Huawei HiLens

Getting Started

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Contents

1 Preparations

Creating a HUAWEI CLOUD Account

Before using Huawei HiLens, you need to create a HUAWEI CLOUD account. Through this account, you can use HUAWEI CLOUD services and pay only for the services you use. For details, see Account Registration Process.

Obtaining Permissions for Related Services

Huawei HiLens depends on other services. Therefore, you need to obtain the permissions of related services before using Huawei HiLens, including ModelArts, Object Storage Service (OBS), and Software Repository for Container (SWR). For details about the relationships between Huawei HiLens and other services, see **Related Services** in the *Huawei HiLens Service Overview*.

2 Quickly Developing Skills (Developers)

This chapter describes how developers who purchase HiLens Kit devices develop skills using templates and install the skills to devices. After the installation is complete, you can view the skill running effect on the Huawei HiLens console.

The **Safety Helmet Detection Template** is used as an example to demonstrate the entire process from skill development to skill effect viewing. After the skill is installed, the camera can detect whether workers are wearing safety helmets.

Before you start, carefully complete the preparations described in **Preparations**. **Figure 2-1** shows the development process.

Figure 2-1 Quick start guide for developers
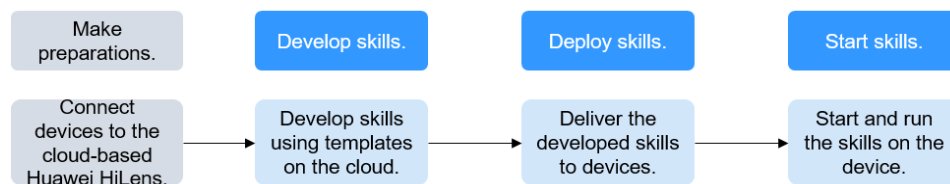
Preparations

- Register an account. Before using HiLens, check the account status, which cannot be in arrears or frozen.
- Purchase a HiLens Kit device and register it with the HiLens platform.

Step 1: Develop the Skill

1. Log in to the Huawei HiLens console, choose **Skill Development > Skills** in the left navigation pane. The **Skill Management** page is displayed.
2. Click **Create Skill** in the upper right corner. The **Create Skill** page is displayed.
   a. Enter basic information about the skill. For details about the parameters, see **Table 2-1**.

Figure 2-2 Basic skill information

Table 2-1 Parameter description

Parameter	Description	Suggestion
Skill Templates	You can select **Create from Scratch** or **Select Template**. If you have saved a skill template, you can use it to quickly develop the skill. If you select the skill template, its logic code and model will be used by default. You can also edit the skill template. If no skill template is available in the system, you can use an empty template to develop the skill.	Click **Select Template**. In the dialog box that is displayed, select the **Safety Helmet Detection Template**.

Parameter	Description	Suggestion
Name	Skill name. The name is also used to name the root directory when the skill is delivered to a device. Enter 3 to 60 characters. Only letters, digits, underscores (_), and hyphens (-) are allowed. The name must start with a letter and end with a letter or digit. **NOTE** The skill market does not allow duplicate skill names. Therefore, if you want to release a skill to the skill market, use a globally unique name to name your skill.	You are advised to name skills in the format of **brand + application name**.
Version	Skill version. The format is **number.number.number**, for example, **2.1.3**. Each number ranges from **0** to **999**. When it has two or more digits, it cannot start with **0**.	For example, **1.0.0**.
Chip	Chip supported by the skill. For skills running on HiLens Kit devices, select the Ascend 310 chip.	Ascend 310
Skill Code Value	Used for skill verification to prevent fake skills.	Use the hash check value in the template. You do not need to set this parameter.
Application Scenario	Application scenario of the skill, such as **Smart Campus**, **Smart Home**, **Smart In Vehicle Device**, **Smart Mall and Supermarket**, and **Others**.	You can directly use the template model and do not need to set this parameter.
Icon	Icon of the skill	This parameter is optional.
OS Platform	OS where the skill runs, including Linux, Android, iOS, LiteOS, and Windows.	Linux

Parameter	Description	Suggestion
Description	Detailed description about the skill, You can enter a maximum of 2,048 characters. Special characters ~^$%& are not allowed.	Enter the skill output mode based on the template. ● **HDMI**: The video data is output to the display through the HDMI port of the device. ● **RTMP**: The video data is output to a server in real time for users to view. ● **H264_FILE**: The video data is output as files to OBS for users to view.

b. Set the skill content. For details about the parameters, see **Table 2-2**.

