2D Path Planning
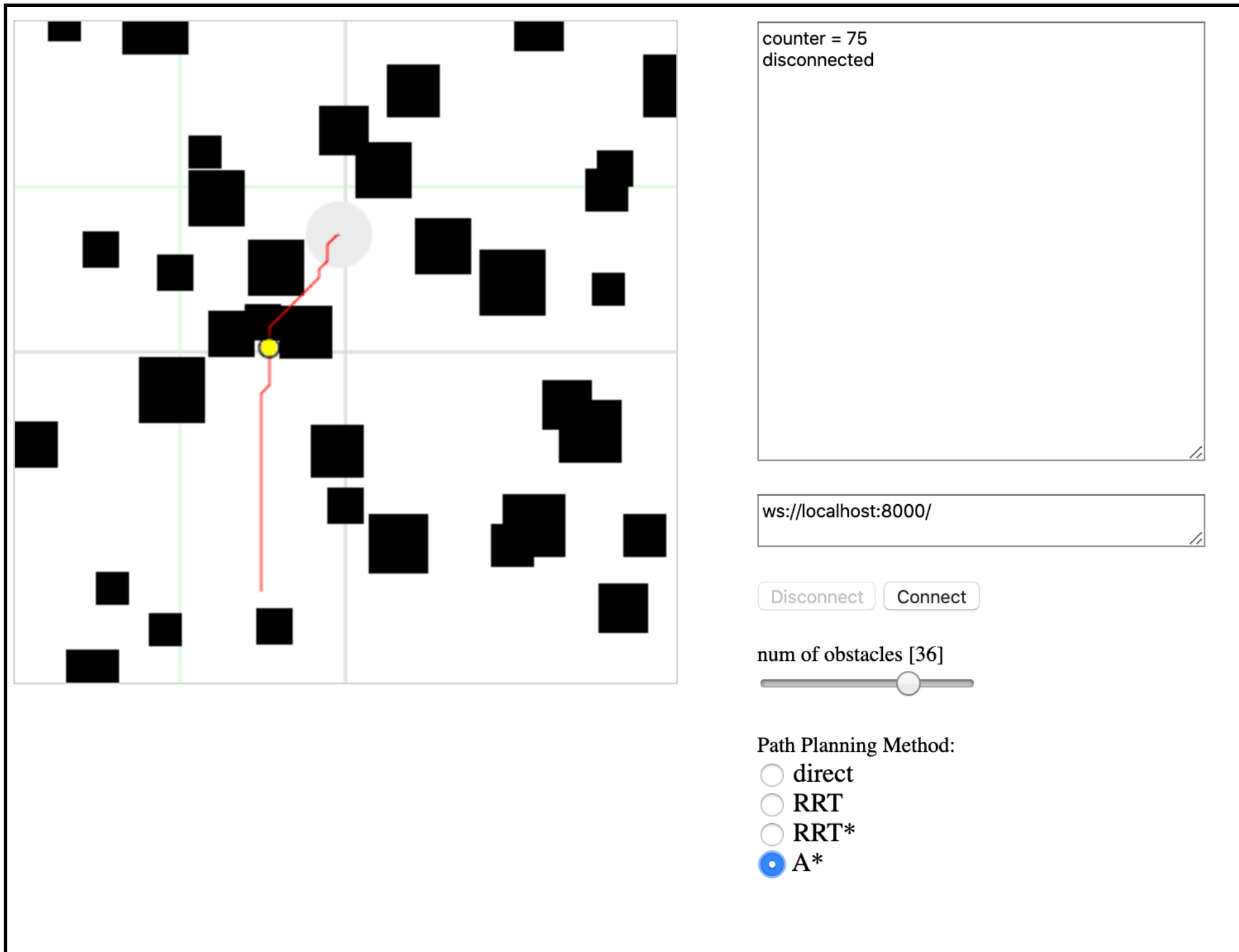
bachelor's project
Qazvin Azad University
Dr. Abbasi

