

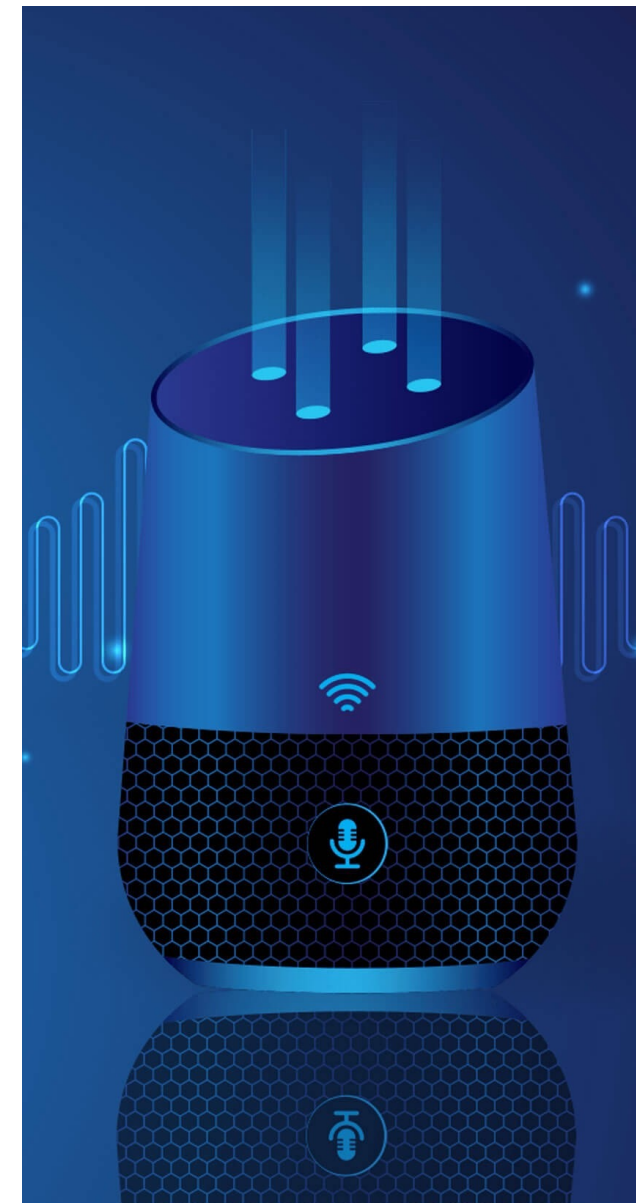
NLP Hackathon: Natural Language Understanding

