University of Cyprus

HUMAN-CENTERED INTELLIGENT USER INTERFACES - MAI648

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MAI4CAREU

Master programmes in Artificial
Intelligence 4 Careers in Europe
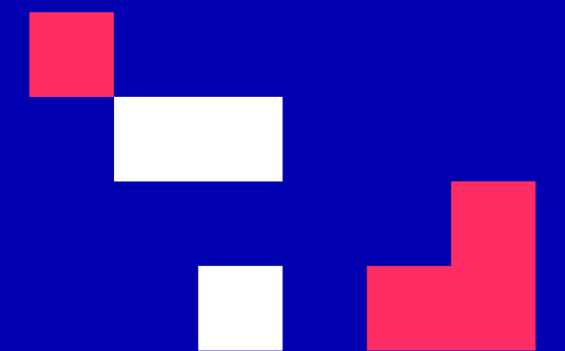
LAB 10

Designing and Developing Skills in Alexa

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- Introduction and Laboratory Description

- Understanding Alexa Skills

- Prerequisites to build a skill in Alexa

- Voice design concepts: utterances, intents, and slots

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Introduction and Laboratory Description

- This is a hands-on laboratory aiming to guide you through the development of an Alexa Skill. The Alexa Skills Kit (ASK) is a software development framework that enables you to create content, called skills

- Skills are like apps for Alexa

Amazon - https://developer.amazon.com/en-US/docs/alexa/ask-overviews/what-is-the-alexa-skills-kit.html

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Introduction and Laboratory Description

- With an interactive voice interface, Alexa gives users a hands-free way to interact with your skill. Users can use their voice to perform everyday tasks like checking the news, listening to music, or playing a game

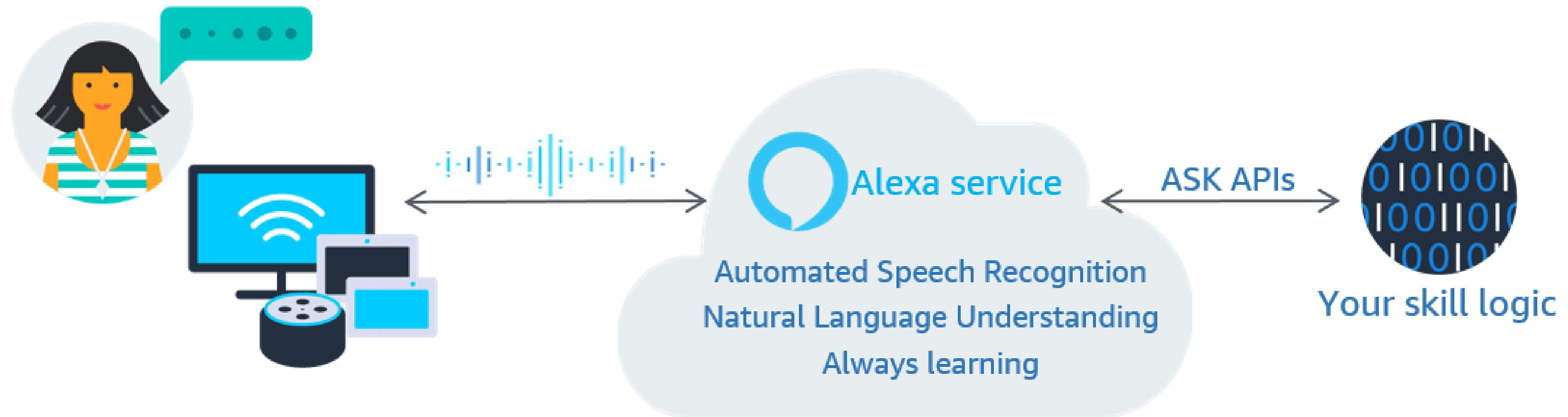- Users can also use their voice to control cloud-connected devices

Amazon - https://developer.amazon.com/en-US/docs/alexa/ask-overviews/what-is-the-alexa-skills-kit.html

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Introduction and Laboratory Description

- For example, users can ask Alexa to turn on lights or change the thermostat

- Skills are available on Alexa-enabled devices, such as Amazon Echo and Amazon Fire TV, and on Alexa-enabled devices built by other manufacturers

Amazon - https://developer.amazon.com/en-US/docs/alexa/ask-overviews/what-is-the-alexa-skills-kit.html

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Introduction and Laboratory Description

Alexa service

Automated Speech Recognition
Natural Language Understanding
Always learning

ASK APIs

Your skill logic

Voice-activated processing flow to invoke a skill with the Alexa service
Source: https://developer.amazon.com/en-US/docs/alexa/ask-overviews/what-is-the-alexa-skills-kit.html

Understanding Alexa Skills

- The following steps are run when a user interacts with an Alexa skill:
  - 1. The user says the wake word, "Alexa."
  - 2. Alexa hears the wake word, and then listens.
  - 3. Alexa captures the audio, and then sends it to the Alexa service.
  - 4. The Alexa service uses the interaction model to figure out where to route the request.

