

HYUNDAI – NTU 3D Printing Challenge 2021 for Electric Vehicle (IONIQ 5)

The School of Mechanical and Aerospace Engineering (MAE), Nanyang Technological University (NTU) and Hyundai Motor Group (HMG) are launching 3D printing competitions geared at the innovative use of the technology in automotive engineering.

Design Theme: Customized car accessories and parts

In light of the soon to launch smart factory in 2022, HMG in Singapore is commemorating its launch by inviting everyone in Singapore to participate in a challenge to designing a **Singapore oriented car accessory and/or car parts**. As Hyundai's new electric vehicle (EV) will be manufactured here in Singapore, show what it means to be built in Singapore by creatively flexing ideas to show the uniqueness of the red dot.

Deadline of submission: **28 February 2022.**

Design Rules:

1. The design must be 3D printable. Multi-colour designs are allowed.
2. The final object should be functional as is when it is being printed. It should not require any additional electronics or non 3D printed parts.
3. Multiple parts are allowed for the design. Assembly instruction must be given clearly if the design contains multiple parts.
4. The final object should not be a stand-alone accessory car piece and should have functionality to enhance the aesthetic, show personality, or ease usability within the car.
5. Each submission package will contain the following items:

Track 1 – General

- The sketch or design idea should be submitted either hand drawn ideation sketch or a digital created file.
- For hand drawn idea, dedicated competition official will reach out to assist on creating a digital sketch file for final submission.
- A description of your design in less than 250 words. In this write up, you may include images that strengthen your submission (e.g., screenshots, illustrations, drawings)
- Please ensure that the digital design files are non-identifiable by names or watermarks for judging purpose.

- A pre-recorded video presentation on your design is optional.
- Signed Registration Form.

Track 2 – Advanced

- The designed 3D model should be submitted as CAD file.
- The CAD drawing file of the 3D design (in DWG, IGS, or STEP)
- Exported STL file(s) of the 3D design with no error and ready for printing.
- Provide one clear rendered image of your design (max file size 10 MB).
- A description of your design in less than 250 words. In this write up, you may include images that strengthen your submission (e.g screenshots, illustrations, drawings)
- Please ensure that the digital design files are non-identifiable by names or watermarks for judging purpose.
- A pre-recorded video presentation on your design is optional.
- Signed Registration Form.

6. The submission package should be submitted to Mr Nicholas Ng via email (Email : nicholasnph@ntu.edu.sg) by 28 FEB 2022.
7. Please name your submission email with email header: “HYUNDAI – NTU 3DP competition, <your name>”
8. You should send us **the shared link to download the files** through Microsoft OneDrive, Google Drive, OR WeTransfer.

Additional information for reference:

- The base model of a car, which will the 3D printed objects will be used is IONIQ 5, <https://www.hyundai.com/worldwide/en/eco/ioniq5/highlights> ([link](#)).
- IONIQ 5’s new EV platform gives us the opportunity to re-create a new mobility experience.
- Interior of IONIQ 5 is spacious – Universal Island, an innovative moveable centre console that can slide back as much as 140mm.
- Use of eco-friendly and sustainably sourced materials to consist of the interiors.



Figure 1. The interior view of IONIQ 5



Figure 2. Moveable center console of IONIQ 5

Terms and Conditions:

Eligibility

- This competition is open to public in Singapore.
- There is no limit to the number of submissions from each participant. You may also form a team to participate in this competition. However, only one prize will be awarded to each participant/ team.

Judging Criteria

- We will be looking at the most inspiring, most well-designed, and showing the unique traits of Singapore car part/accessory to commemorate IONIQ 5, taking advantage of 3D printing technology.
- It should be a car part/accessory that would function as an add-on for IONIQ 5. But should not be a stand-alone product.
- It should not require to be powered by external source of power.
- Panel of judges include experts in 3D printing, engineering, and design.
- The judging criteria are Degree of Innovation, Functionality, Aesthetics, and Feasibility.

Prize

- Track 1
 - Grand prize: Cash award S\$5,000
 - First Runner-up prize: Cash award S\$3,000
 - Second Runner-up prize: Cash award S\$1,000
- Track 2
 - Grand prize: Cash award S\$10,000
 - First Runner-up prize: Cash award S\$5,000
 - Second Runner-up prize: Cash award S\$3,000
 - Third Runner-up prize: Cash award S\$1,000
- Winner will be contacted via email or phone by 31 May 2022.

Fine Print

- All entries must be participants' original work.
- Organizer reserves the right to amend these rules at any time. Any amendment to competition rules will be announced.
- The decision of the judges will be final.
- The organizer holds the right to amend or modify the winning design.
- The organizer also owns the right to the digital design file and the printed parts using the design files.

This competition is organized by MAE NTU, Hyundai Motor Company and KIA Corporation, and supported by HP-NTU Digital Manufacturing Corporate Lab and Singapore Centre for 3D Printing (SC3DP).

You are cordially invited to participant Hyundai-3D Printing Challenge 2021. We are looking forward to your supporting on the competition.

Associate Professor Moon Seung Ki, School of Mechanical and Aerospace Engineering,
Nanyang Technological University

Organizers

Nanyang Technological University

Hyundai Motor Company and KIA Corporation

Sponsors

HP – NTU Digital Manufacturing Corporate Lab

Singapore Centre for 3D Printing