



## **Robot Games Ireland Tournament**

**Friday 1<sup>st</sup> May 2015**

**Radisson Blu Hotel, Galway City**

### **2015 Line Follower Tournament Rules V1.1**

**(Updates are shown in red)**

#### **1. Definition of the Line Follower**

##### **1.1. Definition**

A robot line follower must autonomously follow **all** parts of the defined line in whatever course it is competing in.

Robots may enter **either or both** of the following line following competitions but can only win one of them:

##### **a. GP Competition**

- This has a simple line circuit course without any difficult bends
- See the 'Line Follower GP Course 2015' jpeg in Appendix 1

##### **b. F1 Competition**

- This has a difficult line circuit course with many difficult bends
- See the 'Line Follower F1 Course 2015' jpeg in Appendix 1

**If a robot enters both and wins both then they will be deemed F1 winners and the 2<sup>nd</sup> place GP winner will be deemed GP winner.**

#### **2. Requirements for Robots**

##### **2.1. General Robot Specifications**

- a) A robot line follower must be designed in such a way that it can successfully follow the specified line on the course in use in the competition.
- b) Any robot that loses the line course must reacquire the line at the point where it was lost, or at any earlier (e.g. already traversed) point.**

- c) **A robot that wanders off of the arena surface will be disqualified. A robot shall be deemed to have left the arena when any wheel, leg, or track has moved completely off the arena surface.**
- d) The total mass of a robot at the start of a match must be under 500g.
- e) All robots must be autonomous. Any control mechanisms can be employed, as long as all components are contained within the robot and the mechanism does not interact with an external control system (human, machine, or otherwise).
- f) The robot gets a number for registration purposes. Display this number on your robot to allow spectators and officials to identify your robot.
- g) All robots should use the same motors (RVFM 1:120 Inline Motor & Gearbox) and control board (GENIE E18) similar to those used in the t4 prototype Mini Sumo Robot introduced during in-service 2012/2013. This rule is to ensure a financial level playing pitch for this year. For example, these can be purchased from Rapid Electronics here:
- <http://www.rapidonline.com/Electrical-Power/120-1-Inline-motor-and-gearbox-81728>
  - <http://www.rapidonline.com/Electronic-Components/Genie-E18-Motor-Kit-13-6016>
- h) Robots may use any wheels, sensors etc. as long as they comply with Rule 2.1 a) & b).

## **2.2. Robot Restrictions**

- a) Motors and control boards other than those described in 2.1 are not allowed.
- b) Parts that could break or damage the competition mat are not allowed.

## **3. Line Follower Racing**

### **3.1. Scoring**

- a) One race round shall consist of a maximum of 2 runs, within a maximum time of 5 minutes, unless extended by the referee.
- b) The best time of the two runs will be recorded as the robot's time for that round.
- c) Robots will have the opportunity to compete in a number of rounds depending on the number of entries and the time available. The organisers will endeavour to let entrants know how many rounds there will be in advance of the tournament.
- d) The fastest robots after rounds are completed will be entered into quarter or semi-finals depending again on numbers of entries and time available.

## **4. Start, Stop, End a Race**

### **4.1. Line Follower Placing**

Upon the referee's instructions the operator will place the front of the line follower on either of the two start points on the selected GP or F1 track - see Appendix 1

No part of the line follower can extend past the farthest edge of the black start line in the direction in which the line follower intends to travel before the referee gives the command to go.

### **4.2. Starting a Race**

The following start procedure will be employed for the 2015 tournament:

1. The referee announces that countdown is about to begin and operators prepare to release or activate their line followers. NOTE: The wheels of the line follower may be moving at this point with the operator holding them off the ground so that the robot is not moving forward.
2. The referee counts down using "3, 2, 1, GO!" and operators release or activate their line followers.
3. If a robot obviously begins moving forward before the countdown is complete then that individual referee will restart once with a new countdown.
4. If the same robot obviously activates again before the countdown is complete then that referee informs the head referee and the offending team may lose that round unless the problem can be rectified within the 5 minute round time.

