Adding Natural Language Processing through LUIS AI

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Agenda

What is LUIS and why is it important to me?

LUIS framework aspects

- Intents
- Entities
- Utterances

The LUIS UI

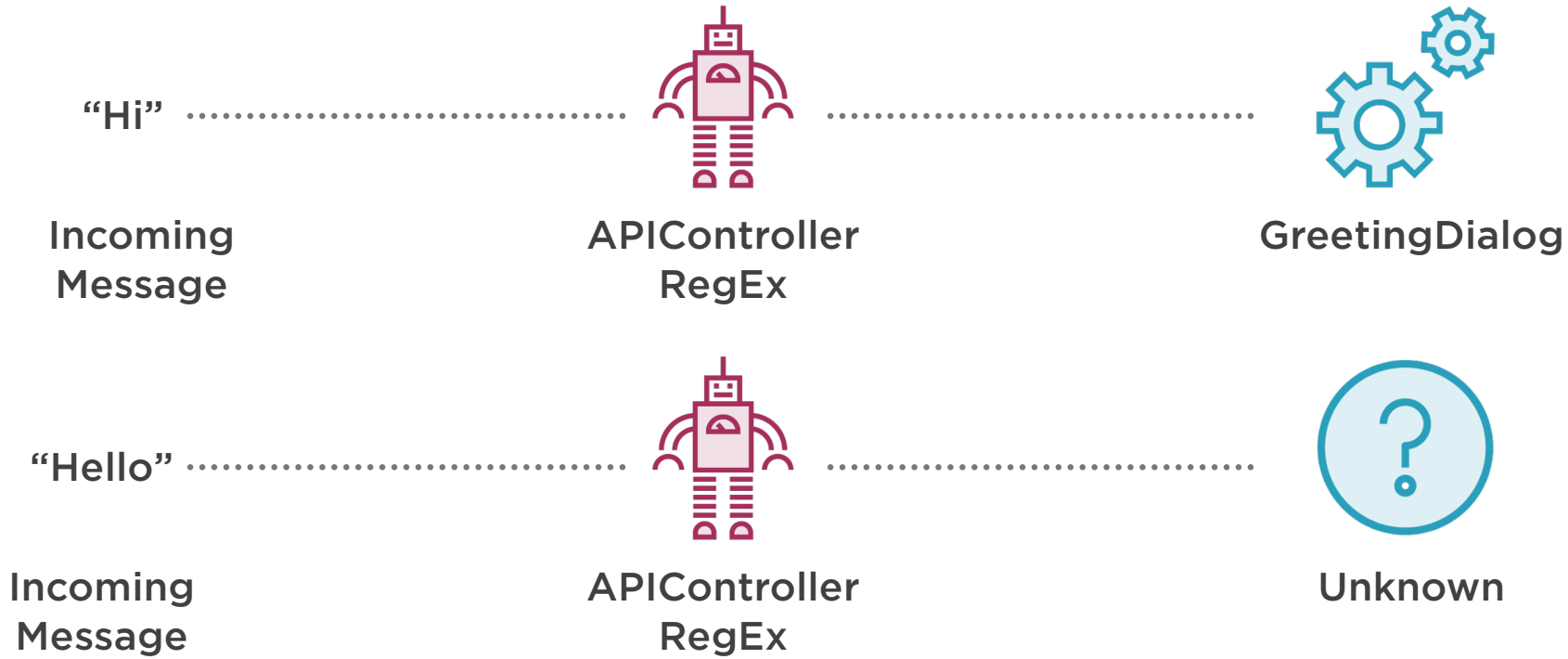
What Is LUIS?

