AI on Cloud

depa Microsoft AIT Asian Institute of Technology SCB ACADEMY

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Chapter 4

การประมวลผลภาษาธรรมชาติ (Natural Language Processing (NLP)

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Lab 4: สร้าง Home automation System โดยใช้ Conversational language understanding

สร้าง Language Model ด้วย Conversational Language Understanding (CLU)

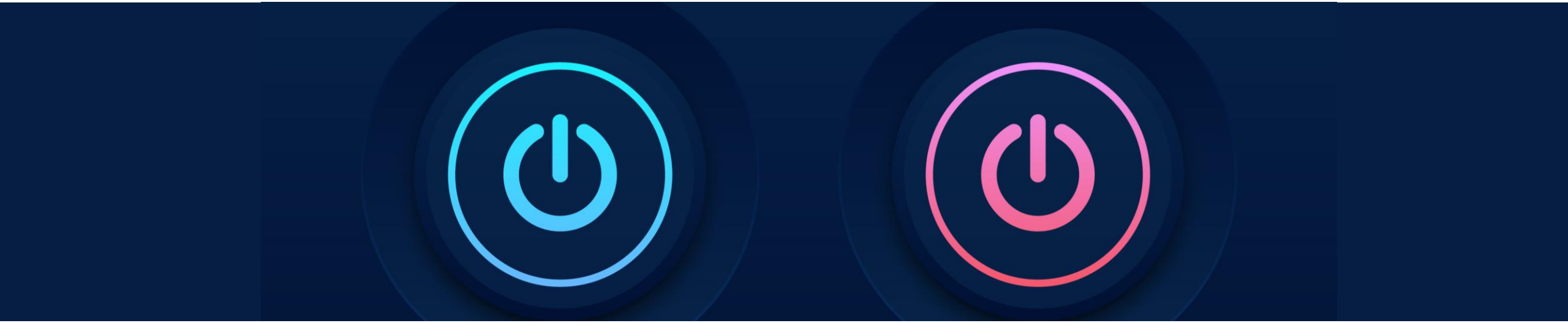
3 Concepts ที่สำคัญสำหรับ Conversational Language Understanding (CLU)

- *Utterances*
- *Entities*
- *Intents*

Utterances

ข้อความ/ชุดข้อความ
จาก users

Entities



Item, สิ่งของ หรือสิ่งต่าง ๆ ที่ Utterances อ้างถึงเช่น

- "*Switch the **fan** on.*"
- "*Turn on the **light**.*"
- Entities คือ fan, light