### **4.3. Stop, Restart**

The round stops and restarts when a referee announces so.

### **4.4. Timing a Race**

The referee will time the line follower as it completes one full round from when the go signal was given until the furthest part of the front of the line follower passes the finish line completely.

Automated timing equipment will be used where possible to ensure that timing is as accurate as possible.

Where automated equipment is unavailable a suitable stopwatch will be used.

## **5. Time of Round**

### **5.1. Duration**

Each round will last for a total of 5 minutes maximum, starting and ending upon the referee's command and comprising two timed laps where possible.

### **5.2. Extension**

An extended round, if called for by the referee, shall last for a maximum of 2 minutes.

## **6. Violations**

### **6.1. Violations**

Players performing any of the deeds described in Sections 2.2, 6.2 or 6.3 shall be declared in violation of these rules.

### **6.2. Insults**

A player who utters insulting words to the opponent or to the referees or puts voice devices in a robot to utter insulting words or writes insulting words on the body of a robot, or performs any insulting action, is in violation of these rules.

### **6.3. Minor Violations**

A minor violation is declared if a player:

- a) Enters into the line follower track during the match, except when the player does so to take the robot off the track upon the referee's announcement of a restart.
- b) Performs the following deeds:
  - a. Demands to stop the round without appropriate reasons.
  - b. Takes more than 30 seconds before resuming the round, unless the referee announces a time extension.
  - c. Does or says that which disgraces the fairness of the match.

## **7. Penalties**

### **7.1. Penalties**

- a) Players who violate these rules by performing the deeds described in Sections 2.2 and 6.2 shall have at minimum their best time for that round not counted and at worst may be disqualified from the competition. The head referee will decide on any disqualification with the assistance of the track referee.
- b) Each occasion of the violations described in Sections 6.3 shall be accumulated. Three of these violations may result in their best time for that round not counted and at worst may be disqualified from the competition. The head referee will decide on any disqualification with the assistance of the track referee.
- c) The violations described in Article 6.3 shall be accumulated throughout the full competition.

## **8. Injuries and Accidents during the Round**

### **8.1. Request to Stop the Match**

A player can request to stop the round when he/she is injured or his/her robot had an accident and the round cannot continue. The referee will decide on the outcome in this event.

### **8.2. Time Required to Handle Injury/Accident**

Whether the round should continue in case of injury or accident shall be decided by the individual track referee with assistance from the head referee if necessary. The decision process shall take no longer than five minutes.

## **9. Declaring Objections**

### **9.1. Declaring Objections**

- a) No objections shall be declared against the individual track referees' decisions.
- b) The lead person of a team can present objections to the head referee, before the match is over, if there are any doubts in the exercising of these rules.

## **10. Miscellaneous**

### **10.1. Flexibility of Rules**

- a) As long as the concept and fundamentals of the rules are observed, these rules shall be flexible enough to encompass any reasonable changes in a competition round.
- b) Modifications or abolition of the rules can be made by the local event organisers as long as they are published prior to the event, and are consistently maintained throughout the event.

