**RoboNav Implementation Plan**

1. Set robot to face straight when the robot is placed down.
2. Check all directions and update map.
3. Move to blue square (prioritise the ones in front)
   * If green square is there then move there and stop
4. Face straight again
5. Repeat from step 2

Check all directions

* Update map with front direction.
* Pan camera to the left by 45 degrees. Track the blob in that direction and orient the robot towards it (set\_speed()). Update map
* Repeat once more to face completely to the left. Update map
* Do the opposite until you reach completely to the right, updating the map for the diagonal right and right.

Updating the map

* Initialise a local map, global map and a direction tracker.
* Local map will be a list of lists of lists. List containing a ‘array’ of 2 rows and 3 columns. (L – Left, DL – Diagonal Left, F – Front, DR – Diagonal Right, R - Right)

|  |  |  |
| --- | --- | --- |
| DL | F | DR |
| L | ROBOT | R |

* Global map will be a list of lists – 6 rows and 4 columns (like grid)
* Direction tracker will be a list
  + Contains all the directions in which the robot moved in the grid.
* Once an edge is found, the global map will be populated with the local map data using the direction tracker and it will be updated backwards (starting from current position to start position)
* Once global map is populated, only use global map.
* If reached deadend, update deadend as red marker and move robot back one step.

Move to square

* If green square available, specifically move to green using the following steps. Otherwise move to blue.
* If square is front or diagonals, just pan camera and track blob
* Orient robot using set\_speed() while tracking blob (to ensure blob is centered when pan angle becomes 0)
* If square is right or left, do this one more time (turn camera, turn body twice)
* Record blob.cy() of biggest blob (of the right color ofc).
* Move straight while tracking the biggest blob (using PID if possible) while blob.cy() is increasing. The moment blob.cy() decreases, stop moving because you have reached the next grid square.

**Random search**

1. Track and move to blue
2. If no blue, pan camera head until blue found and do 1
3. If still no blue, rotate entire robot and do 1