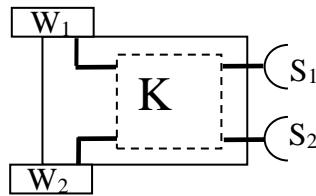


CSCE 452 Project #3 Braitenberg Vehicles

Project description: We have seen Braitenberg Vehicles in the lecture. In this project, you are required to simulate Braitenberg Vehicles with configurable parameters.

- Environment settings: a 2D rectangular space with at least 800*600 pixels
- Light sources:
 - Point light source should be used,
 - The intensity of the light is inversely proportional to the distance between the light and the sensor on the vehicle. The maximum light intensity of the light source is 100. If a sensor S_1 is 10 pixel always from the light source, then the sensor output is $S_1=100/10 = 10$.
 - Your simulator should allow users to set number and location of light sources
- Each vehicle has two wheels W_1 and W_2 and two sensors S_1 and S_2 as shown below,



The relation ship between wheel moving speed and the sensor inputs are,

$$\begin{bmatrix} w_1 \\ w_2 \end{bmatrix} = \begin{bmatrix} k_{11} & k_{12} \\ k_{21} & k_{22} \end{bmatrix} \begin{bmatrix} s_1 \\ s_2 \end{bmatrix} = K \begin{bmatrix} s_1 \\ s_2 \end{bmatrix}$$

- You can select vehicle size in your implementation.
- You should allow users to set number of vehicles, matrix K for each vehicle, and initial position of the vehicle through a text file or dialog box.

Each group need to submit a project report before/on due date. Grading is based on in-class demonstration (40pts), peer-review (40pts) and project website (20pts). Detailed project requirements are,

1. Complete a successful in-class demo (40pts)
2. Create sub directories for project 4 on your project website (20pts in total).
 - a. Team member task allocation for current project (5pts).
 - b. Team meeting log for current project (5pts).
 - c. Source code for current project and instructions for compiling (5pts).
 - d. Screenshot of the software interface of current project (5pts).
3. Peer Review (40 pts): You will be able to find a peer review form in our course website. **Note this each student needs to submit his/her own form. Grading will be based on overall score that your teammates evaluate you. The deadline for turn in your peer review form is the same as the project deadline. Failure to submit peer review form before the deadline will lose 5pts as a penalty for the individual.** There are two main parts: personal evaluation (20 pts) and technical evaluation (20 pts). Please follow the URL on course website to enter your review.