

Brian Day

Assignment 2

1) Hierarchical Organization is horizontal decomposition which requires all slices to run and accomplishes steps in sequence. This makes it hard to change any particular piece afterwards.

Biology and reactive architectures tend to be more Vertical. Which has levels in which many can be active at once. The higher the level the more specific the task is therefore it easy to add more layers and have them all work.

2a) Subsumption architecture has layers of behaviors and has relationships to control what is running. Modules are grouped into layers of competence and modules in a higher lever can override the behavior of the next lower level. This can either be done through substituting input into a module or turning off the output of a module. There is no internal state.

Potential fields are either a primitive or constructed of primitive behaviors in which can be summed together by using vector summation. A Pfield is easier to visualize and easier to build up and teak values.

2b)Overall in this class the minimal approach to each of the labs seemed to be more of a subsumption type of architecture. In the later labs like the wall following we used more of a pfield type architecture.

3a)Based on the description given of the avoid obstacle robot if the robot started too far from an obstacle in any direction it would not move. There is no potential field given to tell what direction it will follow if all sensors read the same. If it was close enough to an obstacle it would slowly move away from the obstacle until it got far enough away in which it would just stop moving. It would only continue to move if it found another obstacle before its potential fields summed to 0. In that case it would start to move away from that obstacle as well.

3b) If a sensor breaks and continually returns the same value the robot would have a tendency to favor moving in one direction. Depending on the value of X it could either have a tendency to move toward or away from the side that the sensor is broken on. However since the large quantity of sensors around the object it would never crash into an object since the other sensors would still be contributing a larger value into the field.