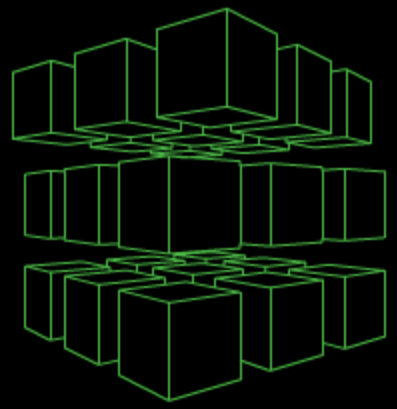


Hardware/Software

Team 8

Hardware Strategy (Initial)

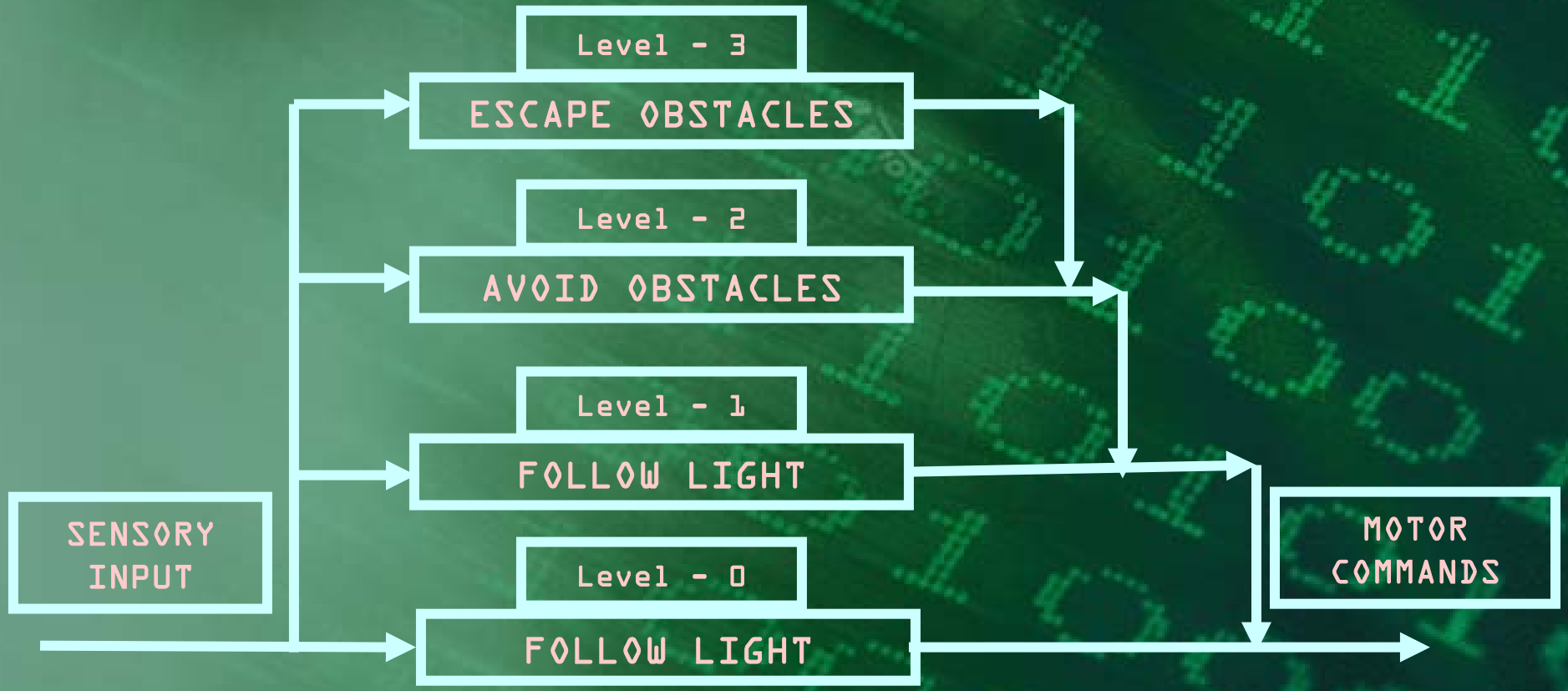
- 2-Motor Differential Drive
  - 4 Equal-sized wheels
  - One motor controls left, one controls right
  - 4-Wheel Drive
  - 3:1 Gear Reduction
- Dynamic Sensing
  - Sweep Sensors across robot's field of view
  - Buckets and Lights
    - Use Sensors mounted on a pole attached to a Servo for high sweep
  - Rocks and Walls
    - Use ET Sensor mounted on 2nd (upside-down) Servo for low sweep
    - Or use Switches to create bumpers

Hardware Strategy (Final)

- 2-Motor Differential Drive
  - 4 Equal-sized wheels
  - One motor controls left, one controls right
  - 2-Wheel Drive
  - 5:1 Gear Reduction
- Dynamic Sensing
  - Mount sensors statically on robot chassis
  - Buckets and Lights
    - Use Sensors mounted on a pole and attached to ~~a Servo for high sweep~~ robot chassis
  - Rocks and Walls
    - ~~Use ET Sensor mounted on 2nd (upside-down) Servo for low sweep~~
    - ~~Or~~ use Switches to create bumpers

Software Design

- Reactive Paradigm Approach - Subsumption and behavior fusion
- Four Behaviors



Software Strategy

1) Escape Obstacles Behavior

- To escape large obstacles (buckets)
- Takes input from range finders
- Threshold value: 45
- LEFT_RANGE_FINDER > 45 - Obstacle on Left
- RIGHT_RANGE_FINDER > 45 - Obstacle on Right
- IF BOTH RANGE FINDERS > 45 - Obstacles either on both sides or exactly ahead of the robot.

2) Avoid Obstacles Behavior

- To avoid rocks in the arena
- Takes input from bumpers/switches
- Similar to Escape obstacles behavior in strategy

Software Strategy Contd…

3) Follow Light Behavior

- To search for and go to light source and follow it until it touches that.
- Takes input from the four light sensors installed in the front and the back
- Goes towards the strongest sensor.
- Tolerance of 17%

4) Wander Behavior (rarely used)

- No input
- This is the lowest behavior, so will be active when no other behavior is active.
- When no light is found, this makes the robot to move

Improvements needed

- Behavior fusion has to improve
- Infinite loop of any two behaviors has to be avoided in a better manner
- Utilization of range finders must be more efficient.

Loading...

Questions ?

Team 8