How we understand your intent > Splunk Natural Language Platform (NLP)

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Learning Objective

1. Overview of natural language understanding
2. Technical deep dive on intent understanding approach
3. Engineering challenges and solutions

Natural Language Understanding

Overview

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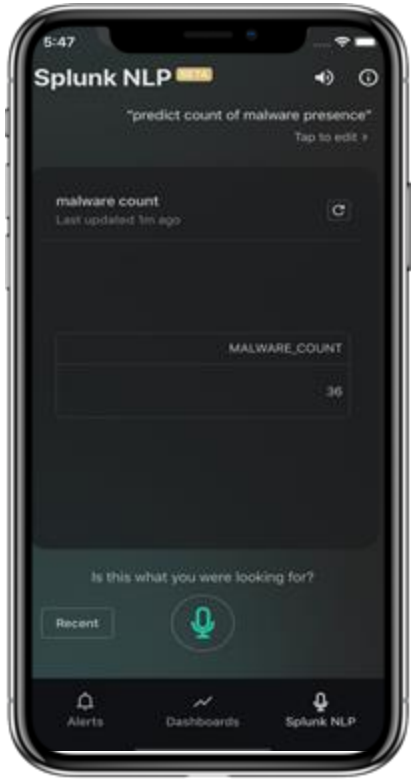
Splunk Natural Language Platform (NLP)

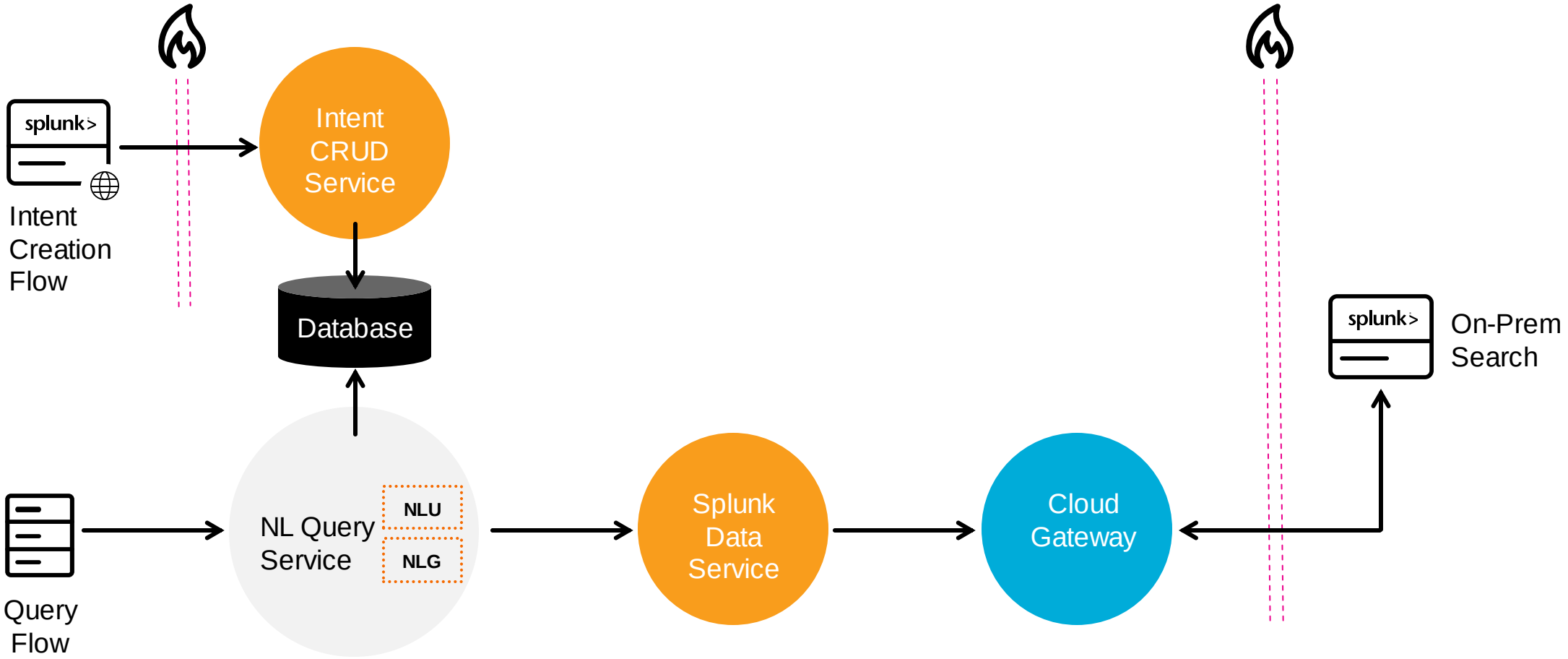
Predict count of malware presence

Without SPL!!

Natural Language Understanding (NLU)



Splunk NLP



Overview

Voice based assistant on **Splunk Mobile** and **Splunk TV**

Intent based system

Hybrid Cloud Enabled (via **Cloudgateway**)