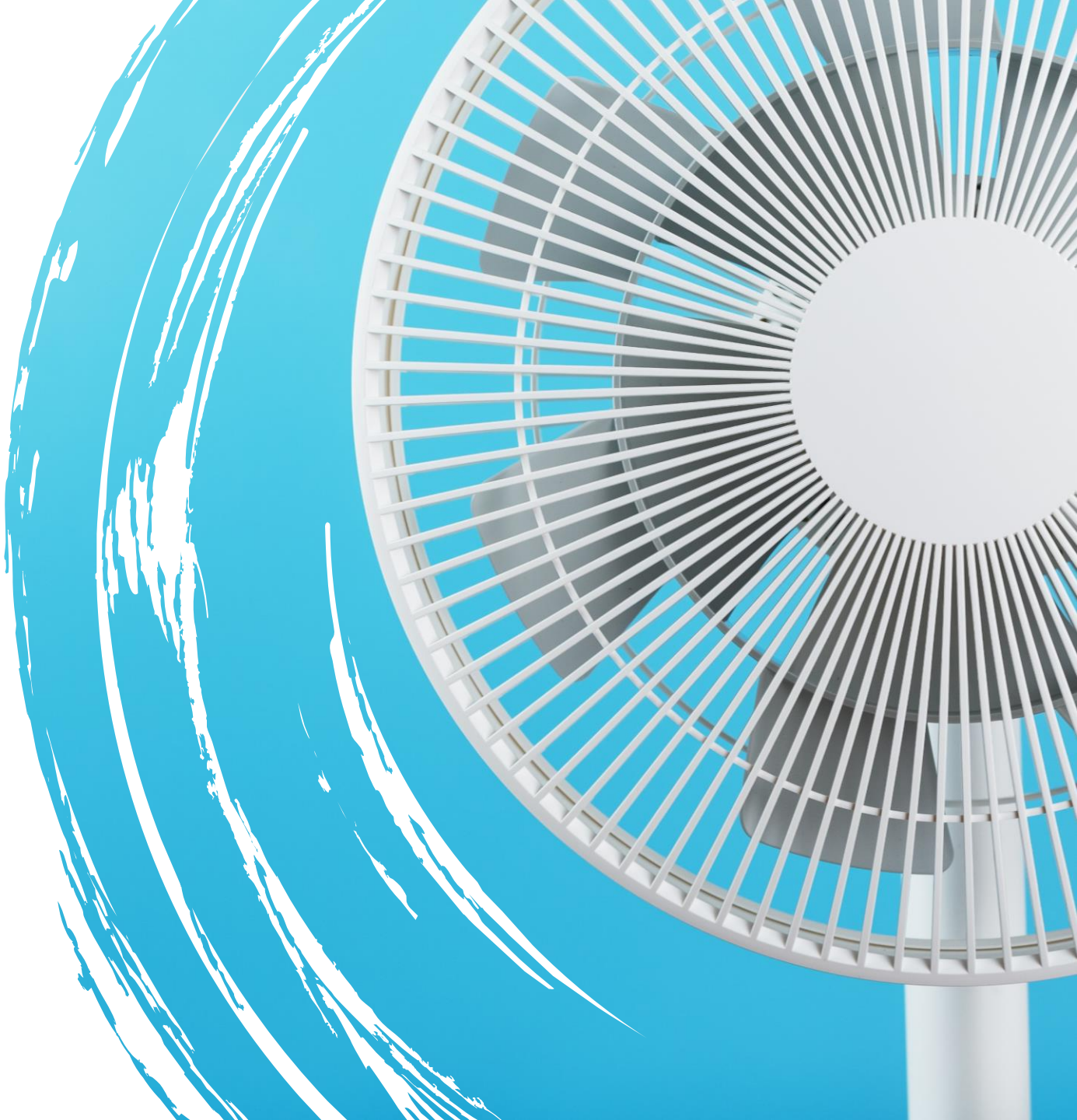
Intents

ส่วนที่บ่งบอกถึงเป้าหมาย หรือความต้องการที่แฝงอยู่ใน Utterances ที่ผู้ใช้ต้องการ

ตัวอย่าง จาก Utterances

- "*Switch the fan on.*"
- "*Turn on the light.*"

Intent คือ **TurnOn**



Examples

Intent	Related Utterances	Entities
Greeting	"Hello"	
	"Hi"	
	"Hey"	
	"Good morning"	
TurnOn	"Switch the fan on"	fan (device)
	"Turn the light on"	light (device)
	"Turn on the light"	light (device)

https://docs.microsoft.com/en-us/learn/modules/create-language-model-with-language-understanding/1-introduction

Examples

CheckWeather	"What is the weather for today?"	today (datetime)
	"Give me the weather forecast"	
	"What is the forecast for Paris?"	Paris (location)
	"What will the weather be like in Seattle tomorrow?"	Seattle (location), tomorrow (datetime)
None	"What is the meaning of life?"	
	"Is this thing on?"	

The None intent is considered a fallback and is typically used to provide a generic response to users when their requests don't match any other intent. Use the None intent to handle utterances that do not map any of the utterances.

https://docs.microsoft.com/en-us/learn/modules/create-language-model-with-language-understanding/1-introduction

None Intent

สำหรับ CLU application the **None** Intent มีความสำคัญและจำเป็น และไม่สามารถลบหรือ Rename ได้ ใช้สำหรับระบุ Utterances ที่อยู่นอกเหนือ Scope ของ Application

Creating an Application with Conversational Language Understanding

Step 1: *Authoring* the Model i.e., Define Entities, Intents, and Utterances to Train the Language Model.