Project by
Zahra Noury
winter - 2020

2D Path Planning

Direct
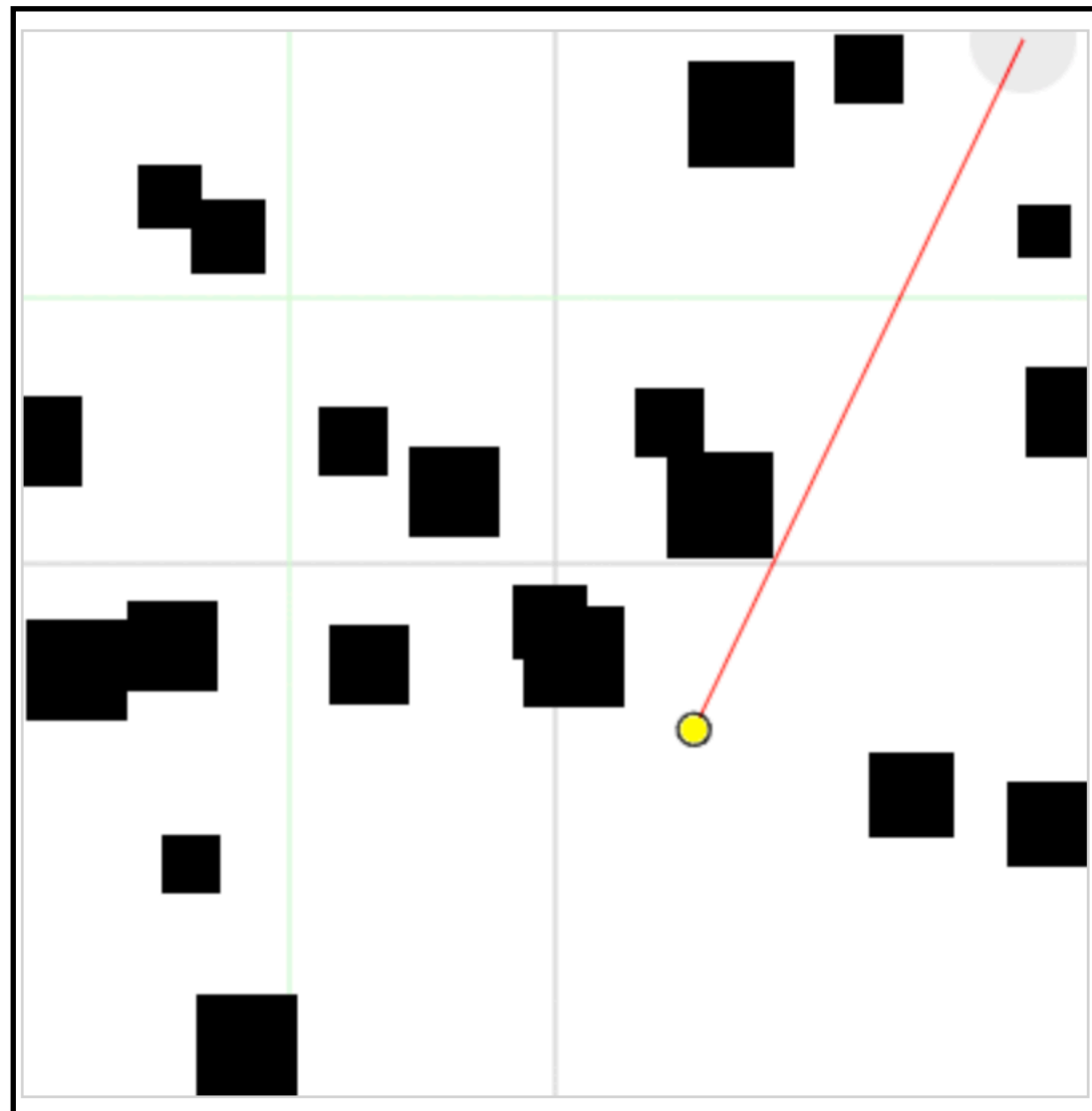