Simple Enablement option for existing Splunk Mobile/TV customers to adopt NLP

Understanding Intent

Technical Deep Dive

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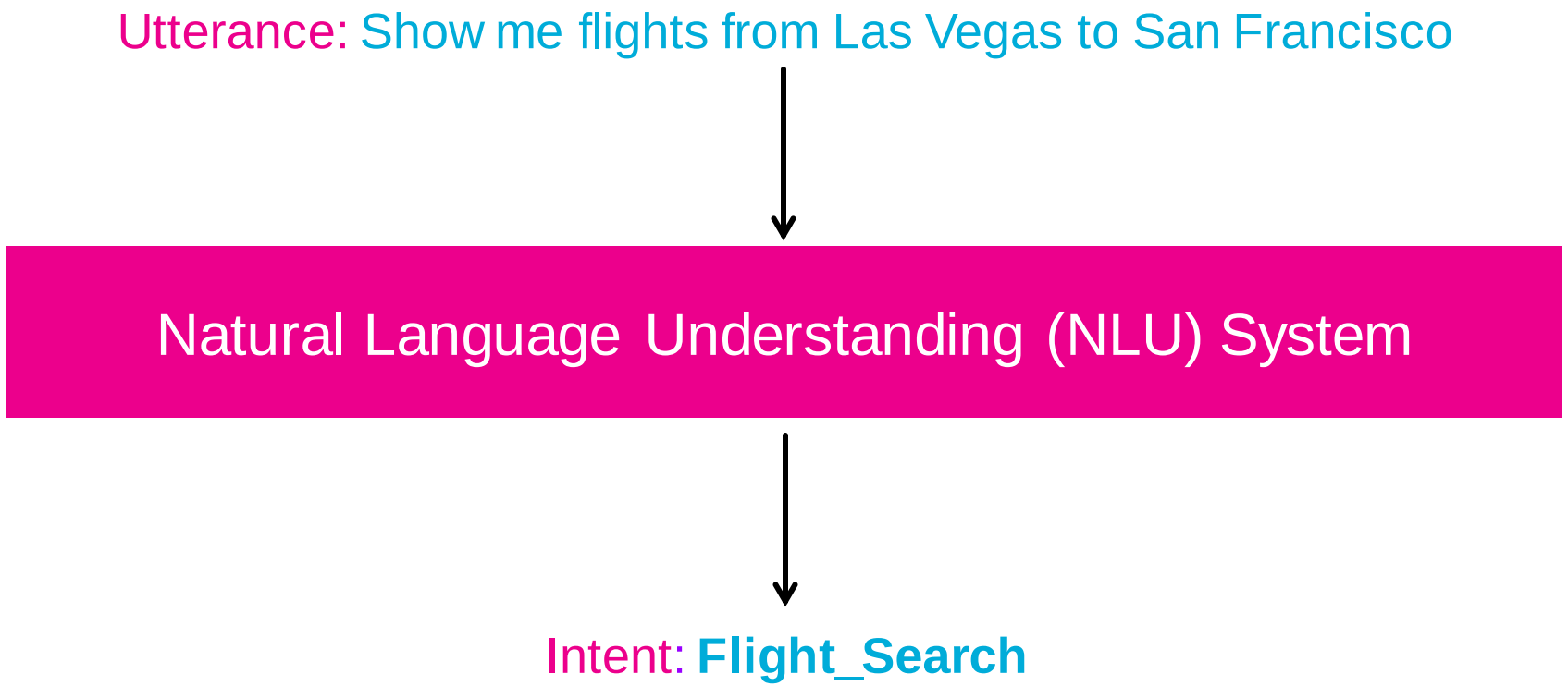
Outline

Understanding Intent

1. Overview
2. Techniques

What is Intent Understanding?



Intent Understanding Techniques

Utterance: Show me flights from Las Vegas to San Francisco

Rule based

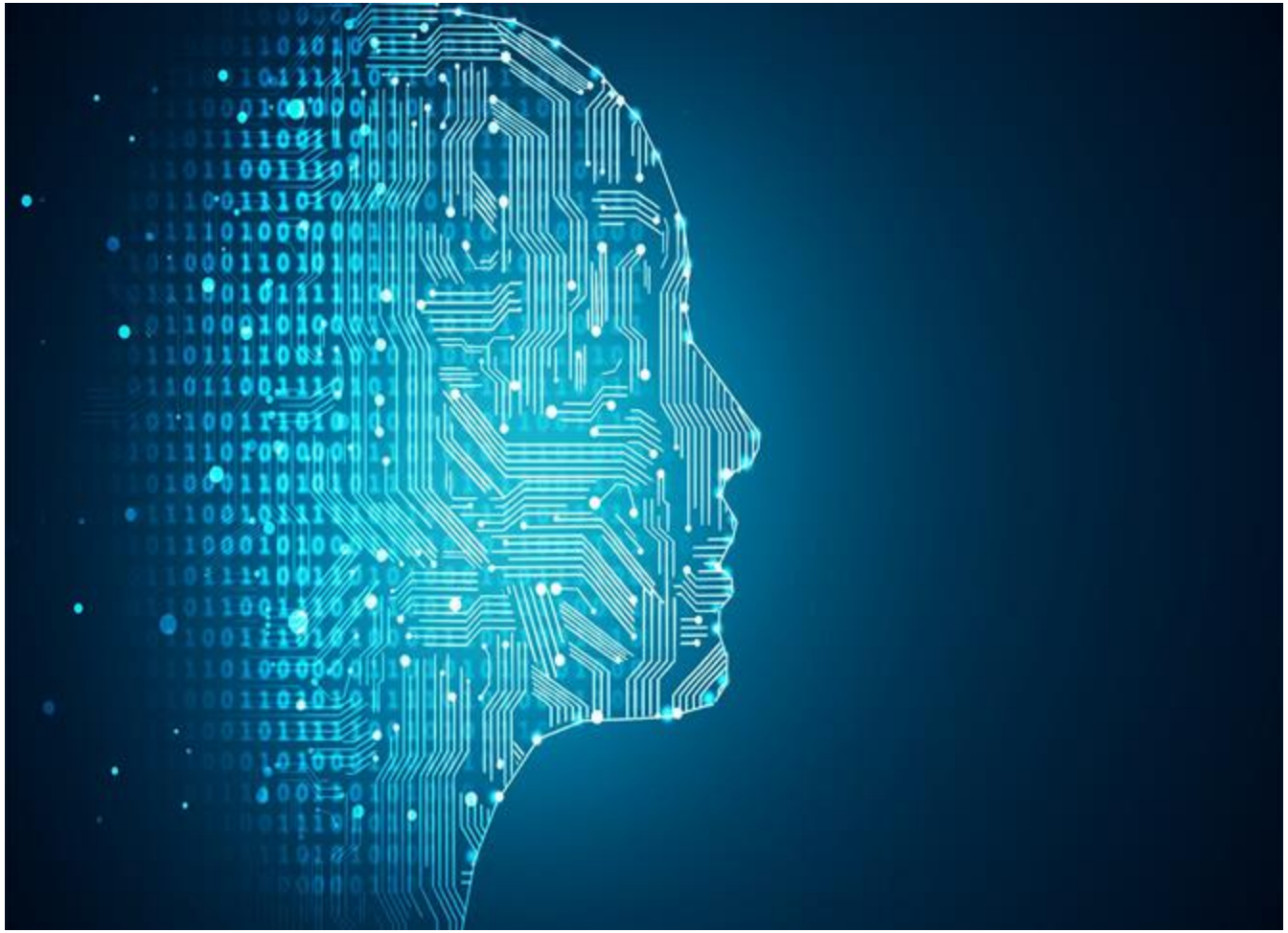
Machine learning based

Intent: **Flight_Search**

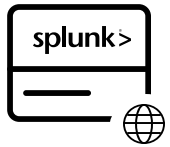
Rule Based Intent Understanding

How Do We Write Rules?