Step 2: Publish the Model

Authoring Resource in Azure

- Azure provides Language Understanding portal – a web-based interface for creating and managing Conversational Language Understanding applications.
- The portal provides a collection of prebuilt *domains* that include pre-defined intents and entities for common scenarios. You can use as a starting point for your model.
- You can also create your own entities and intents.
- When you create entities and intents, you can do so in any order.
- Tip: Best practice is to use the Language portal for authoring and to use the SDK for runtime predictions.

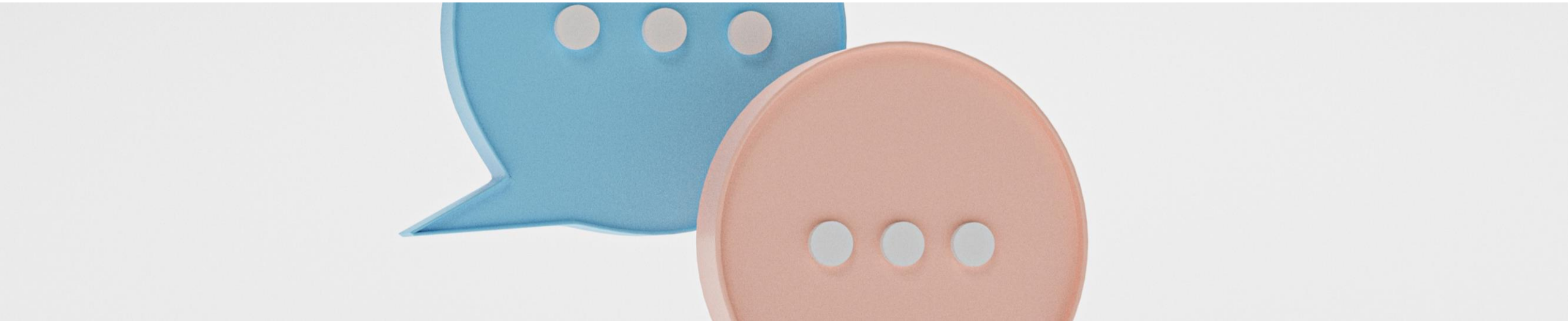
Creating Intents

- Define intents based on actions a user would want to perform with your application.
- For each intent, you should include a variety of utterances that provide examples of how a user might express the intent.
- Be sure to include sample utterances for each potential entity; and ensure that each entity is identified in the utterance.

Creating Entities: 4 Types

- **Machine-Learned**: Entities that are learned by your model during training from context in the sample utterances you provide.
- **List**: Entities that are defined as a hierarchy of lists and sublists. For example, a **device** list might include sublists for **light** and **fan**. For each list entry, you can specify synonyms, such as **lamp** for **light**.
- **RegEx**: Entities that are defined as a *regular expression* that describes a pattern – for example, you might define a pattern like **[0-9]{3}-[0-9]{3}-[0-9]{4}** for telephone numbers of the form ***555-123-4567***.
- **Pattern.any**: Entities that are used with *patterns* to define complex entities that may be hard to extract from sample utterances.

Training the Model



Using the sample utterances to teach the model to match natural language expressions that a user might say to probable intents and entities.

