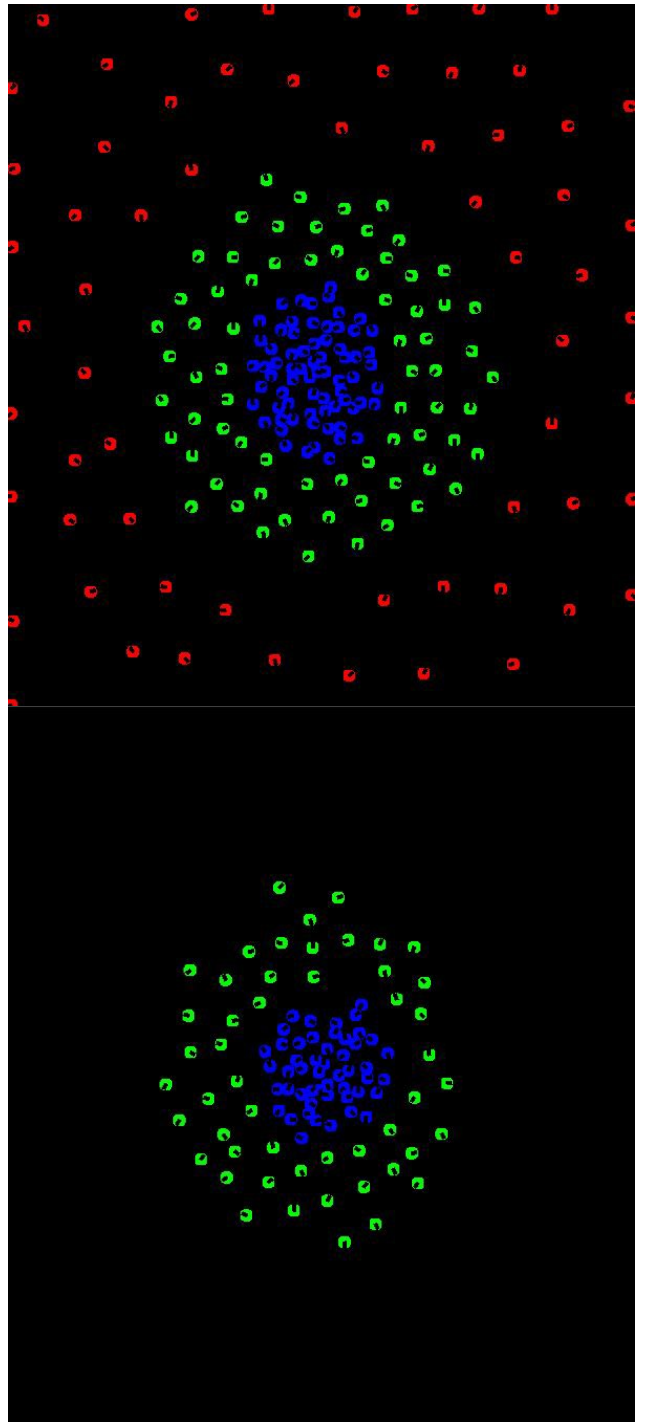
Project 3

Segregation based on brazil nut effect

Due Nov 15 (noon)

Goal

- Sort a group of robots in concentric shells
  - 1,2 or 3 different shells
    - 100 robots for 1 shell (assigned_id ==0)
    - 100 robots for 2 shells (50/50) (assigned_id ==0,1)
    - 150 robots for 3 shells (50/50/50) (assigned_id ==0,1,2)
- Work must be your own
  - see academic honesty policy in lab2



Details

- Should be centered in the arena
- In init_pose.py
    - Robots will be arbitrarily placed in environment (may differ from what I give you as an example)
    - Robots will be given an assigned id of 0, 1, or 2
    - “Swarm_Size” in coachswarm.conf will match the assigned ids
- Robots with lower assigned id should have smaller radius
- Display color based on its radius (should not change)

Submit the following:

- Image of
  - 1 radius sorting (assigned_id ==0)
  - 2 radius sorting (assigned_id ==0,1)
  - 3 radius sorting (assigned_id ==0,1,2)
- Well commented usr_code.py

Hints

- Robot motion / sensing hint
  1. Robots sense
  2. Robots turn to desired angle (rotate for a certain amount of time)
  3. Robots move forward for certain amount of time
  4. Goto 1.
- Break problem into sub problems.
  1. Have 1 robot move to light (arena center)
  2. Have many robots move to light
  3. Have 2 robots move away from each other if closer than R
  4. Have many robots move away from each other
  5. Have one robot move randomly
  6. Put all behaviors together!