

Link to github: <https://github.com/Darkat-X/Rutgers-CS428-523-Social-Force>

Links to videos:

Part1: <https://www.youtube.com/watch?v=De91X7eJXwU>

Part2:

Pursue and Evade: https://www.youtube.com/watch?v=7RXhgQ_DSqw

Growing Spiral: <https://www.youtube.com/watch?v=u337NRSqs54>

Leader Following: <https://www.youtube.com/watch?v=xK3Po3BUnCw>

Queueing: https://www.youtube.com/watch?v=RpMiH_gdiOE

Fundamental Social Force Components:

Part 1:

Social Force = Goal Force + Agent Force + Wall Force

Agent Force = Proximity Force + Repulsion Force + Sliding Friction

Wall Force = Proximity Force + Repulsion Force + Sliding Friction

Part 2:

Pursue and Evade:

Pursuer Social Force = Goal Force From Pursuer to Evader + Agent Force + Wall Force

Evader Social Force = - Goal Force From Evader to Pursuer + Agent Force + Wall Force

If Evader is too close to the Wall:

Evader Social Force += The Tangential Force + Goal Force

So that if Evader approaches the corner, they will spin away (The center of spin should be Vector3.zero)

Growing Spiral:

Social Force = The Tangential Force + Goal Force + Agent Force + Wall Force

After a period of time:

Social Force = The Tangential Force - Goal Force + Agent Force + Wall Force

Leader Following:

Leader Social Force = Goal Force + Agent Force + Wall Force

Follower Social Force = Goal Force to the Leader + Agent Force + Wall Force

If Follower may block the way of leader:

Follower Social Force += The Tangential Force + Goal Force

The direction of the tangent is dependent on the angle

Queueing:

Social Force = Goal Force to their queue position + Agent Force + Wall Force

The queue position is the position that is a little behind the position that is next one agent closer to the destination than this agent.

The queue order is dependent on the distance from agent to the destination, after a period of time, the order will not change any more. So that the queue will form a line that goes to the destination and will not change the shape of line after a period of time.

Hints:

1. There is a private int, named "Mode" in Agent.cs. By changing the value of "Mode", you can choose different modes. You can change it in Agent script, in start().

```
/* Mode  
1 = Pursue and Evade  
2 = Growing Spiral  
3 = Leader Following  
4 = Queueing  
other number = Normal Mode for Part one */
```

2. FreeCam Keys:

- wasd / arrows - movement
- q/e - up/down (local space)
- r/f - up/down (world space)
- pageup/pagedown - up/down (world space)
- hold shift - enable fast movement mode
- right mouse - enable free look
- mouse - free look / rotation