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Understanding Alexa Skills

- 5. The Alexa service sends a JSON request to the skill's Lambda function.
- 6. The Lambda function inspects the JSON request.
- 7. The Lambda function determines how to respond.
- 8. The Lambda function sends a JSON response to the Alexa service.

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Understanding Alexa Skills

- 9. The Alexa service receives the JSON response, and then converts the output text into an audio file.
- 10. The Alexa service sends the audio file to the Alexa-enabled device.
- 11. The Alexa-enabled device receives the audio file, and then plays the audio.

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Prerequisites to build a skill in Alexa

- For the laboratory, we will use the Alexa simulator in the developer console. For doing so, an Amazon account needs to be created.

- https://developer.amazon.com/alexa/console/ask

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Voice design concepts: utterances, intents, and slots

Design concepts
Source: https://developer.amazon.com/en-US/docs/alexa/workshops/build-an-engaging-skill/design-vui/index.html
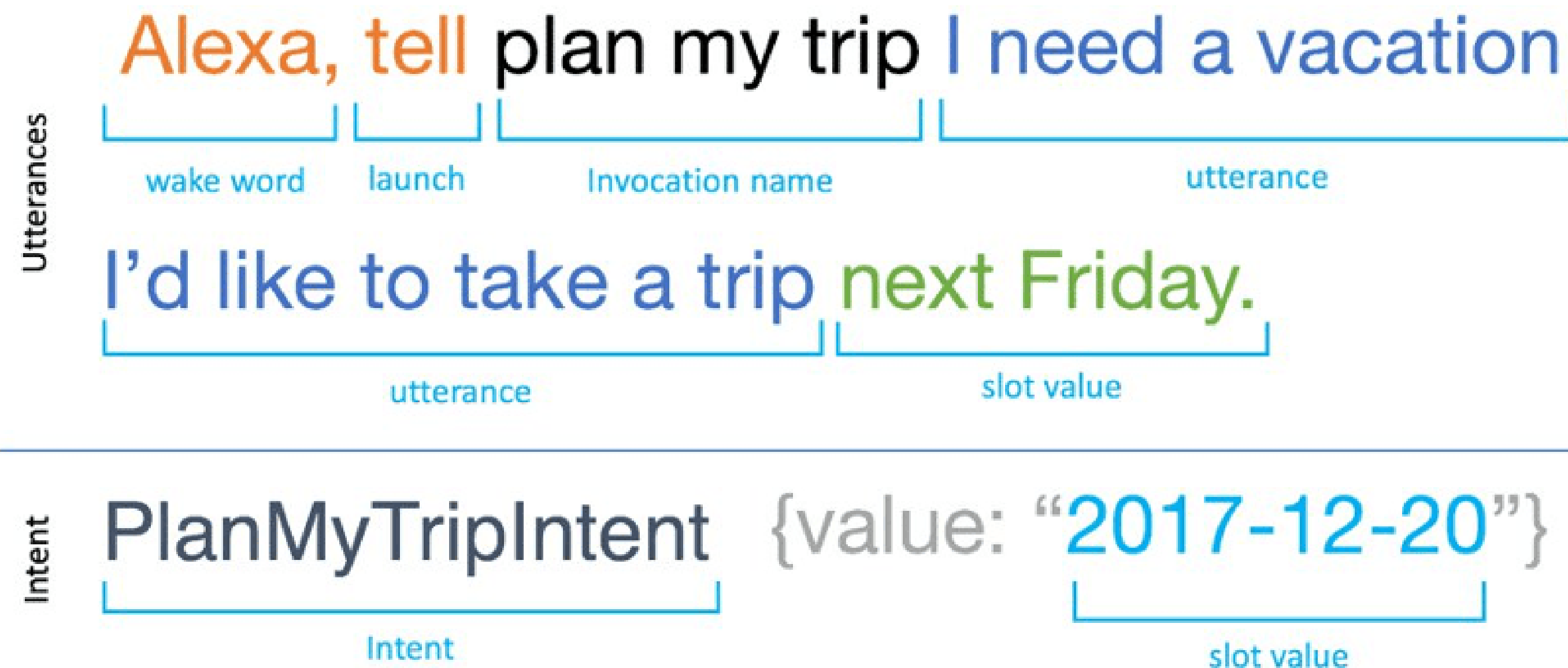
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Hands-on Examples

- In this laboratory, you will build the Cake Time skill that performs the following tasks:
  - Asks the user to guess celebrity birthdays
  - Determines if they guessed right or wrong
  - Tells them their score and remembers it
  - Greets returning users differently than new ones

Create New Skill

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Choose a "Custom" model to add to your skill

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Choose the "Alexa-hosted (Python)" option to host your skill's backend resources

2. Choose a method to host your skill's backend resources

You can provision your own backend resources or you can have Alexa host them for you. If you decide to have Alexa host your skill, you'll get access to our code editor, which will allow you to deploy code directly to AWS Lambda from the developer console.