Language Understanding Intelligent Service

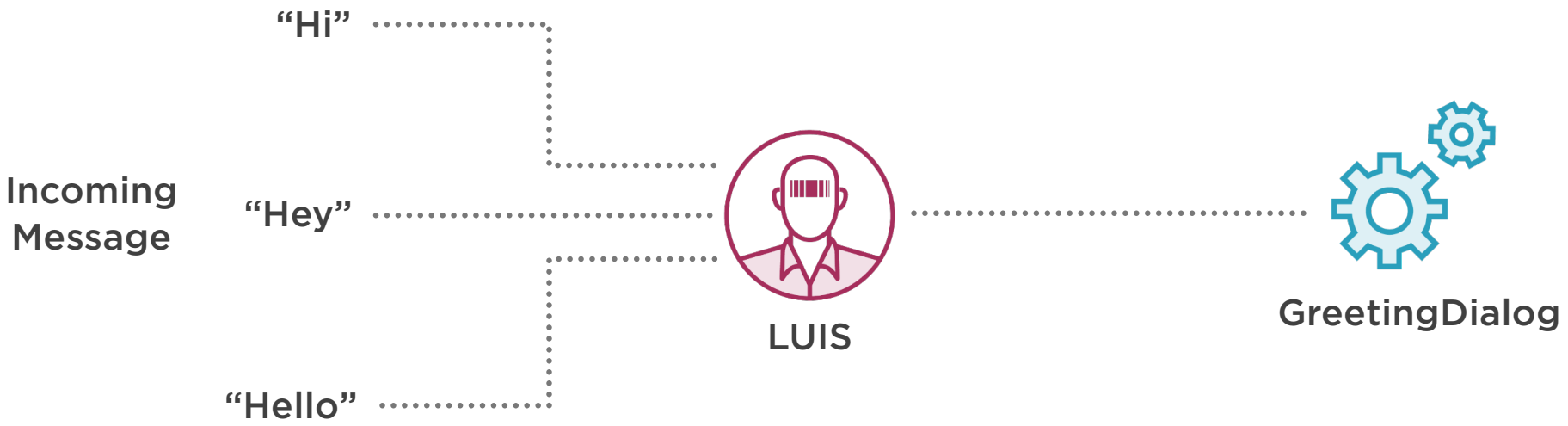
Makes natural language processing possible