### **10.2 Liability**

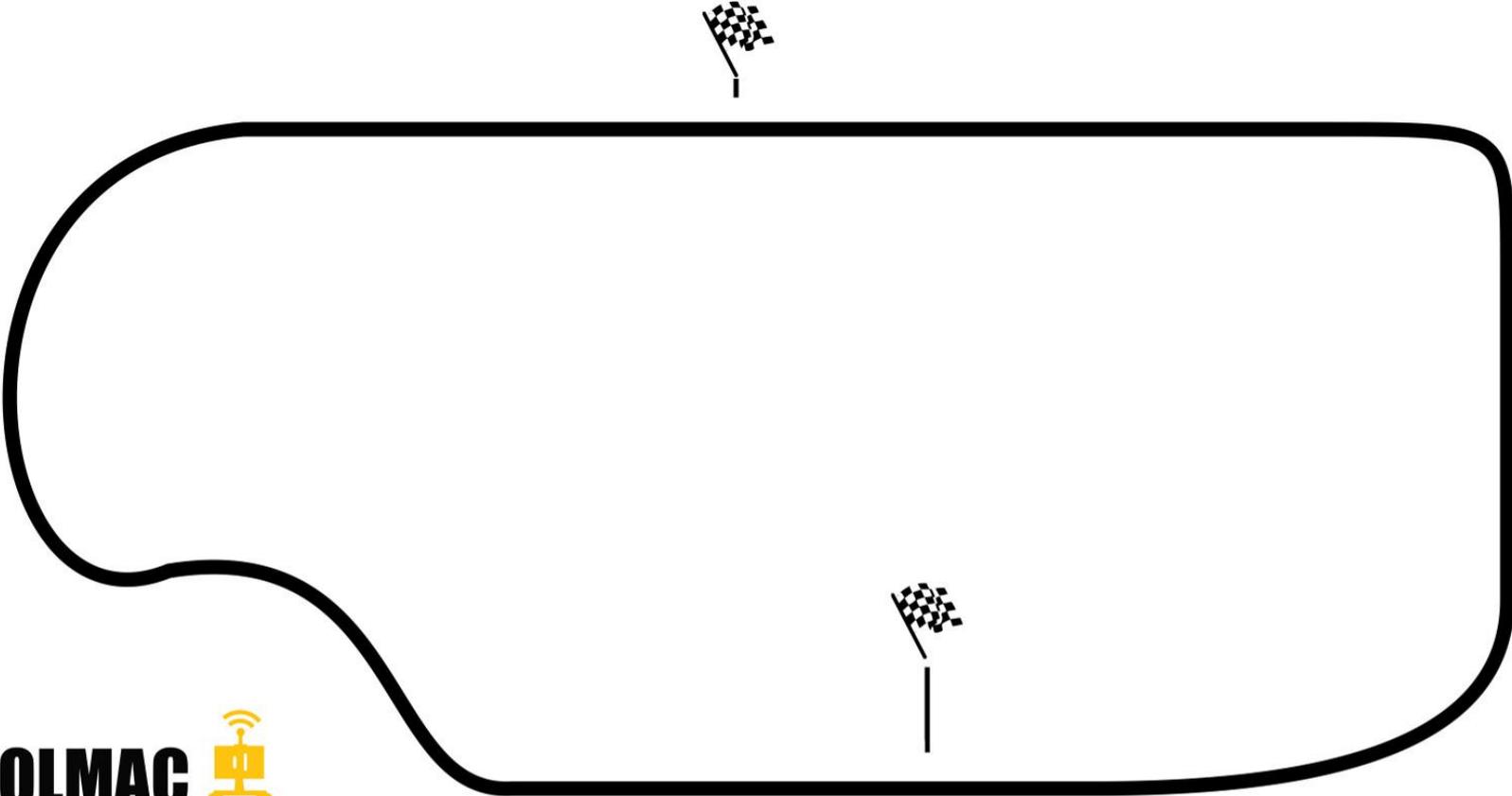
- a) Participating teams, students, teachers and supporters are always responsible for the safety of their robots and are liable for any accidents caused by their team members or their robots.
- b) The organising Committee and the organising team members will never be held responsible or liable for any incidents and / or accidents caused by participating teams or their equipment.

