HKUST Autonomous RC-car Racing Competition

Key Dates  Apply NOW

Eligibility  Cars  Challenges  Format  Rules  Awards
Eligibility

- HKUST members – full-time and part-time students, faculty, staff and alumni
- Registration as individual or team (up to 4 persons). Individuals can also join and will be teamed up after admission.
  - All member MUST attend the competition.
  - Each team MUST allocate time for RC-car trainings (min. 10 hours on-track training* of the car plus coding time) in January and February 2021.
- Each team should have one laptop to work with the RC-car.
  - An Ubuntu 18.04 system should be installed to the laptop.
  - The laptop is recommended to have an Nvidia Graphic GPU Card, otherwise, the model will be trained very slowly using CPU only.
  - Participants who do not have a GPU equipped laptop can contact peide.cai@connect.ust.hk to access the GPU server.

*Participants should make themselves physically available to participate in the trainings and the competition.
Autonomous RC-Cars

- Only standardized autonomous RC-car (JetRacer AI Kit) provided by the organizer can be used in the race. Modifications to the RC-car are not allowed.
- Color stickers will be affixed to each RC-car for distinction during the Main Race.
- The RC-car should run autonomously on the track. No gamepad or other intervention is allowed during the race; otherwise, the car will be disqualified.
- Only on-board computing is allowed (on the Nvidia Jetson Nano mainboard).
- There are no rules governing how to implement the driving algorithm and code.
There will be two kinds of obstacles fixed on the track (with scotch tape): cones and circular truncated cones. The colors, location and the combination of the obstacles are random. Touching these obstacles will lower the speed of RC-cars. The car may also completely get stuck at the obstacle and reset operation will then be needed.
To determine the top 16 cars and the starting position for the Main Race.

Maximum 25 RC-cars will compete in the qualifying sessions.

Each car will be running solely on the track for ONE lap in each session and time will be recorded with an electronic timer system.

The fastest lap time will be counted to determine the ranking.

**Track setup:** The track setup will be the same for each team. 3 obstacles will be placed on the track throughout the Qualifying Session.
### Format on Competition Date

<table>
<thead>
<tr>
<th>Morning</th>
<th>Afternoon</th>
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<tr>
<td>Qualifying Session 1 (QS1)</td>
<td>Qualifying Session 3 (QS3)</td>
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<td>Qualifying Session 2 (QS2)</td>
<td>Main Race</td>
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**Main Race**
- Top 16 RC-Cars from the qualifying session will compete in the Main Race.
- It is conducted in knock-out format with 4 rounds.
- In each race, two cars will be running on the track at the same time.
- The pairings will be decided using drawing lots.
- In each race, there will be 2 parts. The cars have to complete 3 laps for each part.
- Two starting positions will be labelled on the track. The car with higher ranking from Qualifying Session has priority to choose the starting position for the first part of the race. Then the two cars will exchange the positions in the second part of the race.
- The car with shorter total lab time from both parts will advance to the next round.

**Track setup:** 3 obstacles will be placed in different positions on the track in each round.

- Eighth-finals: PK1–PK8
- Semifinals: PK13–PK14
- Quarterfinals: PK9–PK12
- Final: PK15
Format on Competition Date

Here is an example for the schedule arrangement of the Main Race, where the number in the box indicates the ranking of qualifying:

RC-car with higher ranking has priority to choose the starting position.
Rules and regulation

- Car damaging (crashing on the fence in high speed may lead to wheel damage) is immediate disqualified for that race.
- The judge is the final decision maker.
**Awards**

1st place: HKD 10,000 (1 award)  
2nd place: HKD 5,000 (1 award)  
3rd place: HKD 2,500 (2 awards)  
4th place: HKD 1,500 (4 awards)  

All teams can own their RC-car upon completion of the whole competition.
Frequently Asked Questions

What is the HKUST Autonomous RC-car Racing Competition (the "Competition")?
The HKUST Autonomous RC-Car Racing Competition is a platform for promoting and demonstrating the interest and application potential of radio-control vehicle and is specially designed for global technology enthusiasts.

Who can apply?
HKUST members – full-time and part-time students, faculty, staff and alumni can apply as individual or team up to 4 people. Individual participants will be teamed up after the admission.

What is the timeline and format?
Please refer to the section "Key Dates" on the website and the section "Format on Competition Date" for details.

Is it compulsory to join the on-site training and practice in January and February?
Yes, teams should allocate time for RC-car trainings (min. 10 hours on-track training of the car plus coding time) in January and February 2021.

Can I join the competition if I am outside Hong Kong?
There will be a series of training and practicing in Jan-Feb on campus, participants should make themselves available physically to join such activities.