Machine Learning Based Intent Understanding



Machine Learning Based Intent Understanding

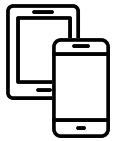


Utterance dataset

Training Algorithm

Trained Model

Phase: Training



Utterance: Show me flights from Las Vegas to San Francisco

Trained Model

Intent: **Flight Search**

Phase: Inference

How Do We Obtain Trained Model?

Classical Machine Learning

- Obtain utterance dataset
- Perform feature engineering
- Learn a function

Deep Learning

- Obtain utterance dataset
- Learn a function

Step 1: Obtain Utterance Dataset

Utterance	Intent
Display flights from Las Vegas to San Francisco	Flight_Search
Find flights from Las Vegas to San Francisco	Flight_Search
Show me count of predicted malware	Malware_Count
….	…

Utterance	Intent
Show me flights from Las Vegas to San Francisco	?

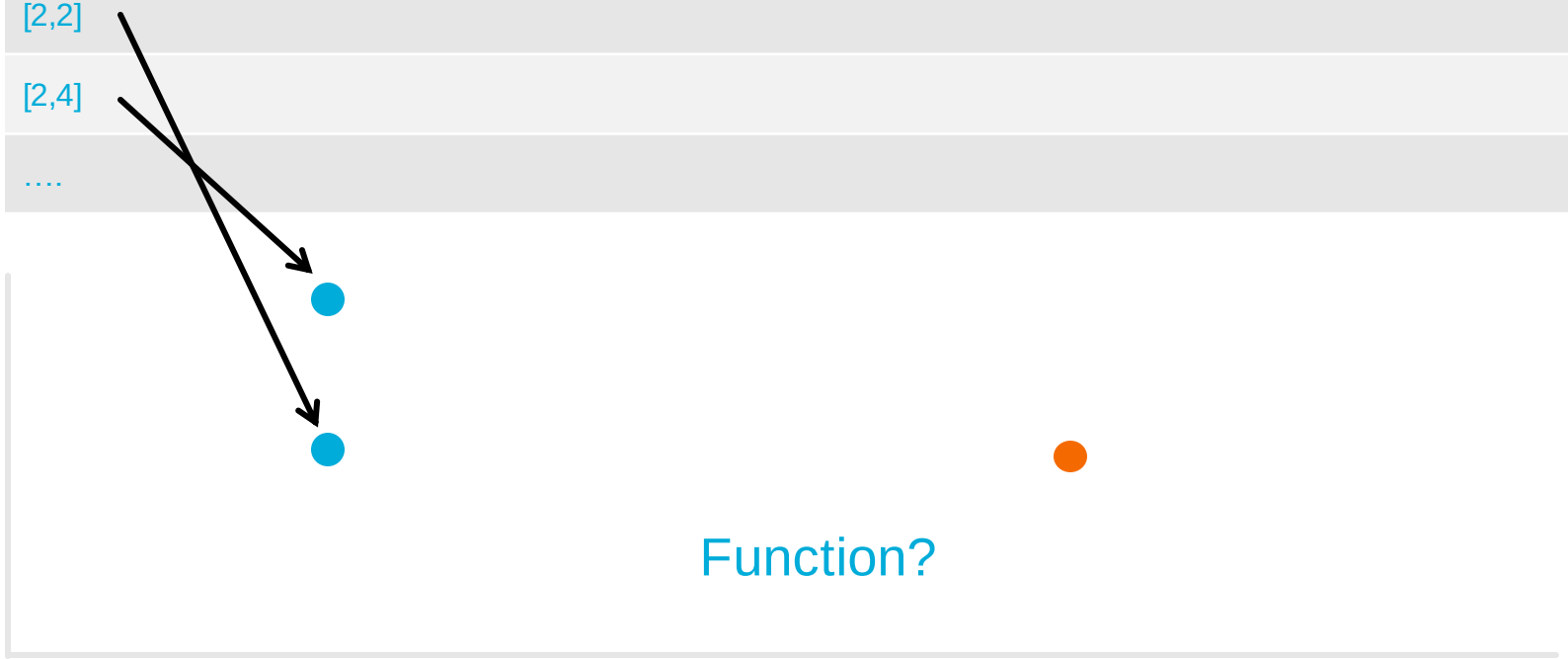
Step 2: Feature Engineering

Utterance	Intent
Display flights from Las Vegas to San Francisco	Flight_Search
Find flights from Las Vegas to San Francisco	Flight_Search
Show me count of predicted malware	Malware_Count
….	…

