Robotics Project 1
Sensing and Movement

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Overview

- Introduction
- Robot Design
- Robot Code
- Team Organization
- Questions
Robot Design

- Body
- Suspension
- Gearing
- Motor Mount
- Sensor Mount
Tank!
Chassis
Cradle
Suspension
Gearing (2)
Motor Mount
Sensor Mount: CMUcam
Sensor Mount: IR Sensors

reflectance sensors
Sensor Mount: Break Beam
Robot Code

- Functional Modules
  - Main
    - <Code Sample>
void main()
{
    init_camera(); //initialize the CMU camera
    clamp_camera_yuv(); //set the camera white balance
    alloff(); //all motors off at the beginning.
    while(!start_button()); //press start to start off the robot.

    //enable encoder channels before using them.
    enable_encoder(RIGHT_ENCODER);
    enable_encoder(LEFT_ENCODER);

    start_off();
    while(!stop_button())
    {
        //yellow color is not found.
        if (stop_flag == 1)
            break;
        track_color(); //detect color and do some actions
    }
    alloff(); //turn off all motors
}
Robot Code

- Functional Modules (cont.)
  - Detect Color
  - Sensing Black Tape
  - Going Straight
    - <Code Sample>
void go_straight()
{
    int pid;
    go(RIGHT_INIT_SPEED, LEFT_INIT_SPEED);
    sleep(1.0);
    pid = start_process(check_tape());
    while(black_tape_found == 0)
    {
        msleep(1L);
    }
    //black tape is found. Reset the flag to be false.
    black_tape_found = 0;
    kill_process(pid);
    //align the robot with the black tape found.
    align();
}
Robot Code

- Functional Modules (cont.)
  - Turning
  - Alignment
- Algorithms
- Data Structures
Team Organization

- Overview
  - Personnel Division
  - Leadership
Team Organization (2)

- Evaluation:
  - Pros
    - Democracy
    - Teamwork Attitude
  - Cons
    - Workload Balance (no correction mechanism)
    - Availability of Equipment
    - Scheduling of Time
Team Organization (3)

- Revision Plan:
  - Division of Work
  - Time Organization
Conclusion

- Reorganization task assignment
- Plan more time to deal with hardware
- Not a bad job
Questions?