Alexa-hosted (Node.js)

Alexa will host skills in your account and get you started with a Node.js template. You will gain access to AWS Lambda endpoints in all Alexa service regions, a DynamoDB table for data persistence, and S3 for media storage. Learn more

Alexa-hosted (Python) — SELECTED

Alexa will host skills in your account and get you started with a Python template. You will gain access to AWS Lambda endpoints in all Alexa service regions, a DynamoDB table for data persistence, and S3 for media storage. Learn more

Provision your own

Provision your own endpoint and backend resources for your skill. This is recommended for skills that have significant data transfer requirements. You will not gain access to the console's code editor.

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Choose "Start from Scratch" template to add to your skill

Change the Skill Invocation name under the Build section

Sources

- https://developer.amazon.com/en-US/docs/alexa/ask-overviews/what-is-the-alexa-skills-kit.html
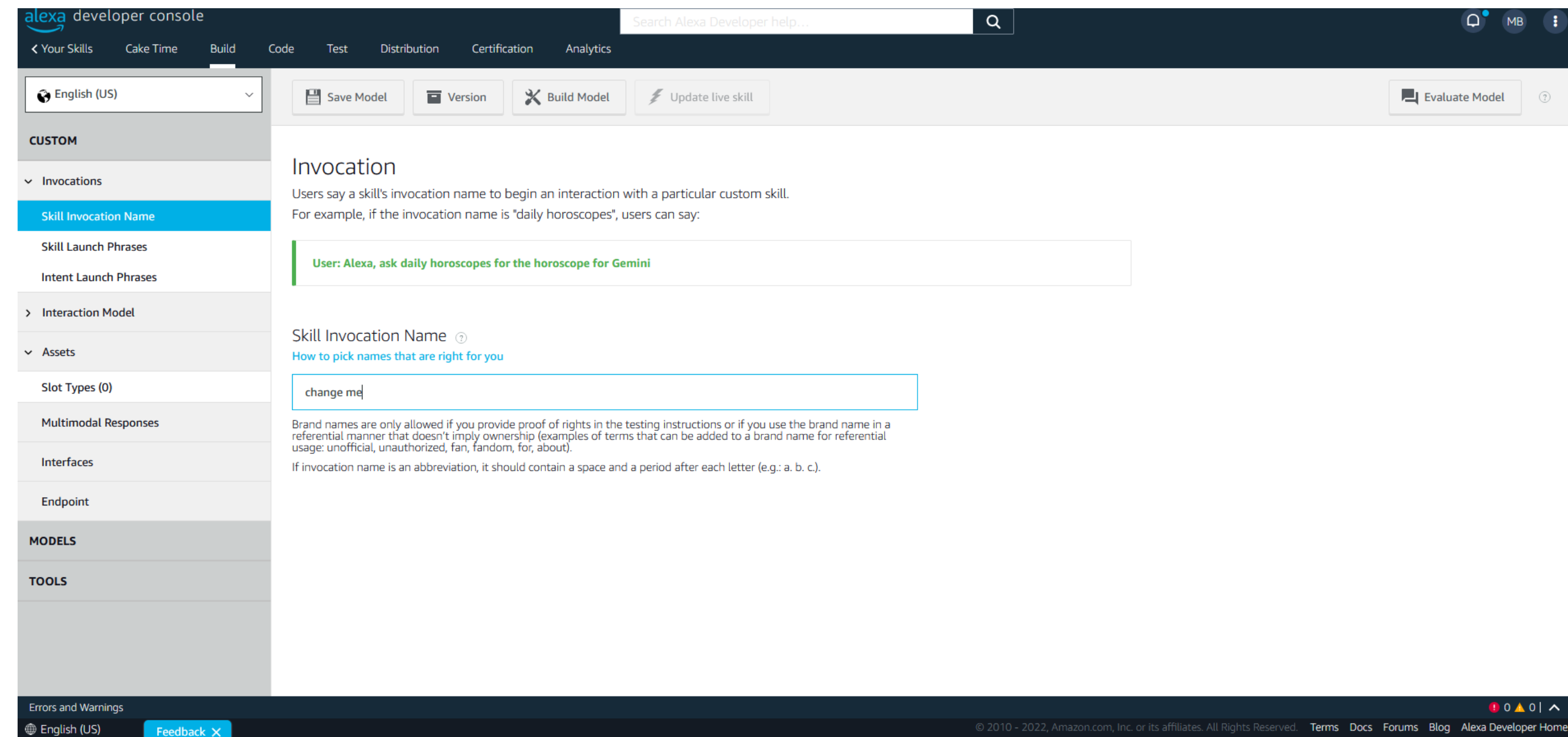
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Thank you.