Utterance	Intent
[2,2]	Flight_Search
[2,4]	Flight_Search
….	…

Step 3: Learn a Function

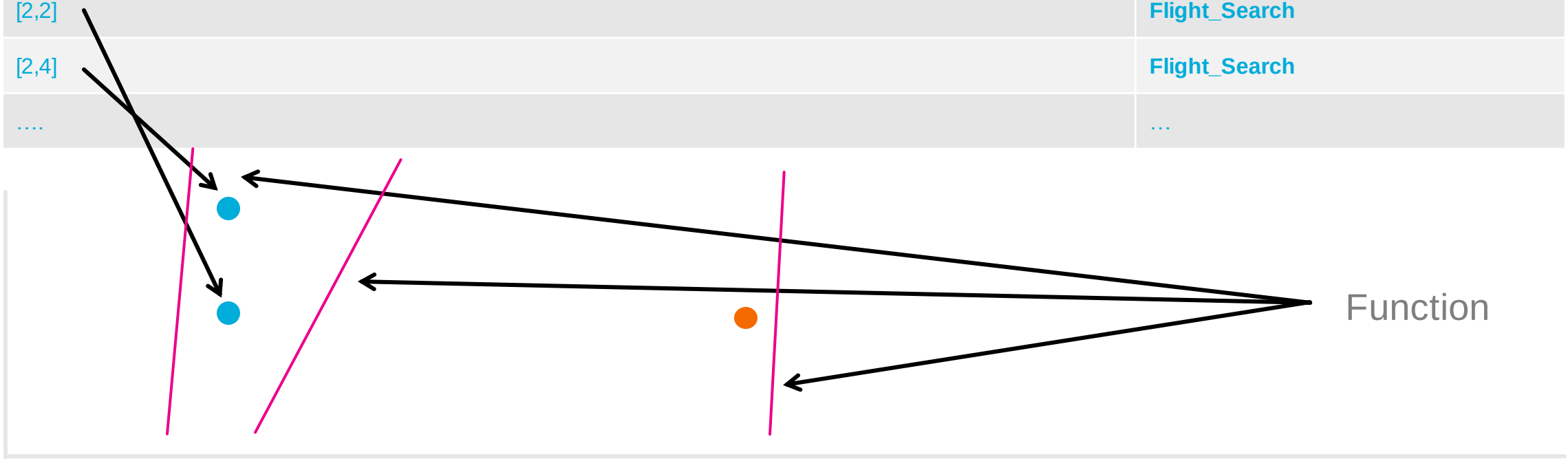
Utterance	Intent
[2,2]	Flight_Search
[2,4]	Flight_Search
….	…



Intent	Data Point
Flight_Search	●
Malware_Count	●

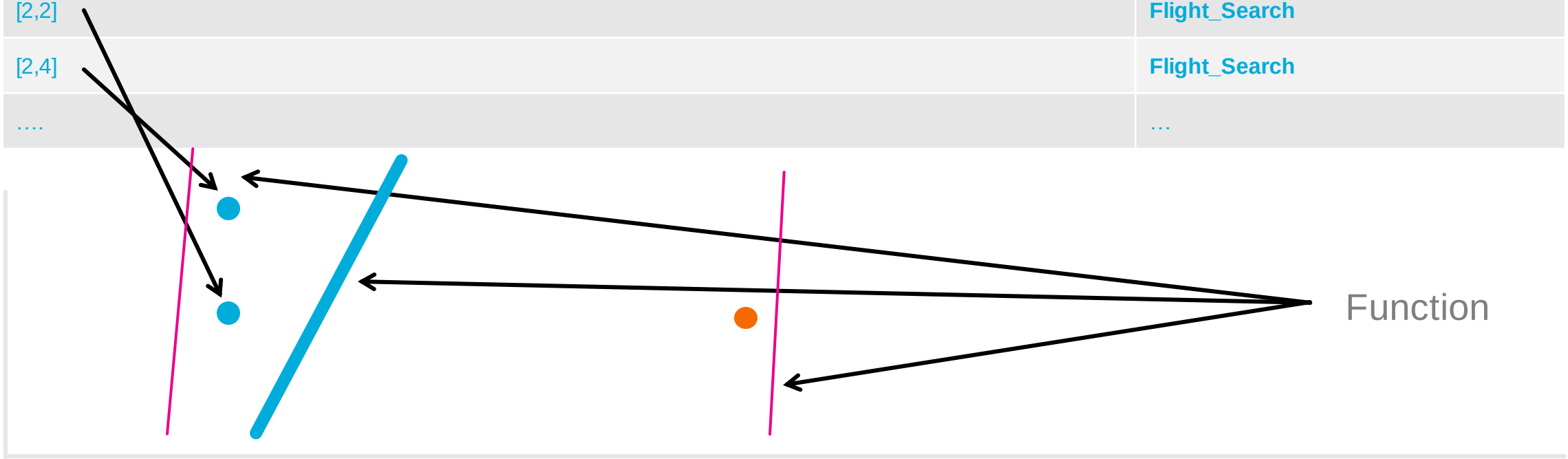
Step 3: Learn a Function

Utterance	Intent
[2,2]	Flight_Search
[2,4]	Flight_Search
….	…



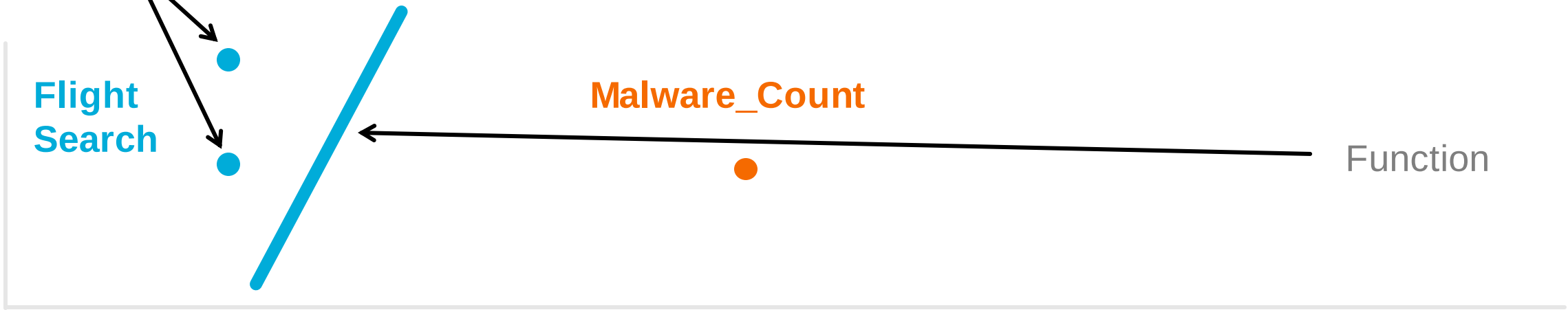
Step 3: Learn a Function

Utterance	Intent
[2,2]	Flight_Search
[2,4]	Flight_Search
….	…



Step 3: Learn a Function

Utterance	Intent
[2,2]	Flight_Search
[2,4]	Flight_Search
….	…



Inference

Utterance	Intent
Show me flights from Las Vegas to San Francisco	?

