Huawei ICT Competition 2023–2024
Innovation Competition (AI Track)

I. C. The Future

Introduction

The Huawei ICT Competition is open to college and university students worldwide, under the theme "Connection, Glory, and Future". Its purpose is to foster the vibrant ICT talent ecosystem through collaborating with governments, higher education institutions, training facilities, and industry companies. In March 2021, the China Association of Higher Education (CAHE) added the Huawei ICT Competition to the 2020 National University and College Student Competition List, recognizing it as one of the most significant competitions for higher education institutions. The 8th Huawei ICT Competition comprises the Practice Competition and Innovation Competition.

The Innovation Competition will introduce an AI Innovation Track this year, examining participants' capacity for technological innovation and application in the AI and ICT domains. In this track, participants are tasked with designing a solution that generates both social and commercial value using Huawei AI technology or combining AI with relevant technologies such as OpenHarmony, IoT, big data, cloud computing, and mobile Internet. Building up this solution, they are required to develop a software entry or an integrated hardware-software entry, ensuring its functionality is relatively comprehensive and capable of addressing specific challenges in industries or real-life scenarios.

Schedule

Phase	Registration		Preliminary (National/Regional Competition)						Global Final		
Activity	Sign-up	Qualification Review and List Announcement	Resource Distribution	Team Training and Q&A	Design	Design Submission	Preliminary Review	Announcing the List of Finalists	Design Optimization and Submission	Presentation	Awarding
Overseas	09.01-12.25, 2023	12.26-12.31, 2023	10.01-12.31, 2023	01.01- 02.28, 2024	01.01-02.07, 2024	01.01-02.07, 2024	02.21-02.25, 2024	02.27-02.30, 2024	05.05, 2024	Mid May, 2024	05.25, 2024
Detail	The teams register online and submit their Application Form and Entry Design.	The Competition Organizing Committee reviews teams' registration materials based on competition requirements.	The owners distribute Huawei Cloud resources and provide sample topics to the approved teams.	The owners provide enablement training for the approved teams.	The teams shall complete designs before the deadline.	The teams shall submit their complete entries on the competition platform before the deadline. (Presentation + Demo video)	Assessors review the entries in the preliminary round, and provide suggestions for improvement.	The owners publish a list of teams that have passed the preliminary review and have reached the final.	The teams that have reached the Global Final submit their optimized designs.	The teams demonstrate their design and conduct presentations.	Huawei presents awards to winning teams.

Please contact Huawei local Talent Manager to obtain the detailed Competition arrangement in your country.

Topic Description

1. Topic Description

Technology selection: Participants must use Huawei AI-related technologies, like MindSpore, CANN, and ModelArts, to design an entry that addresses specific challenges in industries. Huawei also encourages participants to combine AI with other technologies, such as OpenHarmony, IoT, cloud computing, big data, etc. **Industry scenario selection**: The Innovation Competition requires participants to solve problems in real-life scenarios through technology application and innovation. The following is a non-exhaustive list of scenarios that teams may refer to.

Resource support: The Huawei ICT Competition project team will provide the contacts of each student team that successfully registered and passed review with Huawei resources, such as Huawei Cloud vouchers, enablement courses, materials, and tools. These resources include but are not limited to ModelArts, MindSpore, CANN, cloud computing, OpenHarmony, IoT, and big data. Teams are also allowed to use the hardware and software resources that belong to their higher education institution.