RRT
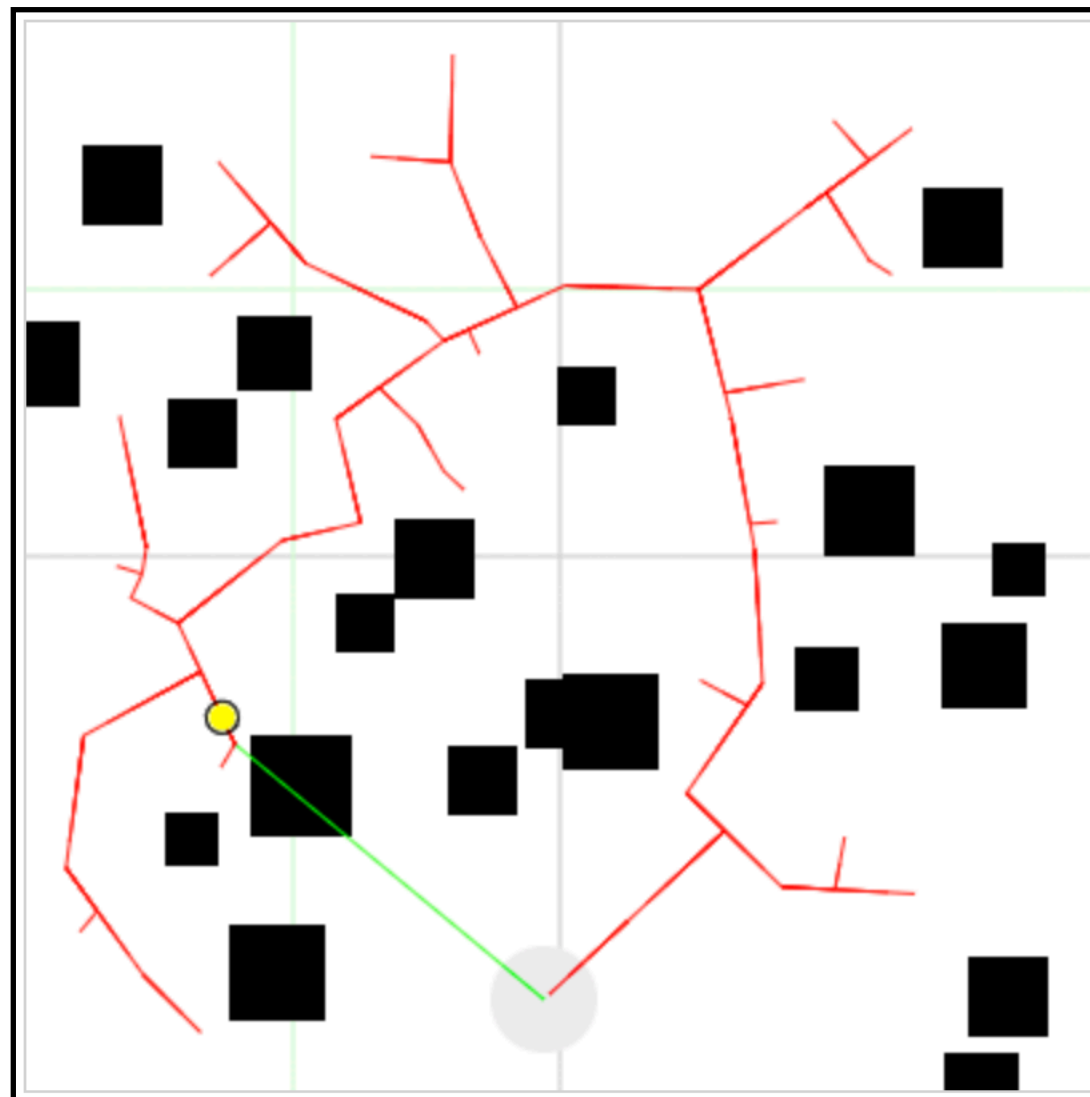
RRT*