Malware_Count

Inference

Utterance	Intent
Show me flights from Las Vegas to San Francisco	Flight_Search

Engineering Challenges and Solutions

Technical Deep Dive

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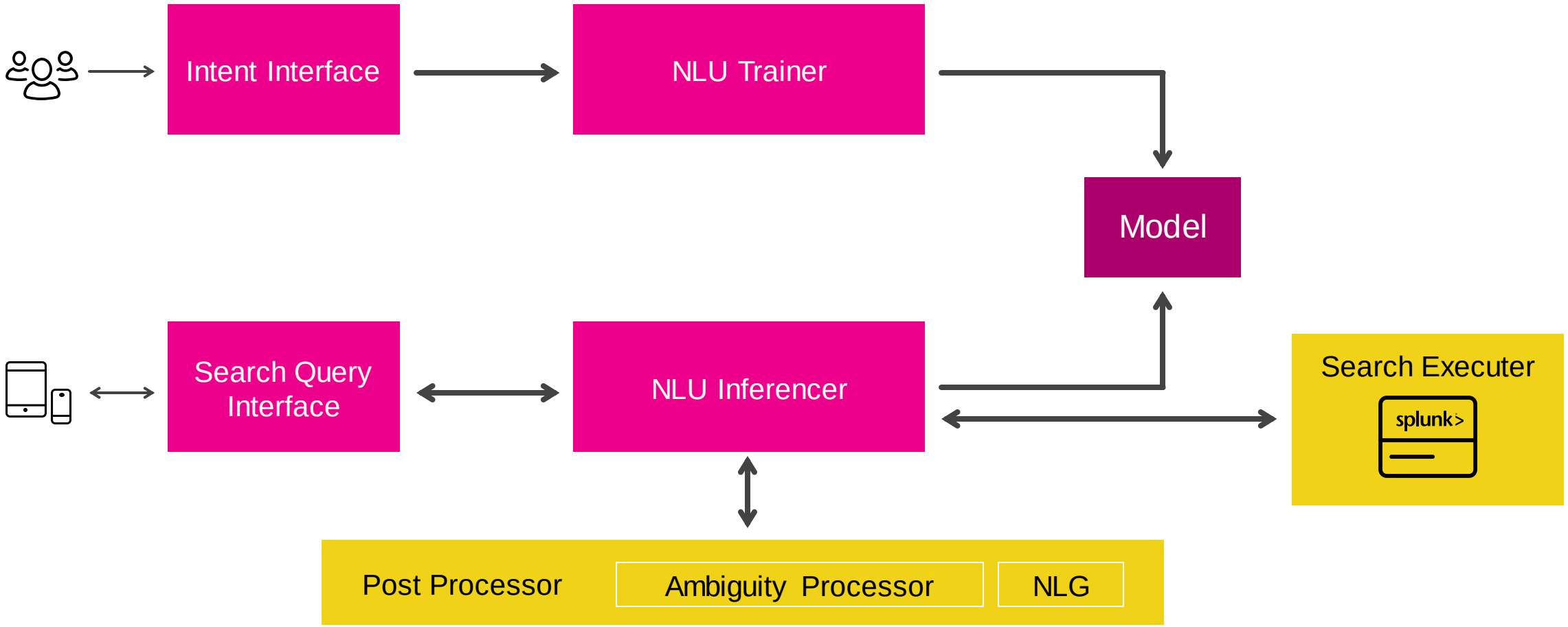
Intent Processing Pipeline



Challenges

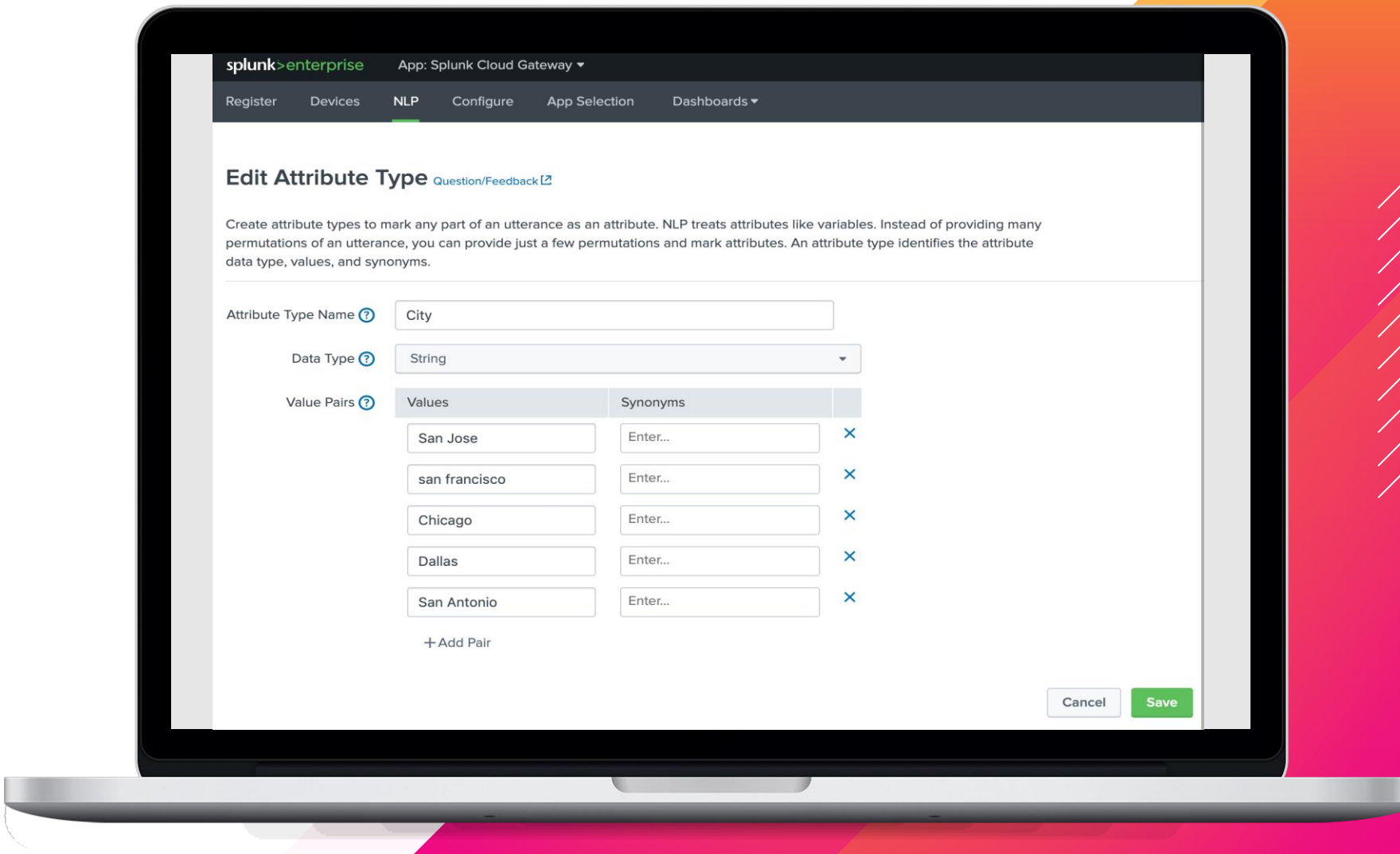
- Minimizing number of intents
  - Show me flights to San Francisco
  - Show me flight to San Jose
- Supporting utterance variation
  - Flights to San Francisco
  - Flights to SF
  - Flights to Bay City
- Removing ambiguity
  - Multiple matched intents
- Resource utilization
  - Transient servers for training