Topic	Topic Requirement	Hardware and software resources provided by Huawei
(General AI Topic) Innovative AI applications based on Huawei technologies	1. Use Huawei technologies to develop your entry. You are allowed to design your entry only using AI technology (MindSpore or CANN), or you can combine AI technology (MindSpore or CANN) with OpenHarmony. The entry needs to be an intelligent app that can run on HarmonyOS devices or an integrated hardware-software entry. 2. Application scenarios: industries such as transportation, finance, and agriculture, or real-life scenarios. These include but are not limited to intelligent traffic prediction, financial risk prevention, livestock management, industrial product defect detection/quality improvement, intelligent office assistants, Smart Homes, and travel translation & interpretation tools.	1. 8-card GPU/NPU for each team, which can be redeemed using vouchers 2. If you use HarmonyOS, you can select the following resources: (1) Development tool (including the simulator): DevEco Studio: https://developer.harmonyos/cn/develop/deveco-studio#download (2) Hardware (Optional; prepared by teams): development boards that support OpenHarmony: https://gitee.com/openharmony
(AIoT Topic) Innovative AIoT device-cloud synergy applications based on Huawei cloud technologies	1. Contestants must use Huawei Cloud technologies like AI, IoT, and OpenHarmony to develop practical and innovative AIoT applications that achieve device-cloud synergy in IoT industries. Preferred scenarios include those within energy, manufacturing, transportation, logistics, healthcare, campuses, cities, and agriculture. For example: a. smart menus on the refrigerator door that can automatically offer healthy recipe suggestions or speakers that can be used to control home appliances b. intelligent production process management for precision molds or fault analysis and prediction for industrial devices c. intelligent traffic solutions such as traffic jam analysis, incident detection, situation analysis, or traffic organization optimization d. smart systems for urban lighting, greenhouses, or inbound and outbound logistics e. smart agriculture solutions such as vegetable planting greenhouses f. smart logistics such as cargo (inbound and outbound), and the automatic stocktaking system 2. The IoT or Harmony devices used in the entry must be connected to the Huawei Cloud IoT platform. Contestants are required to develop a software entry or an integrated hardware-software entry based on this platform, and must ensure that it can be deployed on the cloud with a relatively stable performance. 3. Contestants must use IoTDA or IoT edge and combine it with Huawei's other technologies like AI, OpenHarmony, and big data to develop entries.	1. Elastic cloud servers (ECS) (minimum specifications: 2 vCPUs + 4 GiB) can be used to deploy applications on the cloud or to build an OpenHarmony source code compilation environment. ECS can be redeemed using vouchers. 2. Devices for development: (Contestants must prepare these resources by themselves and are suggested to use hardware and development boards.) (1) BearPi-IoT development kit https://marketplace.huaweicloud.com/contents/4ae300d0-7825-4e63-904c-b7160e228f01#productid=00301-276671-0-0 Development tool: LiteOS_Studio https://gitee.com/LiteOS/LiteOS_Studio (2) Development boards that support OpenHarmony: https://gitee.com/openharmony OpenHarmony ecosystem device component: https://repo.harmonyos.com/#/en/solution Development tool: DevEco Device Tool https://device.harmonyos.com/cn/develop/ide#download If no real device is available, use simulators instead: (1) MQTT: https://support.huaweicloud.com/bestpractice-iothub/iot_bp_00025.html#section4 (2) NB-IoT: https://support.huaweicloud.com/bestpractice-iothub/iot_bp_0014.html#section8 3. Applications for development: Development tool: DevEco Studio https://developer.harmonyos.com/cn/develop/deveco-studio#download Code samples: https://developer.harmonyos.com/cn/documentation/Samples/?catalogVersion=V3 Codelabs: https://developer.harmonyos.com/cn/documentation/codelabs/?catalogVersion=V3
(Huawei Cloud AI topic) Intelligent, innovative applications based on Huawei Cloud ModelArts	Contestants must apply Huawei Cloud AI technology to the intelligent transformation of industries, such as logistics, government, energy, transportation, production, manufacturing, airports, healthcare, electric power, and retail for their entry. Example scenarios include but are not limited to more efficient picking and loading for intelligent logistics, more accurate government hotline distribution for smart government, more accurate and efficient identification of tumors for smart healthcare, and more accurate identification of goods for unattended retail stores. 1.Entries must include Huawei Cloud AI technology. They must be developed based on ModelArts and be complete in function. They could be a mobile phone app, a PC or Mac app, or a Web service. The step that uses ModelArts must be specified for completion.	8-card GPU/NPU for each team, which can be redeemed using vouchers 1.Huawei Cloud ModelArts: https://www.huaweicloud.com/product/modelarts.html, pay-per-use or periodic charging 2.Huawei Cloud data storage service OBS, redeemed using vouchers https://www.huaweicloud.com/product/obs.html 3.Huawei Cloud AI Gallery: Huawei Cloud AI knowledge and practice training zone, including premium AI assets, datasets, models, algorithms, etc. https://developer.huaweicloud.com/develop/aigallery/home.html 4.Recommended framework: MindSpore

Please check the Huawei ICT Competition 2023-2024 Innovation Competition Learning Space for hardware and software free resources, learning materials and more reference works from previous competitions.