📖 NOTE

In this example, an existing template is used to develop the skill. The skill content uses the model and code of the template by default. You can use the default information or edit it as required. The parameters vary if you use an empty template to develop the skill. For details, see the *Huawei HiLens User Guide*.

Figure 2-3 Setting the skill content

Table 2-2 Skill content parameters

Parameter	Description	Suggestion
Skill Format	Format of the skill to be created. Two formats are available: **Skill package** and **Container image**.	You can directly use the template model and do not need to set this parameter.

Param eter	Description	Suggestion
Runtim e Langua ge	Runtime language of the logic code. Currently, the value can be **Python3.7** or **C/C++**. If the **C/C++** language is selected for development, online code compilation is not supported. Developers need to develop and compile the code offline, package the code in the Linux environment, and upload the package the OBS.	You can directly use the template model and do not need to set this parameter.
Functio n Executi on Entry	The startup of a skill uses the code execution file as the entry, which is similar to the main function of the C language. The main file must be in the level-1 directory. ● The main file of a skill in the **Skill package** format must be in the root directory of the skill package. For example, end the file of a Python skill with **.py**. ● For a skill in the **Container image** format, if **ENTTRYPOINT** has been configured for **dockerfile**, the description can be left blank. Otherwise, you need to enter the path to the execution file within the image. The file name can contain a maximum of 1,024 characters, consisting of letters, digits, and underscores (_). Special characters #~^ are not allowed.	You can directly use the template model and do not need to set this parameter.

Param eter	Description	Suggestion
Model	Core algorithm of the skill to be created. The model can be trained locally or in ModelArts and then be imported to Huawei HiLens. Click the plus sign (+). In the dialog box that is displayed, select a model from the model management list on the Huawei HiLens platform.	You can directly use the template model and do not need to set this parameter.

Param eter	Description	Suggestion
Code Entry Mode	Upload mode of the logic code. • **Online Compilation** Use the logic code for developing skills online to automatically generate a **.zip** package and upload it to OBS. Huawei HiLens automatically creates an OBS bucket for storing the skill package. The bucket is named in the **<project_id>-hilens-skill** format. You can go to the OBS console, find the OBS bucket with the corresponding name, and obtain the code package file edited online. • **Upload From OBS** You can develop complex project code offline, manually generate a **.zip** or **.tar.gz** package, upload it to OBS, and select the **.zip** or **.tar.gz** package from OBS here. • **Select Container Image** For skills in the container image format, you can upload their container image files to SWR in advance. For details, see **Uploading Images Through the Docker Client**.	You can directly use the template model and do not need to set this parameter.

    c. Configure runtime configurations. The **Runtime Configuration** is used to configure the parameters required by the skill for users who use the skill.

The configuration parameters provided by the template can be directly used.

3. After setting and confirming all skill development parameters, click **OK** on the right.

    The developed skill is stored on the **Skill Development > Skill Management** page. You can view the skill status this page.

Figure 2-4 Skill Management

Step 2: Install the Skill

1. Choose **Skill Development** > **Skills**, select the developed skill, and click **Install** in the **Operation** column.

2. In the dialog box that is displayed, select the device to which the skill is installed and click **Install**. After the installation is successful, click **OK**.

    During the installation, the Huawei HiLens console will deliver the skill package to the device. It takes some time to deliver the skill package. You can view the skill installation progress in the progress bar. After the delivery is complete, the progress bar displays **Installation succeeded**. See **Figure 2-5**.

Figure 2-5 Successful installation
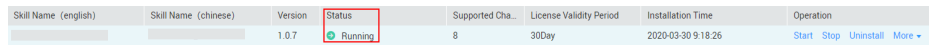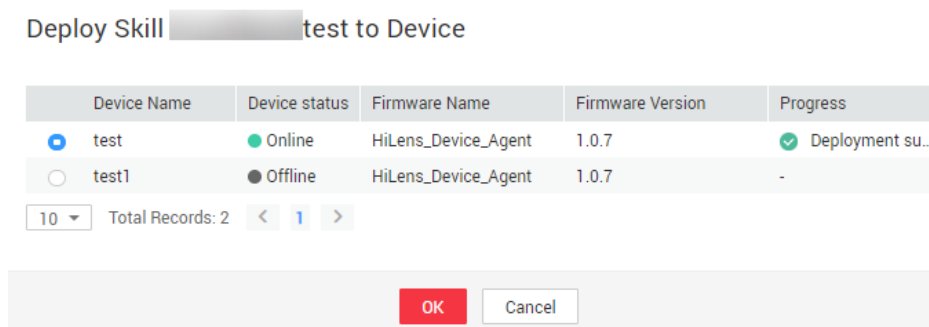

Step 3: Start the Skill

If the skill status is **Installation succeeded**, the skill is successfully installed on the device. You can start it to view its output data.

