



Cozmo Dream House

Nora T. Everly



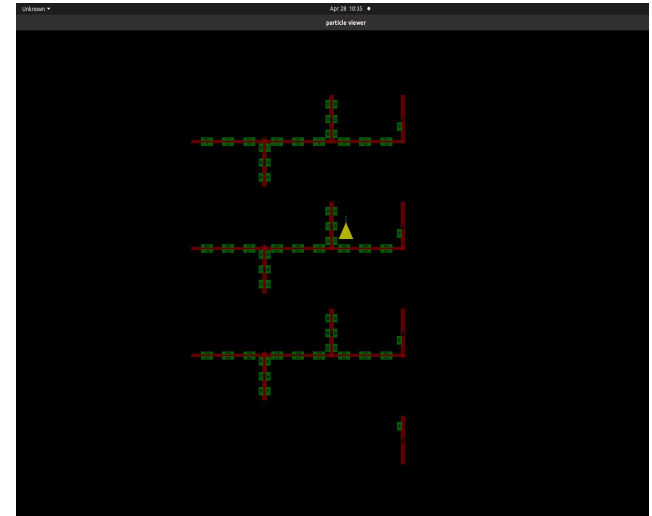
Problem to Solve

Navigation through the Dream House:

- Navigate to specific room
- Give tour of dream house
- Recognize portraits on the wall and report who is in what room

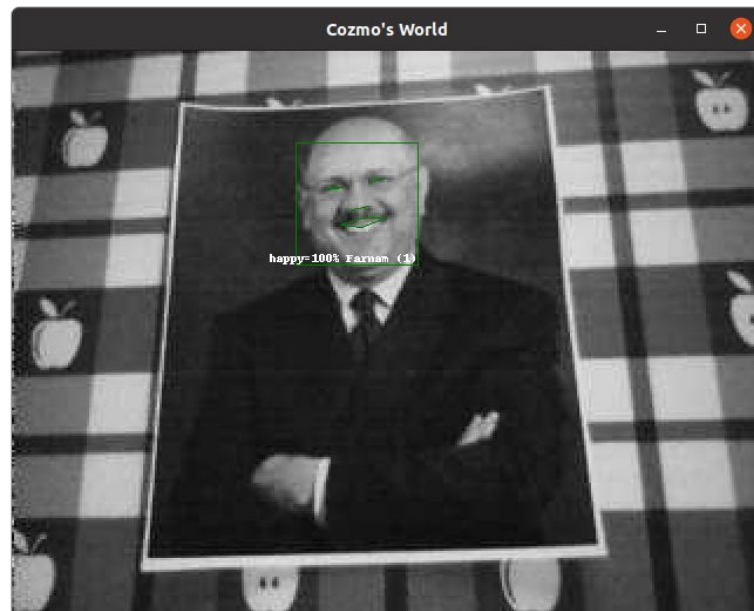
Approach to House Navigation

- Used particle filter to localize Cozmo
- Created Roomobjs in the world and used the corner points to determine what room Cozmo is in
- Roomobjs store adjacent rooms and doorways so used those to navigate through the house
- Had to keep track of floors to determine when to use the elevator



Portrait Recognition

- Used built-in Cozmo facial recognition
 - Can store up to 10 faces
- When he sees a face, he can localize with the particle filter to determine where that portrait is





Results

- Cozmo can navigate throughout the Dream House (all floors)
 - Had some problems with the existing particle filter representation of Dream House so had to adjust the room dimension parameters so that Cozmo would not get lost
- Cozmo can “bring visitor” to specified room
 - One remaining issue is that Cozmo does not like some doorways. Could not figure out why he could not pass through certain doorways despite them being in the particle filter and world map.
- Cozmo can recognize portraits on wall



Future Work

- Add obstacles to Dream House for Cozmo to navigate around
- Have obstacles block doorways and elevator -> Cozmo either has to find other path or move obstacles



Link to Demos