Minimizing Number of Intents

Solution

Attribute Types

- Extending the scope of single intent to address variety of queries.
- Wide range of commonly used attributes e.g., dates, temperatures, currencies etc. can be addressed using this.

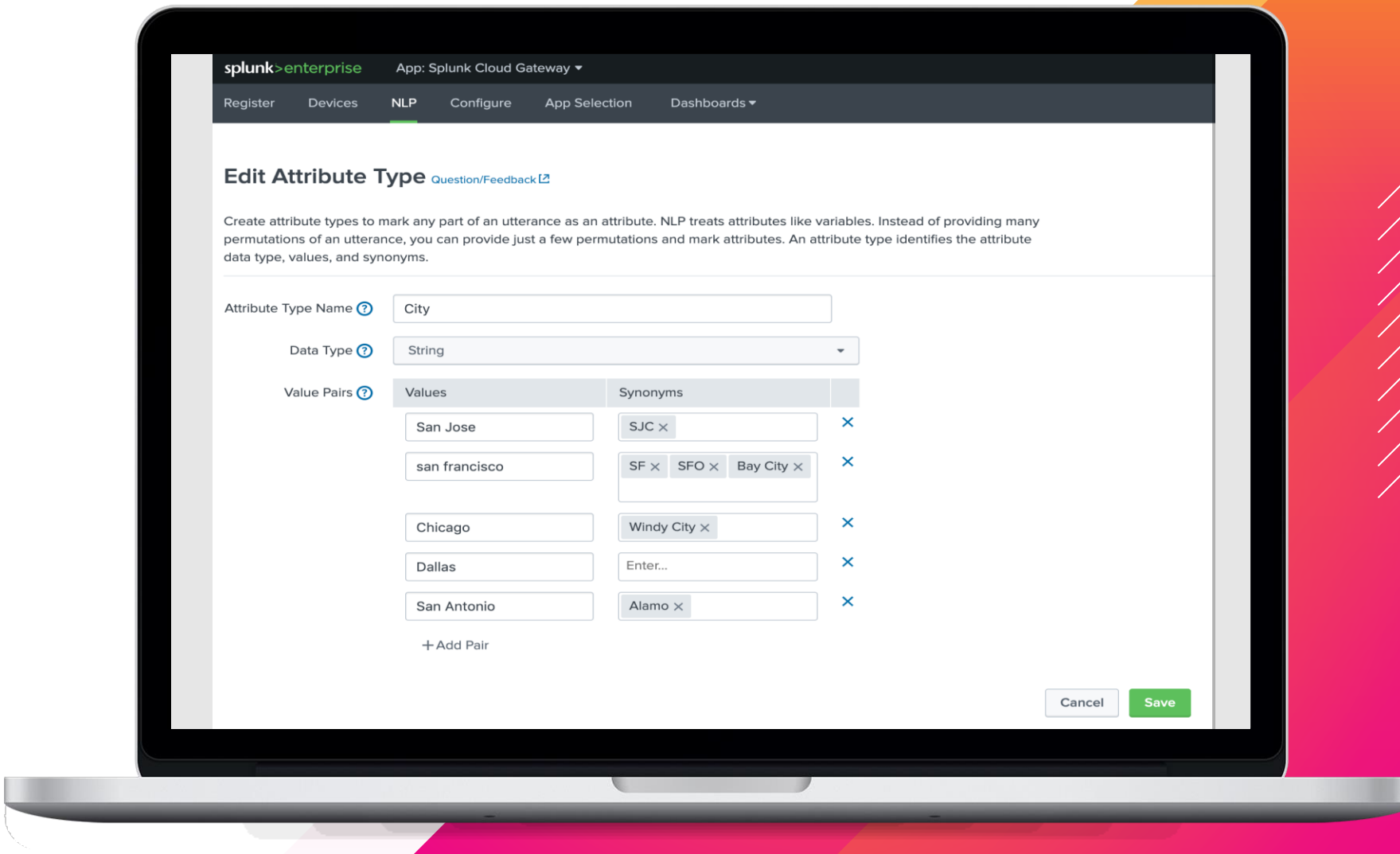


Supporting Utterance Variation

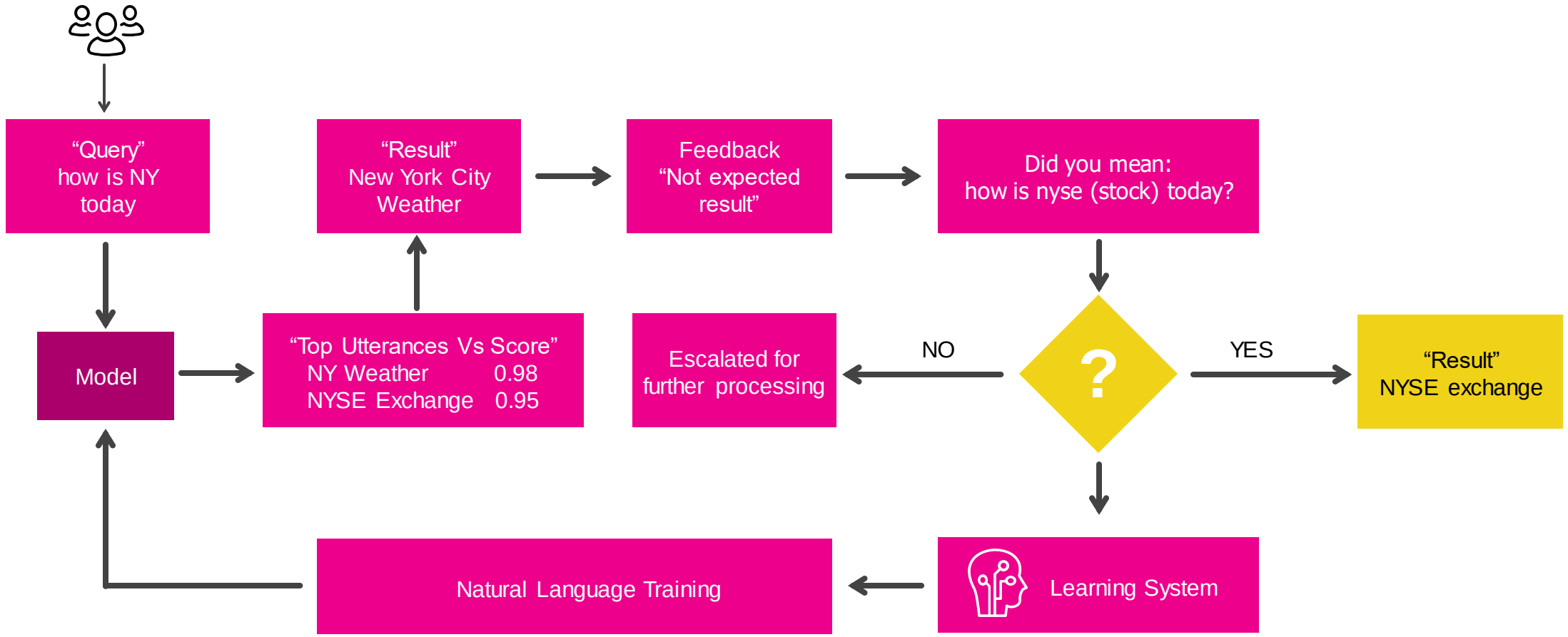