**Please ensure that all team members have read and understood these rules.**

Any queries on the rules should be sent to:

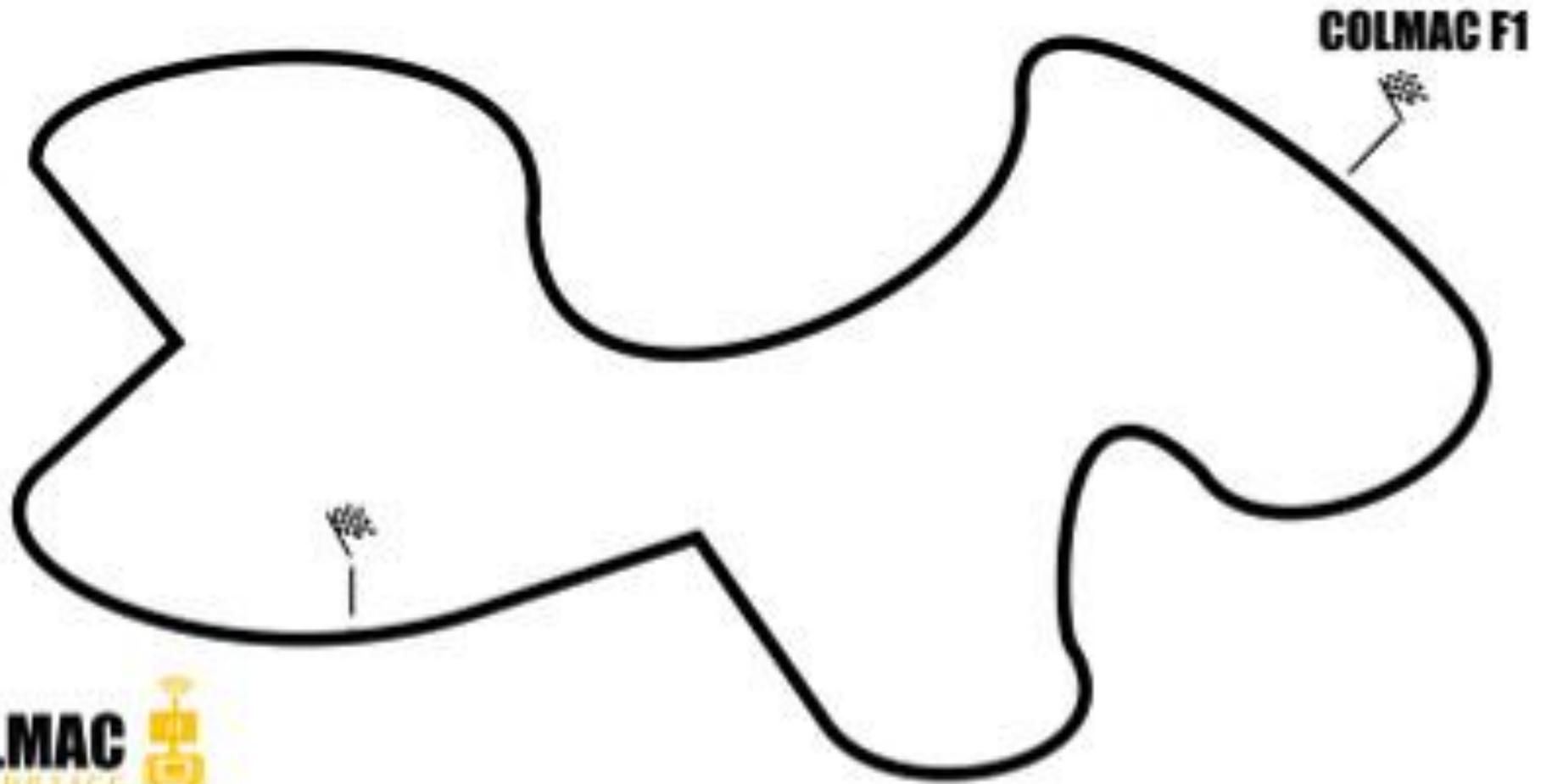
[declan.askin@stgeraldscollege.com](mailto:declan.askin@stgeraldscollege.com)

**Appendix 1**



**COLMAC GP**

A full size version (2400 x 1200mm) of this track can be purchased from [www.colmac.ie](http://www.colmac.ie)



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