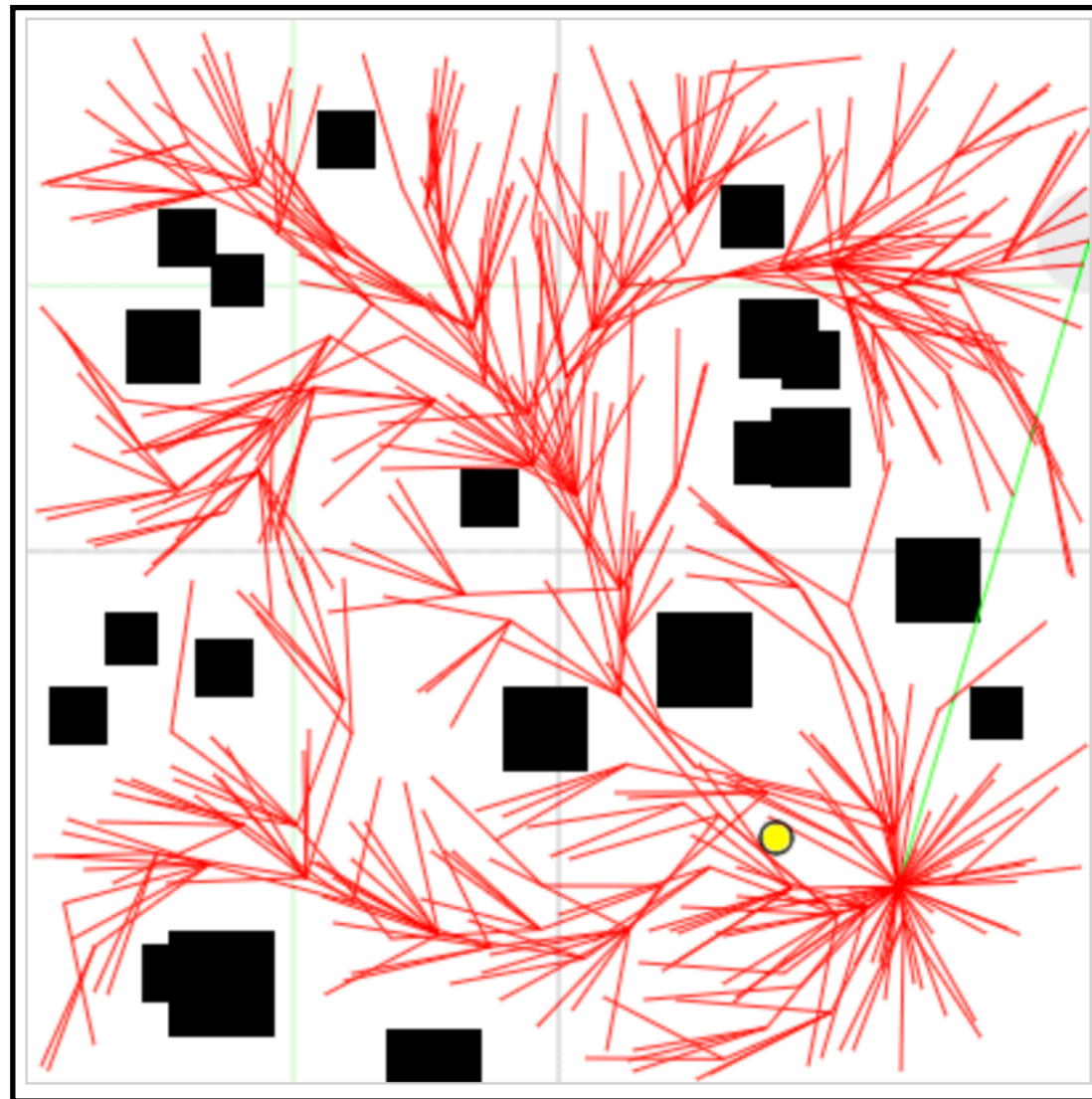
A*
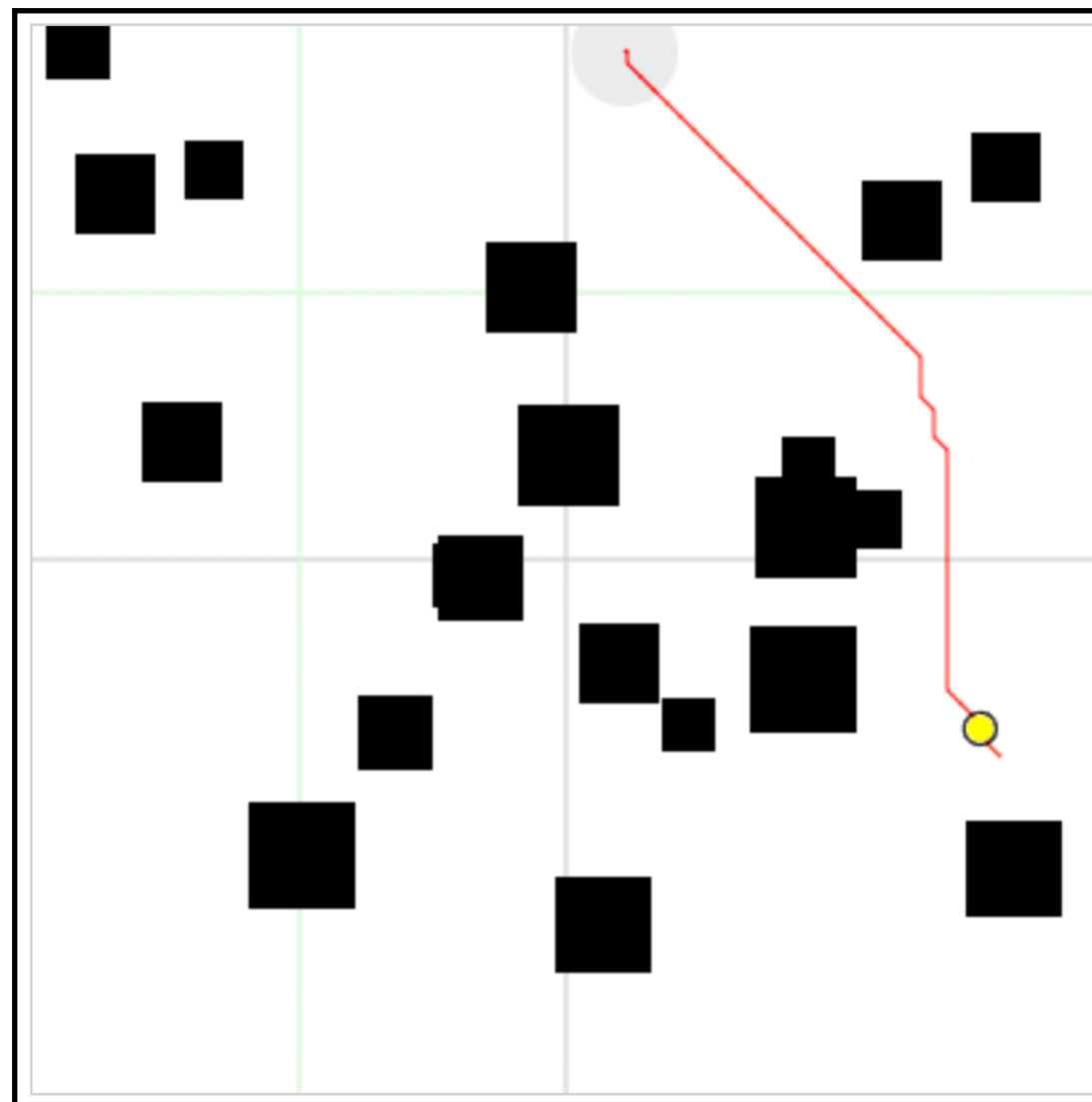
Overall Design