Solution

Synonyms

- Providing ways to ask same query in different ways



Removing Ambiguity



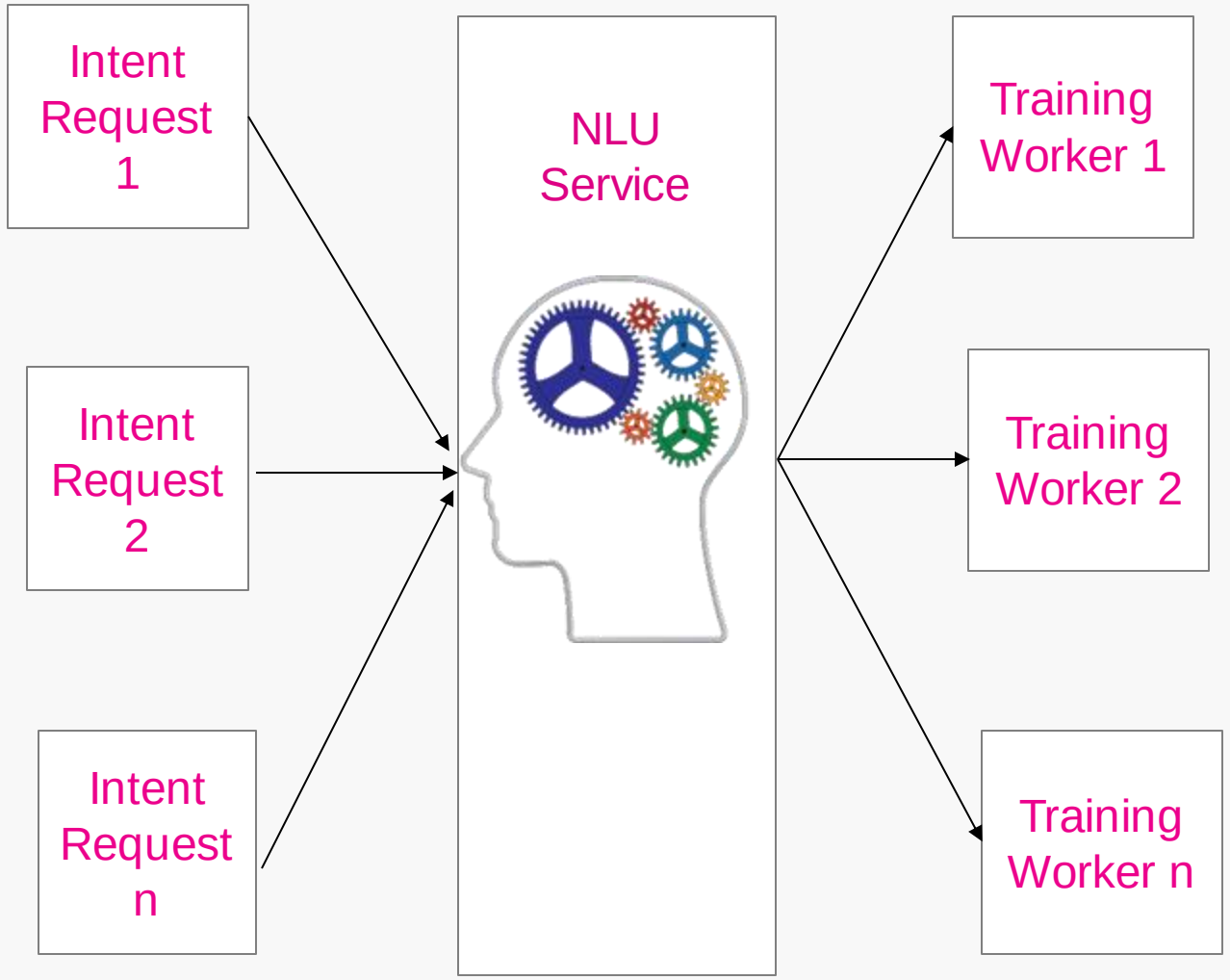
Resource utilization

Avoid idle servers

Efficient resource utilization

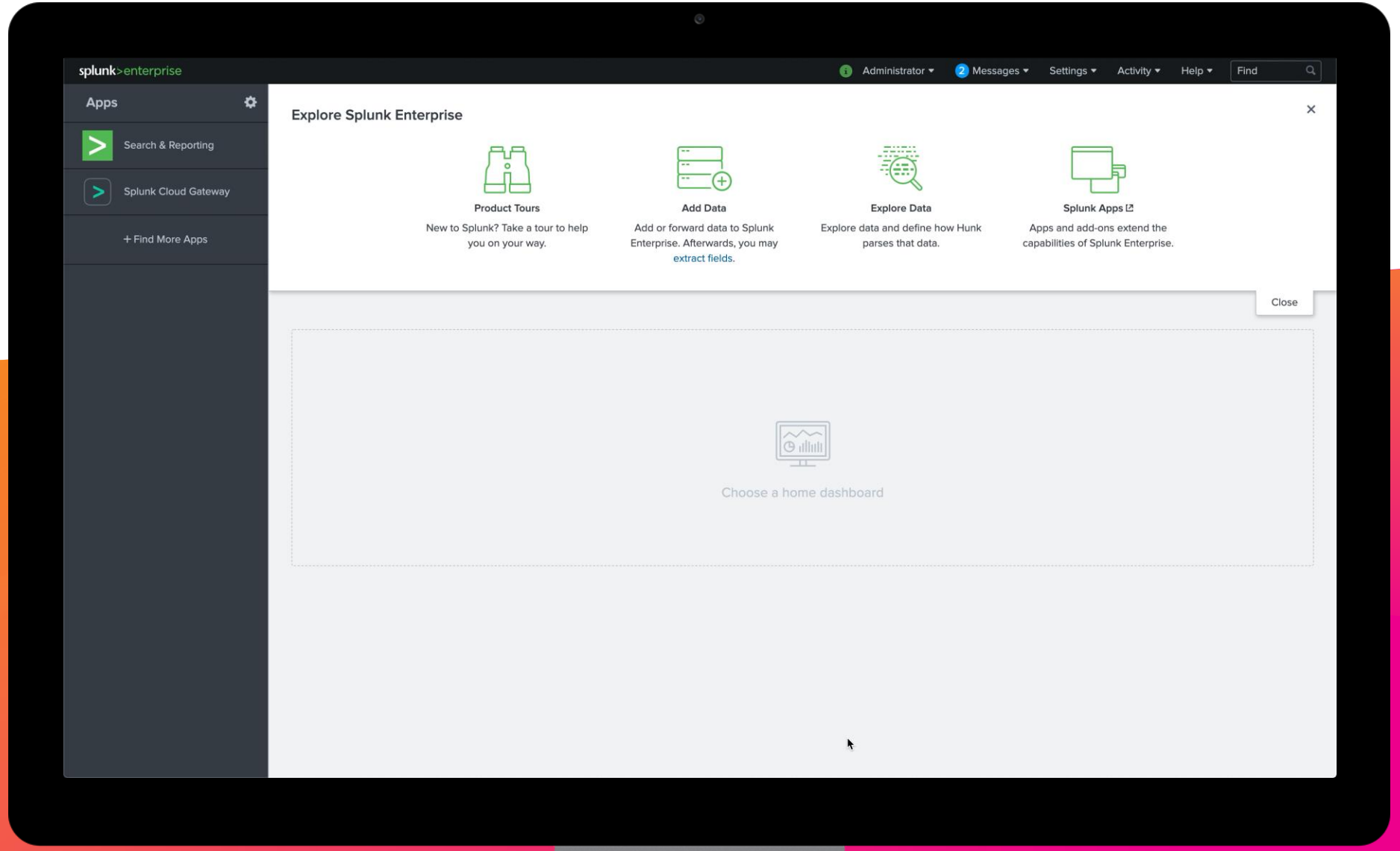
Dedicated Training resource

Resource will be destroyed after each request



Demo