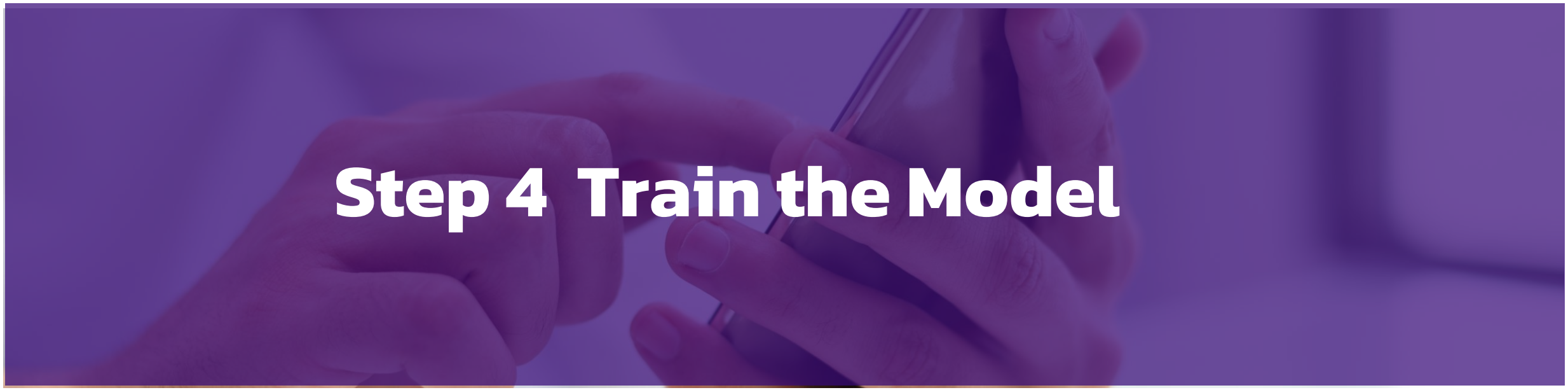
Lab 4: สร้าง home automation system โดยใช้ Conversational language understanding

- **เป้าหมาย:** Implement a home automation system that enables you to control devices in your home by using voice commands such as "switch on the light" or "put the fan on" and have an AI-powered device understand the command and take appropriate action.
- **Tool:** Language service resource and Language Studio portal

Step 1 Create a *Language Service* Resource

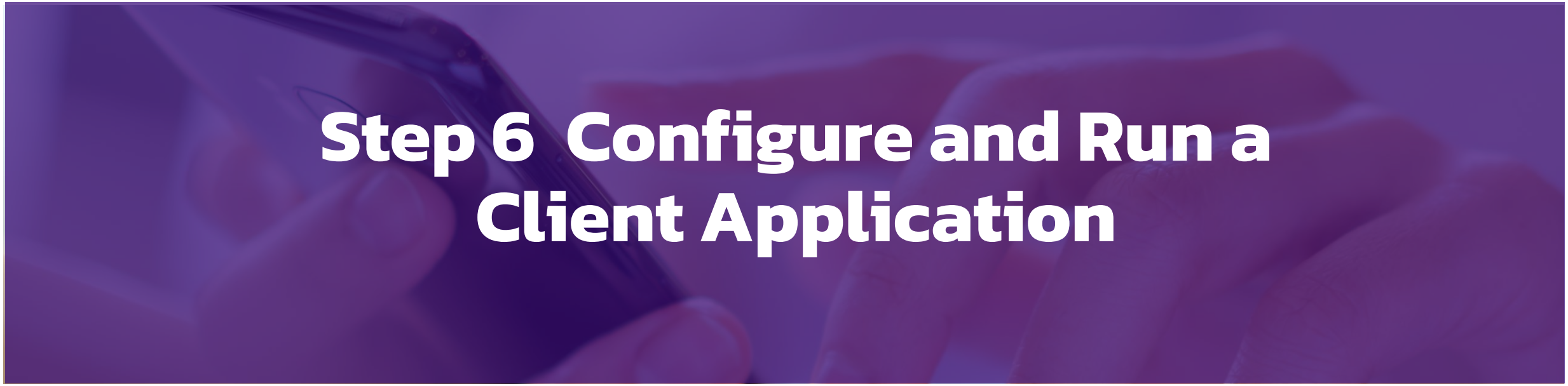
Step 2 Create a Conversational Language Understanding App

Step 3 Create Intents, Utterances, and Entities



Step 4 Train the Model

Step 5 Deploy and Test the Model



Step 6 Configure and Run a Client Application

End of Lab4

- Translate text from English into French, Italian, and Chinese.
- Translate audio from English into text in French

Thank you