Ui

Engine

Cycle

path planning method

run path planning for each orbiter

run physics

each for collision

orbiter cycle

check if all orbiter reached

Yes

No

re-initialize map
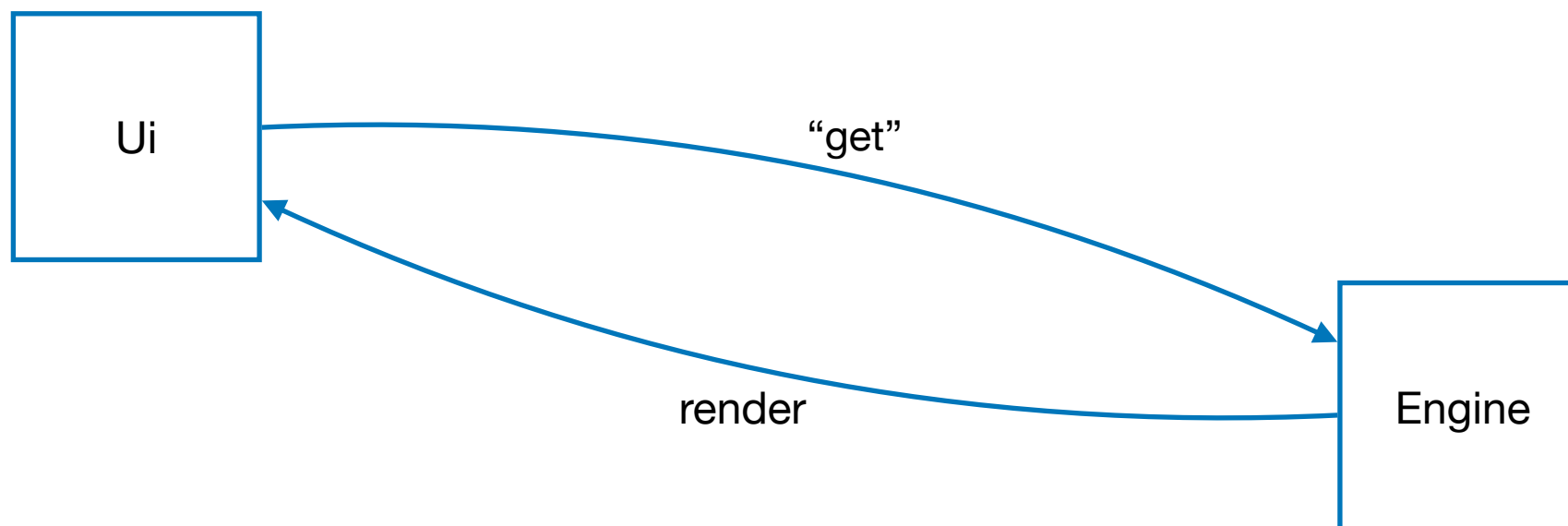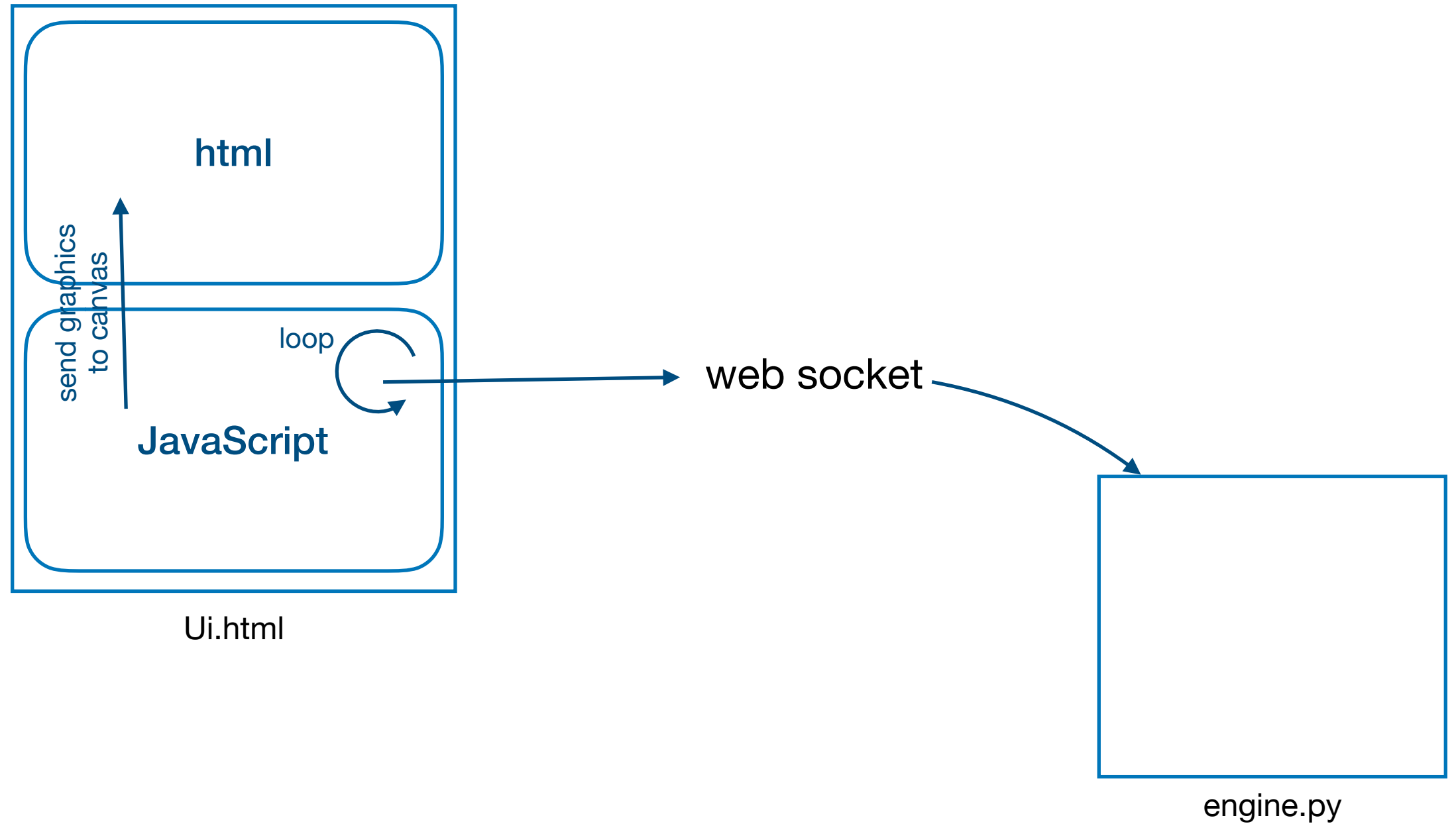