

JRC_AUTOTRAC

"On site" event	"Remote" event
From 5 to 7 October 2020	Probably January/February 2020
Material provided by JRC: Stickers, T-Shirts	Material provided by JRC: Stickers, T-Shirts, Tracks, Camera + accessories, signals <u>The camera mounting and setting specifications can be found in the attached file: Autotrac Tutorial v1.1.docx</u>
The material for both tracks will be rigid panels (FOREX thickness 5mm), with white background and black surface for the tracks/lanes. Everything will be printed in four-colour ink process (CMYK).	The material for both tracks will be flexible PVC , with white background and black surface for the tracks/lanes. Everything will be printed in four-colour ink process (CMYK).
The track will be enclosed in a rectangle of 4x3 meters (4 panels 2x1.5 meters joined together with insulating tape)	The track will be enclosed in a rectangle of 4x2,80 meters (single banner)
To facilitate the recognition of the 4 vehicles by the judges and the camera, 4 stickers (will be provided by the organization) with a different colour (red, green, blue and yellow) will be positioned at the 4 corners of each vehicle. The vehicle must provide an adequate flat space (white to avoid interference with the detection system) on top to position these stickers. The stickers will have a white background with a size of 4x4cm with inside the colored sticker with a diameter of 3cm.	To facilitate the recognition of the 4 vehicles by the judges and the camera, 4 PVC stickers (will be provided by the organization) with a different colour (red, green, blue and yellow) will be positioned at the 4 corners of each vehicle. The vehicle must provide an adequate flat space (white to avoid interference with the detection system) on top to position these stickers. The stickers will have a white background with a size of 4x4cm with inside the colored sticker with a diameter of 3cm. It is mandatory for Red, Green, Blue stickers to be placed on a white square-background. The yellow sticker has to be placed on a black square-background (more details on the attached file: Autotrac_Tutorial_v1.1.docx)

With "Tram"

The track will be crossed by a vehicle (obstacle) that will move forward and back along a white line (like a tram). If the vehicle touches the obstacle, it will be penalized. The size of the mobile obstacle (tram) is approximately 150x150x150mm with a (almost) constant speed of about 0.1m/s. To improve the recognition of the tram by vehicles, two stickers (diameter 3mm) of different colours will be positioned on the right (red) and left (green) side, approximately 10 cm above the ground. The red sticker will be positioned in the direction of the starting line. The 'tram' is not responsible to recognize approaching vehicles. On the contrary, the competing vehicles should be able to predict the movement of the 'tram' and regulate their movement accordingly. There is no restriction on whether all vehicles should wait for the 'tram' or the car-platoon should be split. If this happens then the remaining vehicles should be able to catch up the car-platoon.

PENALTY Collision: each vehicle that manages to finish without collision will be awarded with 25 points. Each collision costs 5 points (also collision whit tram). No points are awarded for vehicles with more than four collisions. After a collision and with the agreement of the judges, a team member will be allowed to reposition the vehicles involved in the collision. The vehicles should be as close as possible to the collision point.

Time race "#": 3min + 1 min for parking
Time race "J": 3min

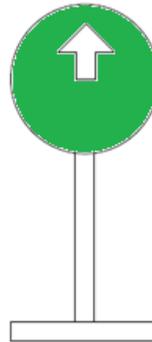
Without "Tram"

When each vehicle is on the "tram rail", it will have to reduce its speed to 0.2m/sec. (or less).

There are two points whit "tram rail" and consequently two points where to reduce the speed.

The 2 signals (with green arrow) will be located on the right and 10cm before the "tram rail"

PENALTY Incorrect speed: each vehicle that manages to finish with the correct speed on the "tram rail" will be awarded with 25 points. Each incorrect speed on the "tram rail" costs 5 points. No points are awarded for vehicles with more than four incorrect speed



Time race **& video** "#": 3min + 1 min for parking
Time race **& video** "J": 3min

<p>Mixed tests (J-shape track) After all teams will have completed their tests, they will be randomly divided in 4 groups. Each team will make available one or more vehicles for each group. The leading vehicle will be chosen randomly. The four newly formed fleets of four vehicles will repeat exactly the same tests described in the previous section for the highway scenario for the whole duration of the demonstration test, lasting 3 minutes. In these tests, the vehicles will not be able to cooperate but still they have to prove their capability to move safely and efficiently. The objective of these tests is to show the effect of the lack of cooperation on safety and driving efficiency. Please note that the mixed test is made only for demonstration purposes. It will not affect the assessment procedure. The teams can chose to participate with any car they want. For this demonstration it will be possible to modify the vehicle's hardware and software.</p>	<p>CANCELED</p>
<p><u>Presentation:</u> Each team will have to present their participation (fleet of AVs, control logics, development stages, validation, sensors, data fusion, machine learning, etc.) in the JRC during the first day.</p>	<p><u>Presentation:</u> Each team will have to present their participation (fleet of AVs, control logics, development stages, validation, sensors, data fusion, machine learning, etc.) during the remote event before viewing the videos.</p>

How will the competition take place?

"On site" event	"Remote" event
<p style="text-align: center;">Three-day agenda (see rules)</p>	<p>PRELIMINARY:</p> <ul style="list-style-type: none"> • Shipping of materials • Camera assembly and setting
	<p>STEP_1: (1 week)</p> <ul style="list-style-type: none"> • START, when each team confirms that they received the materials and installed the camera • Sending to each team the configuration and positioning of signals on the "#" track • The team sends 2 videos whit background (1x "J" and 1x "#") • The team sends 4 videos with at least one lap (2x "J" and 2x "#"). <i>To speed things up, the vehicles can also be remotely controlled</i> • The team sends information on the vehicle stickers placement <p>(More details on the attached file: Autotrac_Tutorial_v1.1.docx)</p>
	<p>STEP_2: (1 week)</p> <ul style="list-style-type: none"> • Preliminary analysis of videos with the automated camera-based referee system (ACRS) • OK for the next step or request for videos correction
	<p>STEP_3: (2 week - Since the preliminary analysis of all the videos sent by the teams will be completed)</p> <ul style="list-style-type: none"> • Recording and sending by the teams of videos relating to the 2 competitions "J" and "#". (The time available does not change compared to the on-site event) <p>(More details on the attached file: Autotrac_Tutorial_v1.1.docx)</p>
	<p>STEP_4: (1 week)</p> <ul style="list-style-type: none"> • Analysis of videos with the automated camera-based referee system (ACRS) • Final Ranking
	<p>STEP_5: (1 day)</p> <ul style="list-style-type: none"> • Final "remote" session • General discussion • Presentation of projects - Presentation of videos • Announcement of the winners
	<p>END</p>