructions

Please read carefully the following questions 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\_fall2021\_<hw#>\_<last\_name>.pdf  
e.g., csce274\_fall2021\_hw4\_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  $\Delta t$ , and the resulting state  $(x, y, \theta)$ .

**show** your work.