2. Entry requirements

Required Materials	Application Form	Design Scheme	Presentation	Demo
Format	WORD	WORD	PPT	VIDEO
Upload	Team information and entry introduction	Introduce your design, with a focus on the technologies used and the value of your entry.	Suggestion: Divide your presentation for the final into five parts, including problem description, solution design, technology selection, function implementation, and effect and value.	Suggested video duration for the preliminary round: around 5 minutes Suggested video duration for the final: ≤ 3 minutes
Description	Mandatory (by template)	Mandatory (by template)	Mandatory (by template)	Mandatory

- Participants must use Huawei AI-related technologies (like MindSpore, CANN, and ModelArts). They can combine these technologies with the hardware and software resources of their own higher education institution to design an entry that addresses specific challenges in industries. Huawei also encourages participants to combine AI with other technologies, such as OpenHarmony, cloud computing, big data, and IoT.
- Teams must specify the Huawei technologies they use in their entries, by highlighting the technologies either in the solution architecture diagram or in the process flow diagram or relevant codes. It is advised that a finalized entry describes the design scheme, functions, value, and issues it is designed to resolve.
- Entries need to be innovative, practical, and originally designed by teams. Teams need to ensure that finalized entries are fully functional with no glaring issues or deficiencies, and that logic and operation is smooth.
- Designs must be able to solve specific issues in real-life scenarios or in a certain industry.
- A design can be a software system or a "software + hardware" platform featuring device-pipe-cloud synergy.
- All designs shall not violate national laws and regulations, or contain discriminatory content relating to gender, nationality, and religion, or infringe on others' privacy.
- It is prohibited to directly use previous entries of other contests or competitions without making any improvements. Otherwise, the team will be disqualified.
- Outside China: All students of higher education institutions can apply for the competition, including undergraduate, graduate, and doctoral students. Each team needs to include three students and one instructor who must come from the same college/university. It is encouraged to clearly specify duties between team members and build a team of students from different grades to gather complementary skills and maximize their ability to innovate.

- **3. Intellectual property rights**
- All designs shall not infringe any copyright, trademark, or other rights of a third party. All the consequences of plagiarism shall be borne by the contestants themselves.
- The contestants own the intellectual property rights of their designs, agree to provide their designs free of charge and grant the Organizing Committee the following rights, without limitation: reproduction, distribution (paper and digital), exhibition, teaching and training, showing, and online dissemination of their designs.

Review Methods

National and regional competitions
- Review form: presentation (10 minutes) and panel assessment (5 minutes)
- Countries and regions will arrange and announce the order of panel assessment for participating teams.

Global Final
- Review form: presentation (15 minutes) and panel assessment (5 minutes)
- The order of panel assessment will be determined by drawing lots, and a reasonable time will be arranged for teams in different time zones. The lot drawing ceremony will be held at the opening ceremony of the Global Final.

Review criteria

Review item	Score	Key review points
Creativity	30	The solution can resolve real-life issues, and there is no well-known similar solution in the industry. Breakthroughs and innovations are made in business models, management and operation, process optimization, and application scenarios.
System/Technical complexity	25	The participant uses Huawei AI-related technologies and, in the presentation, specifies which ones are used. The participant is able to integrate multiple ICTs by comprehensively using Huawei's resources and platforms. These resources and technologies are of great value to the solution.
Social value	15	The project benefits the public or is potential for commercially profitability.
Functional completeness	15	The solution considers all aspects of the issues to be resolved and offers a complete set of functions for all possible situations.
Presentation	15	The presentation is fluent. Presenters can answer questions from assessors and have clear opinions.

The Organizing Committee will set up a Review Team for the Global Final of the Huawei ICT Competition – Innovation Competition ("the Review Team"), which consists of well-known professors in academia and Huawei R&D experts.

The Huawei ICT Competition 2023–2024 Organizing Committee reserves the right to interpret the rules of the Innovation Competition.