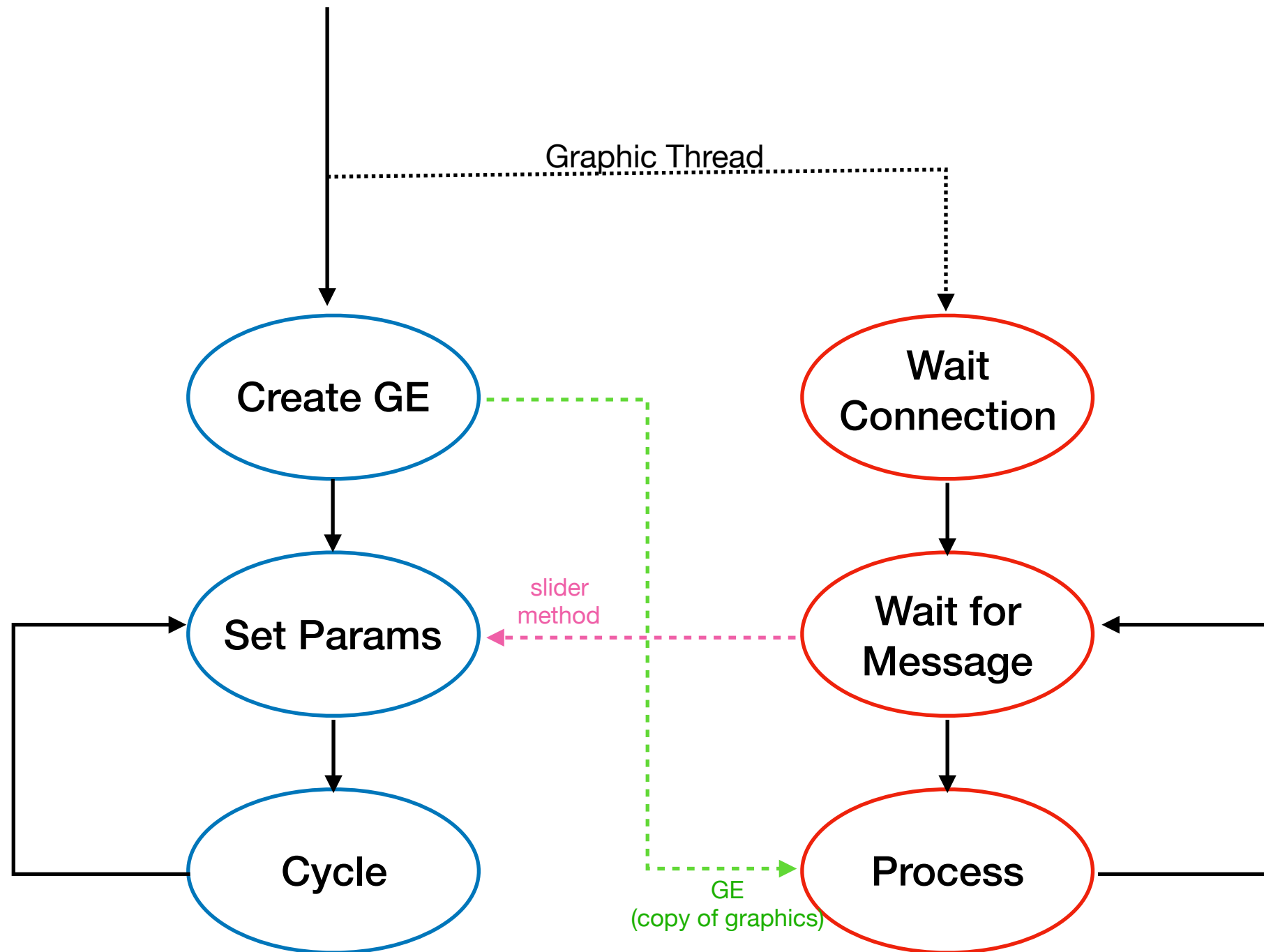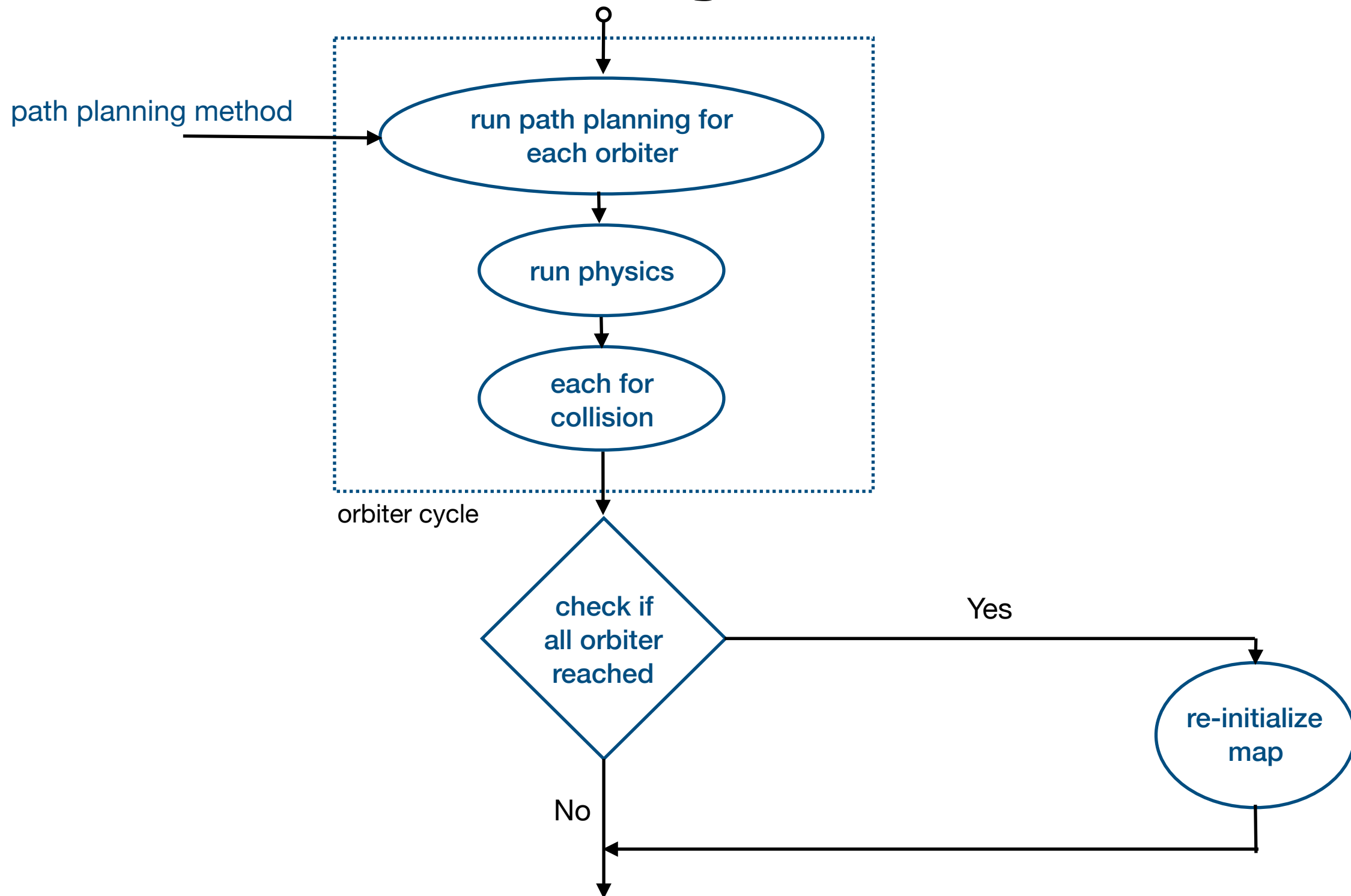
RRT
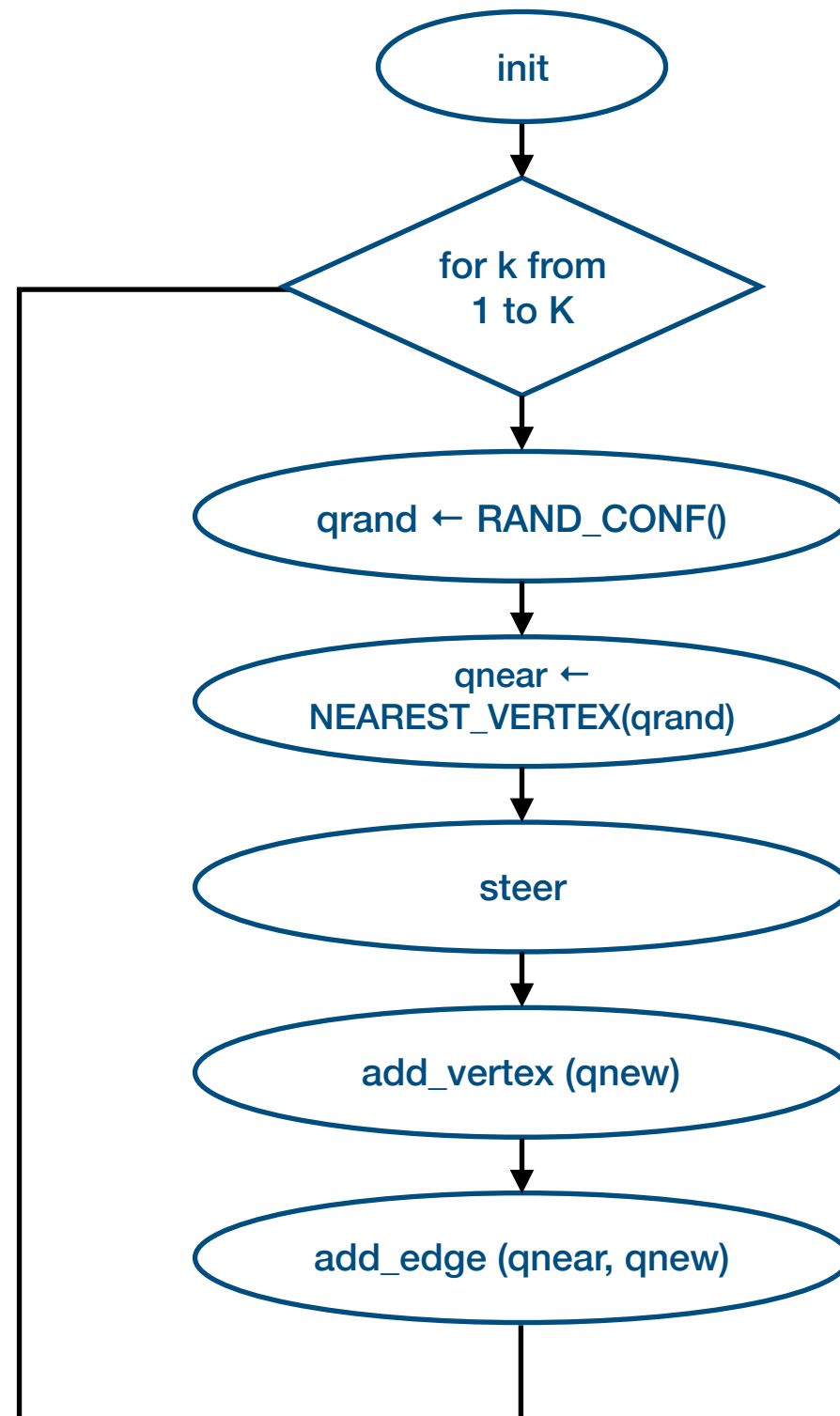
A*

7	6	5	6	7	8	9	10	11		19	20	21	22
6	5	4	5	6	7	8	9	10		18	19	20	21
5	4	3	4	5	6	7	8	9		17	18	19	20
4	3	2	3	4	5	6	7	8		16	17	18	19
3	2	1	2	3	4	5	6	7		15	16	17	18
2	1	0	1	2	3	4	5	6		14	15	16	17
3	2	1	2	3	4	5	6	7		13	14	15	16
4	3	2	3	4	5	6	7	8		12	13	14	15
5	4	3	4	5	6	7	8	9	10	11	12	13	14
6	5	4	5	6	7	8	9	10	11	12	13	14	15

Results

Sample Size	10		20		30		40	
Method	average frame	success rate	average frame	success rate	average frame	success rate	average frame	success rate
Simple	**48**	58%	**47**	26%	**29**	30%	**13**	16%
RRT	123	**100%**	135	**100%**	149	**100%**	137	**91%**
RRT*	77	75%	62	76%	61	38%	55	45%
A*	77	41%	74	46%	47	25%	36	20%

- RTT: most accurate approach

- Simple: fastest approach