1. Use the HDMI video cable to connect the video output port of the HiLens device to the display.

2. In the navigation pane, choose **Device Management > Devices**. The **Devices** page is displayed.

3. Click **Manage Skill** of the registered device. The status of the installed Safety Helmet Detection skill is **Stopped**. Click **Start** in the **Operation** column and click **OK** to start the skill on the device.

    The skill status changes to **Running** after a short period of time, indicating that the skill is successfully running on the device. Then, you can view the skill output data on the display.

Table 2-3 describes the skill statuses.

Figure 2-6 Viewing the installed skill

Table 2-3 Skill installation statuses

Status	Description
Stopped	The skill stops running on the device.
Running	The skill is successfully installed on the device and is running.

3 Purchasing and Using Skills Oriented to HiSilicon Hi35*xx* Series Chips

This section describes how manufacturers of camera devices running HiSilicon Hi35*xx* series chips manage products, purchase skills, and bind device licenses to product skills on the Huawei HiLens console to enable the devices with AI capabilities.

This chapter describes how to purchase a skill oriented to HiSilicon Hi35*xx* series chips to demonstrate the entire process from product creation to skill use. Free test skills are available in the skill market for trial use, but we do not guarantee their commercial precision.

Before you start, carefully complete the preparations described in **Preparations**.

- **Step 1: Create a Product**
- **Step 2: Purchase a Skill**
- **Step 3: Use the Skill**

Preparations

Register a HUAWEI CLOUD account. Before using Huawei HiLens, check the account status, which cannot be in arrears or frozen.

Step 1: Create a Product

Step 1 Log in to the Huawei HiLens console. In the left navigation pane, choose **Device Management** > **Products**. The **Products** page is displayed.

Step 2 Click **Create Product** in the upper right corner and set product parameters, as shown in **Table 3-1**.

Figure 3-1 Creating a product

Table 3-1 Product parameters

Parameter	Description
Name	Product name.
	Enter 3 to 60 characters. The name must start with a Chinese character or letter and end with a Chinese character, letter, or digit. Only Chinese characters, letters, digits, underscores (_), and hyphens (-) are allowed.
Platform	Device OS type.
	Android, Linux, iOS, LiteOS, and Windows are supported.
Chip	Device chip model.
	HiSilicon Hi35xx series chips, including 3516CV500 and 3519AV100
Description	Product description.
	Enter 1 to 512 characters. Special characters #~^$%\'&*<>(){}[] \\/ are not allowed.

Step 3 Confirm the product information and click **OK**. After the product is created, the **Product Management** page is automatically displayed.

Step 4 Select the new product and click **Download License** in the **Operation** column to download the license file.

The license contains the identity information of the product, which is used for registration verification with the skill SDK.

----End

Step 2: Purchase a Skill

You can purchase required skills from the skill market of Huawei HiLens based on your service requirements to develop devices running HiSilicon Hi35xx series chips. The skills can be used for Hi3516EV200, Hi3516CV500, Hi3519AV100, Hi3519V101, Hi3516DV300, and Arm chips..

This example describes how to purchase the free **Human_Face_Detection_Offline_3516EV200_HiLinux** skill, which is used to develop devices running HiSilicon Hi35xx series chips.

Step 1 Log in to the Huawei HiLens console. In the navigation pane on the left, choose **Subscribe > All Skills**. The **Skill Market** page is displayed.

Step 2 Search for **Human_Face_Detection_Offline_3516EV200_HiLinux** in the skill search box and click the skill card. The skill details page is displayed.

Step 3 Click **Buy Now**. The page for purchasing skills is displayed.

