

1. Summary of the meeting

- a. To Do: set up the baseline experiment. Every time, move the farthest particle to the goal and count the total cost
- b. Modify dominant angle function
- c. Do random walk for many steps if it gets stuck in local minimum

2. Work of last week

- a. Path smooth of the map: connecting to the most closest node to the goal without collision → steepest descent direction
- b. Stage division and conquer.
 - i. Stage 1: entropy > 0.9 , do random walk (compare to 4 inputs: up, down, left, right). This part is made for particles detection and preparation for Hough transform.
 - ii. Stage 2: Hough Transform detection till entropy < 0.3 → follow the dominant angle, and try to decrease the number of distinct groups
 - iii. Stage 3: no HT detection and entropy < 0.3 . Dominant angle detection by gradient descent, if none, do random walk.
- c. Semi-autonomous algorithm is done for particles manipulations, but there are local minimums that needs improving.

3. Things to be solved

- a. Local minimum
- b. Steepest descent direction of one swarm might not the steepest gradient of the total cost function. Can we find a steep direction in total cost function?
- c. Value iteration for obstacles map