# Embedded Systems International

## **Project Evaluation**

Team Name and	٦
Team Members:	
Lab Section:	
TA Signature and	
Date:	

1. Print this form for TA use during Project demonstration, **and add any application-specific items from your <u>Proposal</u>.** 

2. Have a copy of your final Proposal available for the TA before/during the demonstration.

3. Be prepared to have a spokesperson for the team provide a brief <u>one-minute</u> elevator-pitch style overview of your embedded application before the demonstration begins. This will be evaluated as part of the Team's collaboration and professionalism score

4. We are interested in updating our project videos to share with future teams. Please consider recording your elevator-pitch overview and some demonstration highlights (before, during or after the evaluation run; if during, it should not interfere with the evaluation). Bonus points are available.

5. The demonstration time limit is 20 minutes. TAs have full discretion to end demonstrations at any time.

## **Demonstration Checklist (150 points)**

## Demo setup and alignment with proposed behavior:

Mapping of functional requirements to platform components and capabilities	
Scoring: Level of integration of each item in system	
2- Used effectively in system and works smoothly	
1- Used in a limited way	
0- Component or capability not used	Points (12)
a. Open Interface and iRobot sensors	
b. Interrupts	
c. Analog to digital conversion (e.g., IR sensor operation)	
d. Input capture (e.g., Ping sensor operation)	
e. Pulse width modulation (e.g., servo operation)	
f. UART/WiFi communication	
TOTAL POINTS	

lest field elements and rules	
Scoring: Extent to which each item is used and responded to in the test field	
2- Defined for the application and responded to appropriately	
1- Not well-defined for application	
0- Not used or demonstrated	Points
	(10)
	(10)
a. Tall objects: The robot should not make any contact with these objects.*	
b. Short objects: The robot can make slight contact with these objects but should move around	
them if detected through the bump sensors.*	
c. Boundaries: The robot should not cross a test field boundary.	
,	
d. Holes: The robot must not fall into any holes.	
e. Dillars (destination zone): The robot should not make any contact with the nillars *	
e. Finals (destination zone). The fobot should not make any contact with the pinals.	
<u>* Note:</u> Response to objects may be defined in Project Proposal (TAs approval of appropriateness)	
TOTAL POINTS	

### **Demo Overall Performance:**

Overall Performance	Points (128)
a. <b>Communication and control (Part I):</b> Mission plan and execution by the team during the demonstration: ( <b>34 points</b> )	
<b>32-34 points:</b> Coordination and communication well-organized; sensor information and commands handled appropriately; able to adapt to issues and problems; strong effort by team; partial credit for minor shortcomings	
<ul><li>29-31 points: Some key shortcomings in plan, execution or effort</li><li>0 points: Communication with Cybot does not work.</li></ul>	
b. <b>Movement and navigation in the test field (Part II):</b> Mission plan and execution by the team during the demonstration: (60 points)	
<ul> <li>60 points: Approach to navigation well-designed; robot uses commands and information to make progress toward a goal; robot responds appropriately to objects in test field; robot arrives within 1 tile of destination zone (close to completion of goal**); able to adapt to issues and problems; strong effort by team;</li> <li>45 points: Some improvements needed in plan, execution or effort; robot; robot does not arrive</li> </ul>	
<b>30 points:</b> Major improvements needed in plan, execution or effort; robot makes little progress toward the destination (toward completion of goal**); <u>robot does not arrive within 1 tile of destination</u>	
<b>Note 1:</b> At 20 minutes, TA will move Cybot to within 1 tile of destination (close to goal completion) zone: <b>-1pt for each minute over 20.</b> <u>At 15 minutes,</u> TA will give team option to have Cybot moved, resulting in 15 or 30 point deduction, based on your progress toward the destination (goal**).	
c. <b>Positioning in destination zone (or completion of application objectives**) (Part III):</b> Mission plan and execution by the team during the demonstration: ( <b>30 points</b> )	
<ul> <li>22-30 points: Approach to positioning in well-designed; robot positions itself within the destination zone; strong effort by team; 75% to all of robot inside of zone</li> <li>15-21 points: Some key shortcomings in plan, execution or effort; 50% - 75% of robot inside of zone</li> <li>0-14 points: Major improvements needed in plan, execution or effort; small fraction of robot inside of zone</li> </ul>	
<b>** Note 2</b> : Application completion (partial) criteria defined in Proposal allowed (with TA approval).	
d. <u>Team collaboration and professionalism</u> : (4 points) (4: very good, 3: good, 1: improvement needed, 0: none) (includes team spokesperson before/during demonstration)	
TOTAL POINTS	

POINTS FOR PROJECT REQUIREMENTS	Points
	(150)
TOTAL POINTS	

### **Bonus Points and Deductions Scorecard**

Add any of your team's application-specific items specified in your Proposal to the tables below.

Bonus Points ( <u>maximum of 30 points</u> )		
Item (Feature)	Maximum	Points
Realism of demo prototype: For example, realism of Application Story mapping to		
the Test Field, Graphical User interface realistically supports Application Story,	5	
other novel ideas to increase demo realism.		
Autonomous navigation: Successfully navigating the test field autonomously	10	
Graphical user interface: Robustness and Clarity for User sending commands	5	
Graphical user interface: Clarity and detail in displaying of test field state	5	
Sound: Use of Cybot sound	2	
Early Demo: Demonstrating before dead week (Also 30 minutes given for demo)	5	
Video: Elevator-pitch overview and demonstration highlights (1 minute max)	2	
Additional functionality beyond basic requirements		
Additional components beyond basic requirements		
Other features specific to your application		
TOTAL BONUS POINTS	30	

Point Deductions			
Item (Incident)	Per Incident	Maximum	Points
Leaving the test field or crossing a boundary	-5	-10	
Falling into a hole	-10	-20	
Coming into light contact with tall object	-5	-30	
Repeatedly coming into light contact with short object	-2	-10	
Improper positioning or light contact in the destination zone	-2	-10	
Program crash	-5	-10	
Exceeding time limit for demonstration (per minute)	-1	-5	
Disregard for meaning of test field object	-30	-60	
Other incidents specific to your application			
TOTAL POINT DEDUCTIONS			

### **Total Points**

TOTAL POINTS = REQUIREMENTS + BONUS – DEDUCTIONS	
(maximum of 180 points)	