Utilizes interactive machine learning

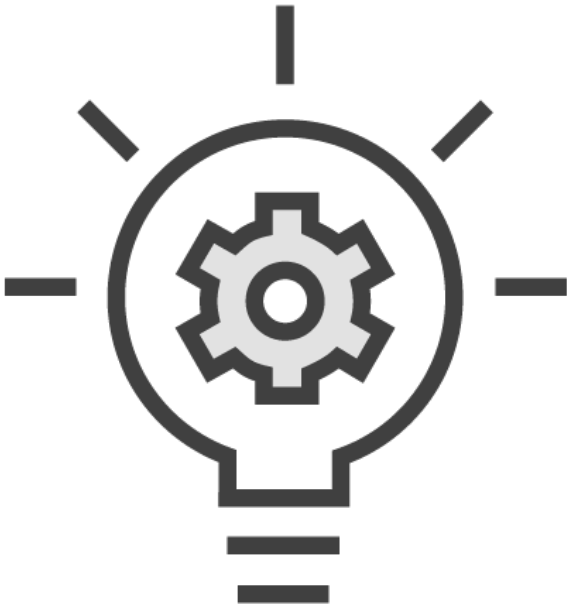
A World without LUIS



A World with LUIS



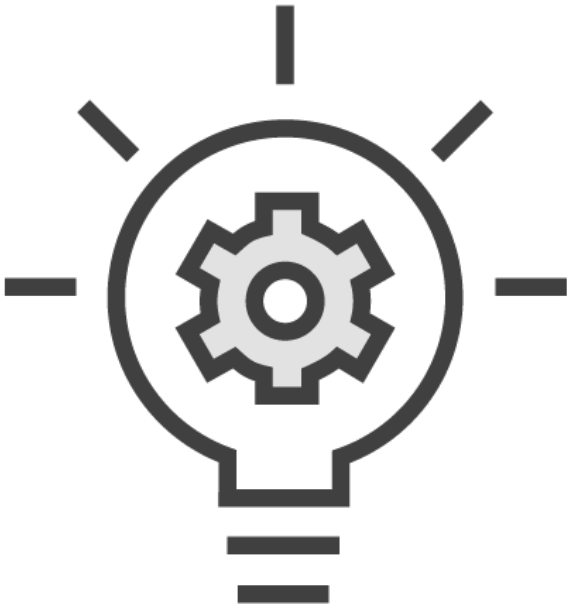
Stating Your Intents



Identifies what actions you want your bot to take

Utilizes Active Learning to improve over time

Stating Your Intents – Prebuilt/Default Intents



Default Intents

- None

Prebuilt Intents

Knowing Your Entities

Identifies what things your bot is taking action on

Helps to enhance your Intents

Two categories

- Machine Learned
- Non-Machine Learned

Shared across Intents

Knowing Your Entities – Entity Types

Entity Types

- Simple
- Composite
- List
- Pattern.Any
- Regex
- Prebuilt

Knowing Your Entities – Entity Types

Simple

- A Machine-learned value
- Example:
  - "I want to order a pizza from Village Pizza"
    - **Intent** – Order a pizza
    - **Entity** – Restaurant
  - "I want to order a pizza from <Restaurant>"

Knowing Your Entities – Entity Types

Composite

- Made up of other entities
- Example:
  - "John Smith wants to search flights from LA to New York"
    - **Intent** – Search Flights
    - **Entity**
      - **Customer** – John Smith
      - **FromLocationEntity** – LA
      - **ToLocationEntity** – NY
  - "<Customer> wants to search flights <FromLocation><ToLocation>"

Knowing Your Entities – Entity Types

List

- Represents a fixed closed set of related words
- Not machine learned, exact match
- Utilizes synonyms
- Example:
  - List Item: Seattle
  - Synonyms: Sea-tac, sea, 206
  - “I want to fly to Seattle”
  - “I want to fly to sea-tac”

Knowing Your Entities – Entity Types

Pattern.Any

- Used when trying to improve entity recognition
- Example:
  - **Entity: MovieName**
  - "Did The **Big Lotto Ticket** win an Oscar this year?"
  - "Did {MovieName} win an Oscar this year[?]"

Knowing Your Entities – Entity Types

Regular Expression

- Example:
  - **RegEx**: kb[0-9]{6}
  - "When was kb123456 published?"
  - **Entity**: kb123456

Knowing Your Entities – Prebuilt Entities

Prebuilt Entities

- Number
- Ordinal
- Temperature
- Dimension
- Money
- Age
- PersonName
- Percentage
- Email
- Url
- Geography
- KeyPhrase

Knowing Your Entities – Prebuilt Entities

Prebuilt Domains

- Calendar
- Communication
- Home Automation
- Email
- HomeAutomation
- Note
- RestaurantReservation
- ToDo
- Utilities
- Weather
- Web

Knowing Your Entities – Entity Types

Roles

- Way to assign contextual purpose
- Example:
  - "The price is between 5 dollars and 10 dollars."
  - 5 – Lower bounds Role
  - 10 – Upper bounds Role
  - "The price is between X dollars and Y dollars."

Knowing Your Entities – Phrase Lists

Phrase Lists

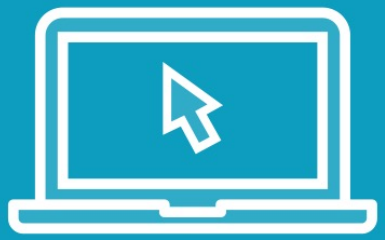
- Groups of words or phrases
- Belong to same class, treated similarly
- Not the same as a List
- Examples of Phrase Lists
  - Industry Terms
  - Slang
  - Company-Specific Language
- Interchangeable or Non-Interchangeable

Defining Your Utterances

Identifies phrases to link to intents and entities

Used to help LUIS learn

Demo



Two-part Formula

- LUIS UI – (https://www.luis.ai)
- ASP.NET Web API Code

Summary

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