

PITCH THE FUTURE

PITCH THE FUTURE: A COGNITIVE BOOST FOR AUTONOMOUS VEHICLES

OVERVIEW

Pitch the Future invites Shell Eco-marathon teams for the next chapter of its journey – **Cognitive Boost for Autonomous Vehicles**.

The last two decades have witnessed unprecedented development in the mobility sector, with the autonomous vehicle (AV) at the pinnacle of it. Several technologies converged together to make AVs possible. Amongst them, artificial intelligence (AI) and digital technologies are the real heroes, as they are about to bring way more innovation in the space of AVs to make them real and up for practical use. With these developments, autonomous vehicles are expected to play a key role in the energy transition. However, the question remains:

“How can the human factor be replaced by artificial intelligence to create a seamless AV experience?”

So far, all the innovations in and around autonomous vehicles are about safe navigation through the streets. AVs will bring a list of advantages, such as no drivers dozing off or better utilization of time; but that's not enough to be of practical use.

Autonomous vehicles must be equipped with several other cognitive abilities to fully replace a human driver. Some examples of human actions that go beyond just driving the vehicle are fixing a flat tyre, acting meaningfully when a passenger falls sick, taking necessary actions when ride-sharing passengers are creating a menace, and many others. This is exactly where Artificial Intelligence, and in particular cognitive computing, can take us a step further into the future.

Note that the rules provided herein for Pitch the Future should be read in conjunction with the [Shell Eco-marathon 2022 Official Rules, Chapter I](#), and all other rules and instructions of the Organiser, together called the Competition Rules.

By fact of their entry, Participants accept all provisions these Competition Rules and agree to abide by all decisions made by the Organisers. The Organisers reserve the right to add, modify or delete any Article of the Competition Rules.

All decisions made by the Organisers are final and binding.





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OBJECTIVE

Your challenge is to address this topic by developing a new and innovative cognitive ability for autonomous vehicles to further replace the human driver. In a creative and visually engaging way, describe how you might accomplish this with the use of artificial intelligence and pitch your concept solution.

Following the initial submissions, a virtual jury will select the three best per region (Asia Pacific and the Middle East, Americas, and Europe and Africa). These nine teams will be asked to further develop their solution and to pitch their solution LIVE to a team of industry experts.



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Shell Eco-marathon • 2022

BRILLIANT MINDS COMING TOGETHER TO BUILD A LOWER-CARBON WORLD

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HOW TO PARTICIPATE

Your submission should consist of the following parts:

1. 30-SECOND ELEVATOR PITCH VIDEO

A brief, persuasive teaser video to explain what makes your teams' solution unique. An elevator pitch should be used to convey your solution in a short and direct fashion. It is intended to convince your listener to want to know more.

The video will be judged for its message, and not for its design or production merits. You are encouraged to use whatever approach allows you to showcase the power of your solution.

The following specifications must be followed:

- The video needs to be uploaded on YouTube or Youku, with the privacy setting to 'unlisted' or the equivalent.
- Only registered team members can appear in the video.
- The video must be filmed in **portrait 9:16** orientation with a minimum resolution of 720p in MP4, MOV or MPEG4 format.
- A maximum duration of 30 seconds for the entire video (including any opening or closing footage and/or slides). Any videos that go over this threshold will be disqualified.

2. WRITTEN REPORT

Submit a PDF document with a maximum of 8 pages and 10-point minimum font size. Cover pages, references, tables, images, drawings, or other supporting visual content must respect the maximum number of pages.

Screenshots of a working simulation of your solution or code output are strongly encouraged, as well as proof of methodology for your team's solution where possible.

Your report must address the following points:

- A short definition of the cognitive challenge addressed with the solution. E.g., which functionality of a driver is your focus area? How often is this required? Is this idea used in any other application?



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- Explain your cognitive computing solution in more detail. Which Digital Technology/AI solution would your idea require to bring to life?
- What sensors do you need for collecting input data?
- How does your idea contribute to creating a more seamless AV experience?
- How does your solution contribute to a lower carbon future? How can your innovations help accelerate energy transition?
- If your team has produced code or is using open-source datasets for its solution, you may add a link to your public git repository, with complete instructions to run the code.

JUDGING PROCESS

The judging process will take place in two stages, each led by a group of industry experts from Shell.ai, Microsoft and Udacity.

- **Judging Stage 1:** A select panel of judges will review and score the submissions based on predefined criteria as described in the competition scorecard shown in the next section.

The judges' scorecards will be averaged to determine the shortlisted teams. In the event of a tie, the lead judge has the tie-breaking vote.

The three best teams per region will advance to the next judging stage.

- **Judging Stage 2:** The three best entries per region (a total of nine entries) as selected by the judges in Stage 1 will be given an opportunity to present their idea in a live online pitch to a panel of industry expert judges. The select panel will evaluate and discuss the pitch, designating a score based on how well the entry meets each of the criteria outlined for Stage 2, described in the next section.

REGIONAL WINNERS

From the three shortlisted entries per region, the regional winner is the team with the highest average score from the judges in Stage 2. In the event of a tie, the lead judge from Stage 2 of the competition will determine the regional winner.



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GLOBAL WINNER

From the three regional winners, the global winner is the team with the highest average score from the judges in Stage 2. In the event of a tie, the lead judge from Stage 2 of the competition will determine the global winner.

SCORING CRITERIA

Judges will be looking for teams who best demonstrate the following criteria.