Step 4 Specify **Copies**. You can retain its default value. The **Specifications** is default to **Channel(s)**, indicating that a license can be installed on one device to use one channel of video.
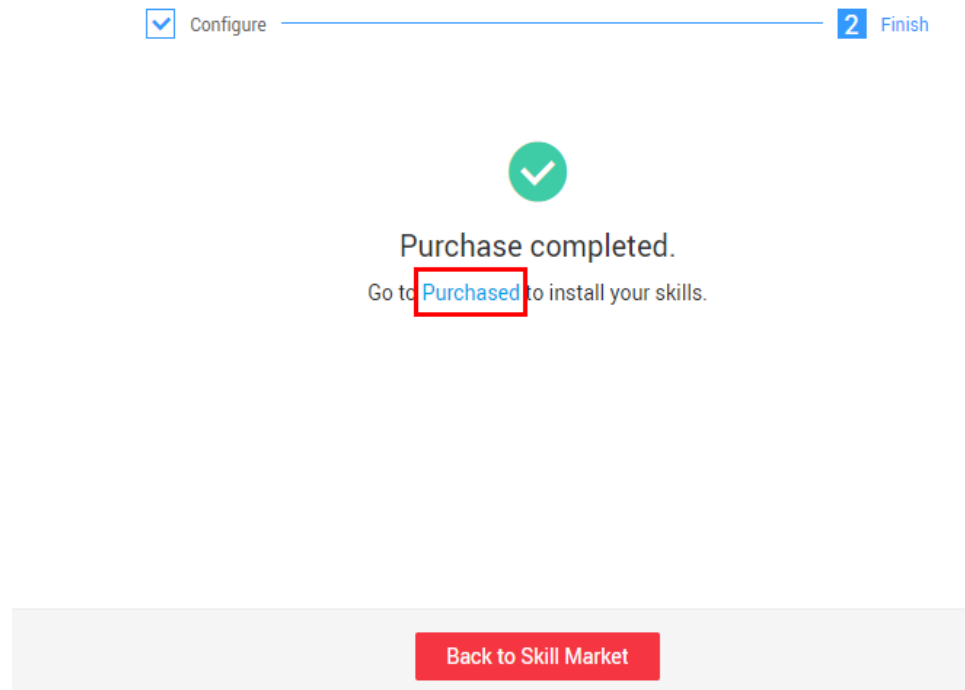
Figure 3-2 Purchasing the skill

Step 5 Confirm the price and click **Buy Now**.

After the purchase is successful, you can click **Purchased** to go to the **Subscribe > Order Management** page and distribute the skill.

Figure 3-3 Successful purchase

Step 6 Go to **Subscribe > Order Management** to distribute the skill.

----End

Step 3: Use the Skill

Skills oriented to HiSilicon Hi35xx series chips can be used only after being distributed to device groups. For devices that run HiSilicon Hi35xx series chips, a maximum of five skills can be distributed to a device group due to performance restrictions.

Step 1 Log in to the Huawei HiLens console. In the navigation tree on the left, choose **Subscribe > Order Management**. The **Skill Orders** tab is displayed by default.

Step 2 Select a skill designed to run on HiSilicon Hi35xx series chips, and distribute the skill license to a product group.

1. Select the skill to be distributed and click **Distribute** in the **Operation** column.

2. In the **Distribute to Product** dialog box, select the product group to which the license is to be distributed, and click the **Distribute to Product** button.

   If you select **Yes** under **Automatic Upgrade**, the skill in the product will be automatically upgraded to the latest version if a new skill version is available. This function is not available yet and will be provided.

Figure 3-4 Distributing a skill

3. The skill distribution information is displayed in the dialog box. Confirm that the **Installation Status** is **Successful** and click **OK**.

Step 3 On the **Skill Orders** tab page, select the skill you want to use and click **Download** in the **Operation** column. The browser automatically downloads the SDK package of the skill.

Figure 3-5 Downloading SDK

Step 4 Install the skill. Integrate the downloaded SDK package to the device.

The device location where the skill is integrated varies according to the device. For details, see the description document in the SDK.

----End

4 Practices for Beginners

This section lists some common practices to help you understand and use HUAWEI HiLens to develop and deploy AI capabilities onto end-user devices like smart cameras.

Table 4-1 Common best practices

Practice	Description
Developing a Face Detection Skill	This chapter describes how to use the model import and skill development functions of Huawei HiLens to create a new face detection skill based on the Caffe model.
Developing a Safety Helmet Detection Skill (with an External IPC)	This chapter describes how to connect an external Internet protocol camera (IPC) to a HiLens Kit device, run the safety helmet detection skill on the HiLens Kit device, and use the POST method to output the results.
Distributing a Skill to a Product (Manufacturers)	This chapter describes how to manage devices, subscribe to skills, and distribute licenses to devices through the Huawei HiLens management console, enabling cameras with HiSilicon Hi35xx series chips with AI capabilities.

5 Change History

Release Date	Description
2020-04-30	The issue is the first official release.