Duration < 5 mins



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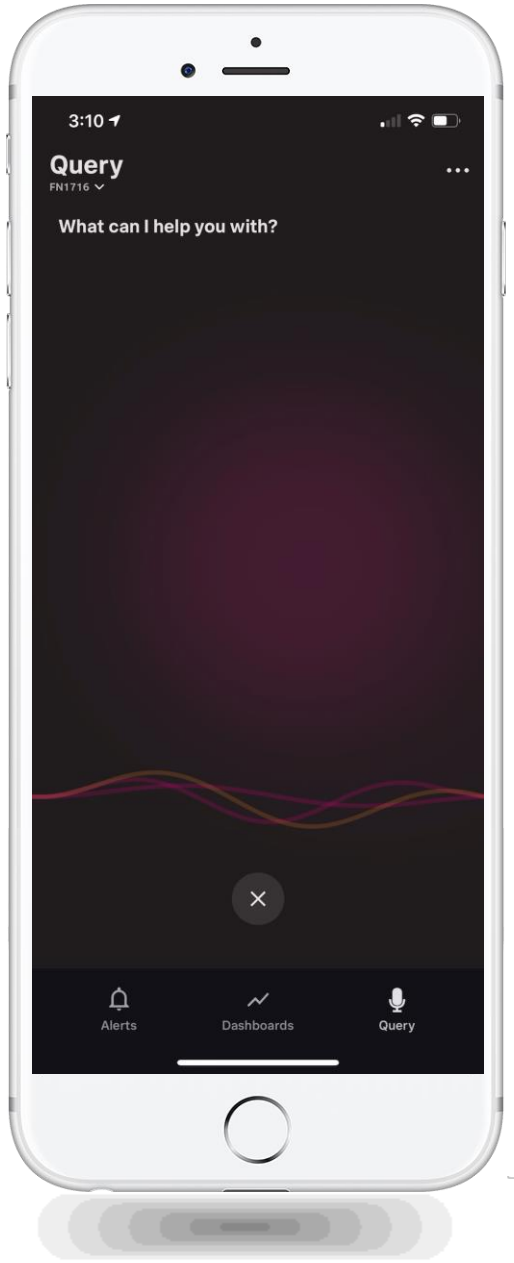

Q&A

Upcoming NLP Session

FN1746

Getting the Most Out of Splunk Natural Language Platform

Schedule

Wednesday, October 23
11:45 AM – 12:30 PM
L1-806 Marco Polo (Venetian)

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