ECE 100 - ITP

Lecture 8

Dr. Alexander J. Flueck
Electrical and Computer Engineering
Illinois Institute of Technology

flueck@iit.edu
http://www.ece.iit.edu/~flueck/ece100

Questions?

- Round 1 Presentation Scores and Teamwork Contribution Scores
  - 30+ students in danger of receiving 0 points for Presentation
  - 30+ students in danger of receiving 0 points for Teamwork
  - Must enter via the ECE 100 web site by 5 PM on Mon, Oct 22
- Sample Round 2 Specifications posted
- Need to strengthen the technical information in your lab reports
  - Diagrams
  - Flowcharts
  - Tables
- Pre-registration/Advising
  - www.ece.iit.edu/~advising
  - Sign up for advising appointment via Genbook
  - my.iit.edu - Academics - DegreeWorks

Round 1 Runoff Teams

Team	Members	Section	History
1	Estrada, Ruben Hummel, Alexander Schnepper, Cory	01	40s, 23s
2	Labovic, Nikoleta Mahajan, Karan	02	16s, 15s
3	Park, Durand S. Sniezek, Konrad Unverzagt, Robert M.	04	57s, 38s
4	Pergrossi, Gregary M. Syed, Saaduzzaman Wang, Hongyang	04	45s, 25s

Round 1 Runoff Results

Team	Strategy	History	Pred	Tr1	Tr2
1	Single light sensor, 40:40(Right) and 24:40(Left), 65% Using Right hand rule	40s, 23s	5	27.2s	56.9
2	Not using Normalize L:on/R:off, 24:24, 100%	16s, 15s	35	17.3s	17.4s
3	Single light sensor on the right side 8:40(left)24:40 (right), 100% motor	57s, 38s	3	0	0
4	Right edge follower, 24:24, Front wheel drive,	45s, 25s	8	11/15	4/15

Round 2

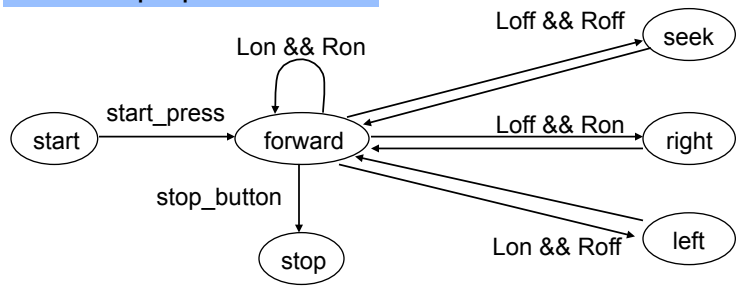
- Sample specifications are posted on the ECE 100 web site
- Mint Shuffle: two robot game of puck pushing
- Lab this week: Introduction to Mint Shuffle
  - Need two alternative solutions (first flowcharts, then code) for following a tape path (e.g., both sensors on, both sensors off).
  - Slightly modified "tape path following" code should be able to push a single puck into scoring position.
- Lab next week: Performance Tuning
  - Need two alternative solutions (first flowcharts, then code) for pushing at least two pucks into scoring position.
  - Modified "tape path following" code (with simple state machine) should be able to push at least two pucks into scoring position.
- See Proposal and Milestone Grading Guides online

State Machine

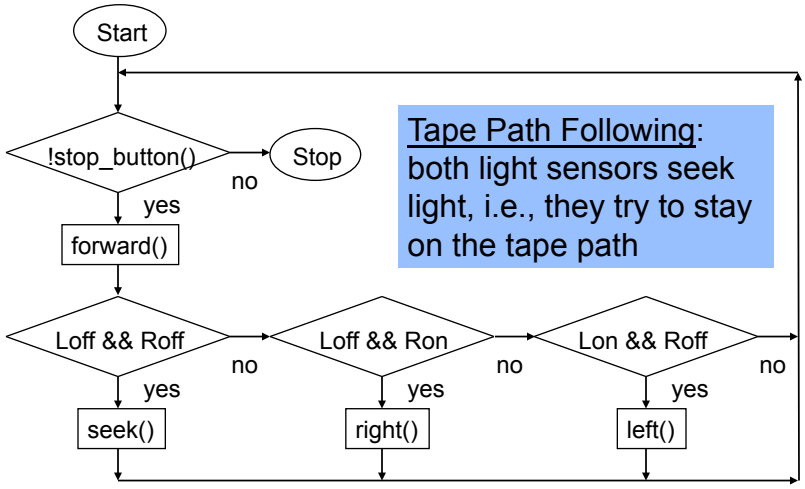
- What states (or stages) does your robot need to go through?
  - Find tape
  - Follow tape (push puck)
  - Find goal (score puck)
  - Re-orient for next tape, and repeat
- How are these states connected?
  - Can you jump from any state to any other state?

Converting "Solution into Code" - State Machine

Tape Path Following: both light sensors seek light, i.e., they try to stay on the tape path



Example Flowchart



Tape Path Following: both light sensors seek light, i.e., they try to stay on the tape path

State Machine Implementation

```
integer INIT=0, FIND1=1, FOLLOW1=2, GOAL1=3, FIND2=4, FOLLOW2=5, GOAL2=6;
integer state=0;

start_press();
while (timer() < MAXTIME) {
    if (state==INIT) {
        // initialize robot: calibrate, orient, etc.
        forward();
        state=FIND1;
    } else if (state==FIND1) {
        // test for tape
        if (analog(LEYE) < LTHR && analog(REYE) < RTHR) {
            state=FOLLOW1;
        }
    } else if (state==FOLLOW1) {
    …
}
```