STAGE 1 SCORECARD

CRITERIA	SCORE
<ul style="list-style-type: none">■ Digital Technology<ul style="list-style-type: none">▪ Identification of the right sensors that need to work together for the solution to be viable.▪ How is the usage of technology described?	30
<ul style="list-style-type: none">■ Innovation<ul style="list-style-type: none">▪ How novel and unique is the solution?	15
<ul style="list-style-type: none">■ Practicality<ul style="list-style-type: none">▪ How sensible and usable is the idea/solution in a real environment?	15
<ul style="list-style-type: none">■ Applicability<ul style="list-style-type: none">▪ How relevant or appropriate is the recommended solution/idea?	10
<ul style="list-style-type: none">■ Scalability<ul style="list-style-type: none">▪ Is the idea achievable at a mass scale so to elicit real change?	10
<ul style="list-style-type: none">■ Creativity<ul style="list-style-type: none">▪ How well is the information presented and the solution brought to life.▪ Out-of-the-box, unexpected approaches, and ideas.	20
Total score	100



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STAGE 2 SCORECARD

The nine entries approved in Stage 1 will each be invited to a live pitch session via Microsoft Teams. During this session, the team will have 15 minutes to pitch their solution in greater detail live to the panel of judges, highlighting the working of the cognitive computing method in the context of AV. Team will be required to show a working version of the Proof-of-Concept in a simulated environment. Screen recordings of the simulation are acceptable.

After the presentation, there will be a 15-minute Q&A session for the judges to ask follow-up questions.

CRITERIA	SCORE
<ul style="list-style-type: none">■ Digital Technology<ul style="list-style-type: none">▪ Feasibility/credibility of the technology usage.▪ Integration of digital aspects as part of the solution, (e.g., how are the sensors identified compliment the technology proposed?).▪ Working simulation of their solution/Proof-of-Concept.	30
<ul style="list-style-type: none">■ Presentation Skills<ul style="list-style-type: none">▪ Presenting the idea/solution in an effective way.	30
<ul style="list-style-type: none">■ Distinctiveness<ul style="list-style-type: none">▪ How does your solution stand out from the others?	20
<ul style="list-style-type: none">■ Maturity<ul style="list-style-type: none">▪ How far developed is the solution?▪ Has your idea/solution been further developed and refined between Stage 1 and Stage 2?	20
Total score	100



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AWARDS AND PRIZES

For details on the awards and prizes, please see Articles 91 and 104 of the [Chapter I Rules](#).

In addition to this, our partner Udacity will offer the global winners of Pitch the Future a Nanodegree of their choice, with one year to complete the learning.

WINNERS' ANNOUNCEMENT

The winners of Pitch the Future will be announced after the results have been verified.

The winning Teams may be contacted ahead of the final announcement and asked to create audio visual content for use on the Shell Eco-marathon social media channels and on the website makethefuture.shell.

PERSONAL DATA

Terms as set out in the [Shell Eco-marathon Privacy Notice](#) governs and covers the Organisers' processing of any personal data collected by the Organiser and/or shared by the Participant as part of the Competition and on the Shell Eco-marathon registration platforms. Any personal information processed by the Organiser is for the purpose of facilitating participation in and association with the Competition.

Note that any photo, film, audio and video recordings taken throughout the Competition, or in any such materials that you submit to the Organisers during and after the event, are considered as personal data. Accordingly, the Organiser will apply your voluntary consent as provided in the Film and Photography Marketing Consent form in order to use, process and share (if necessary) such materials.

INTELLECTUAL PROPERTY

Any work performed or created for use in the Competition may result in the creation of intellectual property. Participants/Teams are encouraged to consider all such intellectual property created as valuable assets, and to seek professional advice about its protections prior to any submission to the Organisers, publication or public usage.

By entering, each Participant warrants and represents on their own behalf, and on behalf of their Team, that their entry does not infringe, defame or otherwise violate the rights and/or property of any third party; does not violate any laws or regulations; and does not utilise, use or infringe the property of any third party including the property and rights of another team without express written permission to do so.

Each Participant on their own behalf, and on behalf of their Team, further warrants that the possession, exploitation, use or distribution by the Organisers of the Team's entry, including any intellectual property included in their entry (including without limitation patents, copyrights, designs, trade or service marks, whether registered or not), shall not infringe or misappropriate the intellectual property right of any third party.

Each Participant shall indemnify the Organisers, and each of their parents, affiliates and subsidiary companies against any costs, loss or damage suffered or incurred by the Organisers, and any of their parents, affiliates and



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subsidiary companies as a result of any claim that the use of a Team's entry thereof infringes the intellectual property right of any third party.

Subject to the consent of a participant for the use of photography, film, audio and video included in the Team's entry, each Participant grants the Organisers, the Shell group and the Organisers' partners (Microsoft Corporation, Udacity, Inc.), an exclusive licence to freely use their Team's entry for general publicity concerning Shell Eco-marathon and related events, including paid advertising, at events and through any form of media, including but not limited to print media, online media and television media. Notwithstanding the foregoing, the Participant may freely use their entry provided (i) all incidences of Organisers' and/or Shell's trademarks are removed, and, (ii) no individuals other than the Participant appear in such entry.

The Participant undertakes to not use the Organisers' name or trademark in any material or medium, and not to present themselves or their Team as being connected with the Organisers in any way.

HSSE

The Health and Safety of our participants is of paramount importance to Shell.

When planning and filming your videos, as you would on the track, always consider safety as the highest priority. This may include, but is not limited to; the selection of your filming location, use of vehicles or tools, potential impact on others around you. Compliance with any country or location specific legal requirements or restrictions is essential.

Any video showing or appearing to show what the judges deem to be unsafe behaviour will be disqualified.

COVID-19 REGULATIONS

Due to the ongoing COVID-19 pandemic, please observe the following guidelines while making your videos.

Anyone visible in your videos must either:

- Appear alone;
- Appear with others ONLY if everyone is wearing a face mask.

All team members involved in the filming and editing of your videos:

- Must wear a face mask at all times when working together.

To learn more about the programme, visit the [Pitch the Future website page](#).