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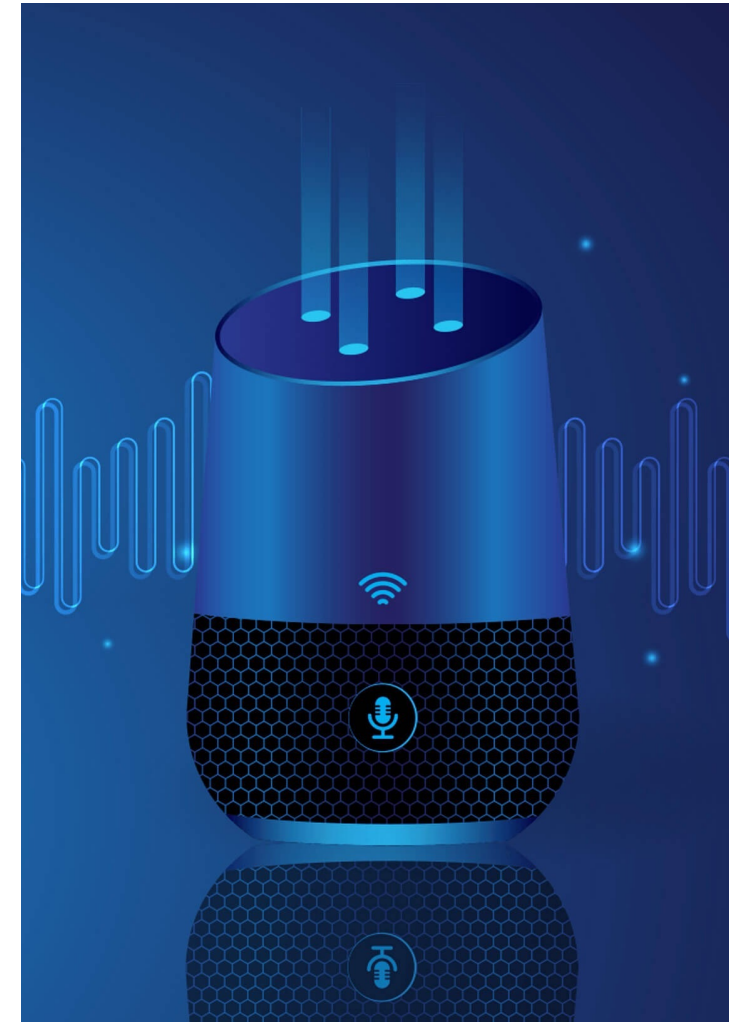
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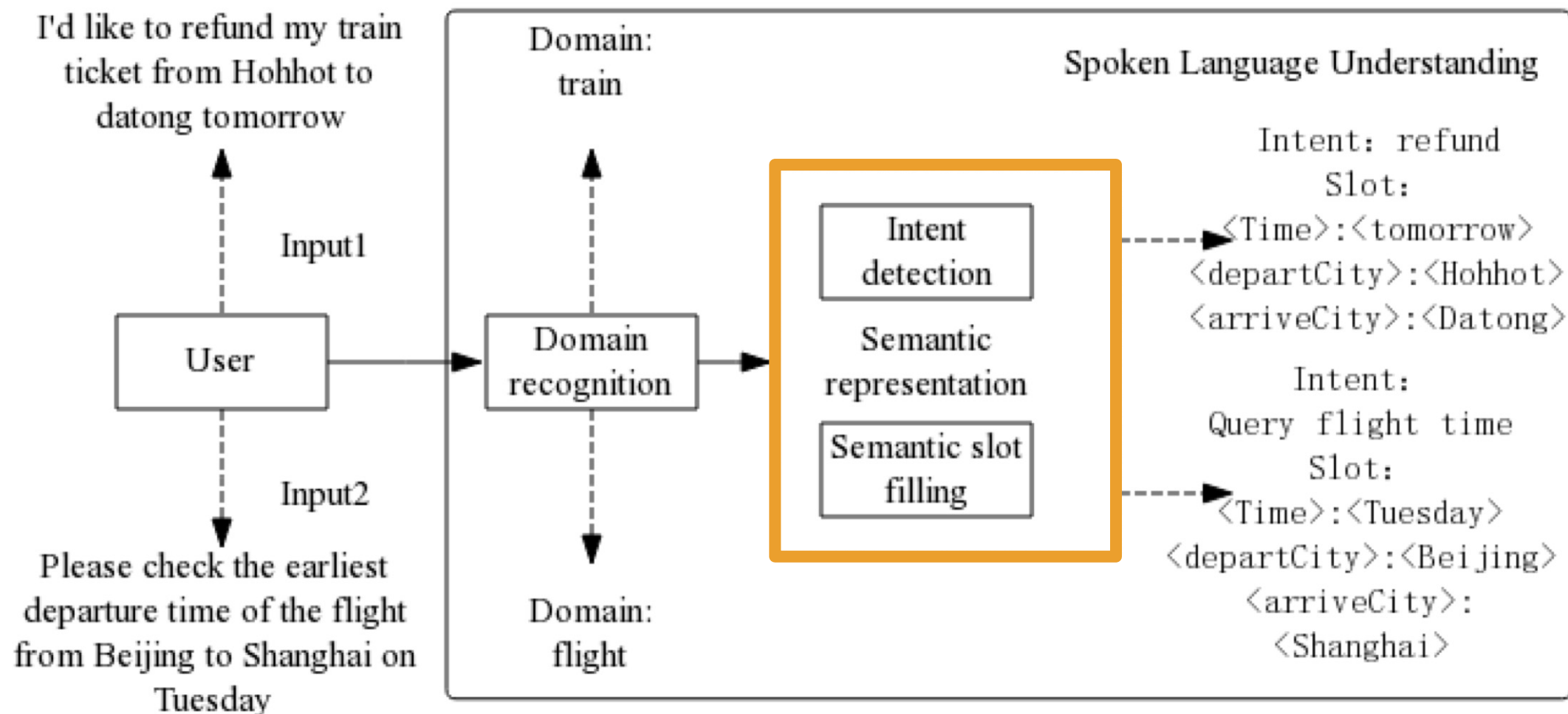
Introduction

Natural Language Understanding

- NLU is a vital task for voice user interfaces
- Voice user interface are now featured in intelligent voice assistants
- Applications:
 - Customer support
 - Mobile phone assistant (Siri, Google)
 - Autonomous cars, etc.

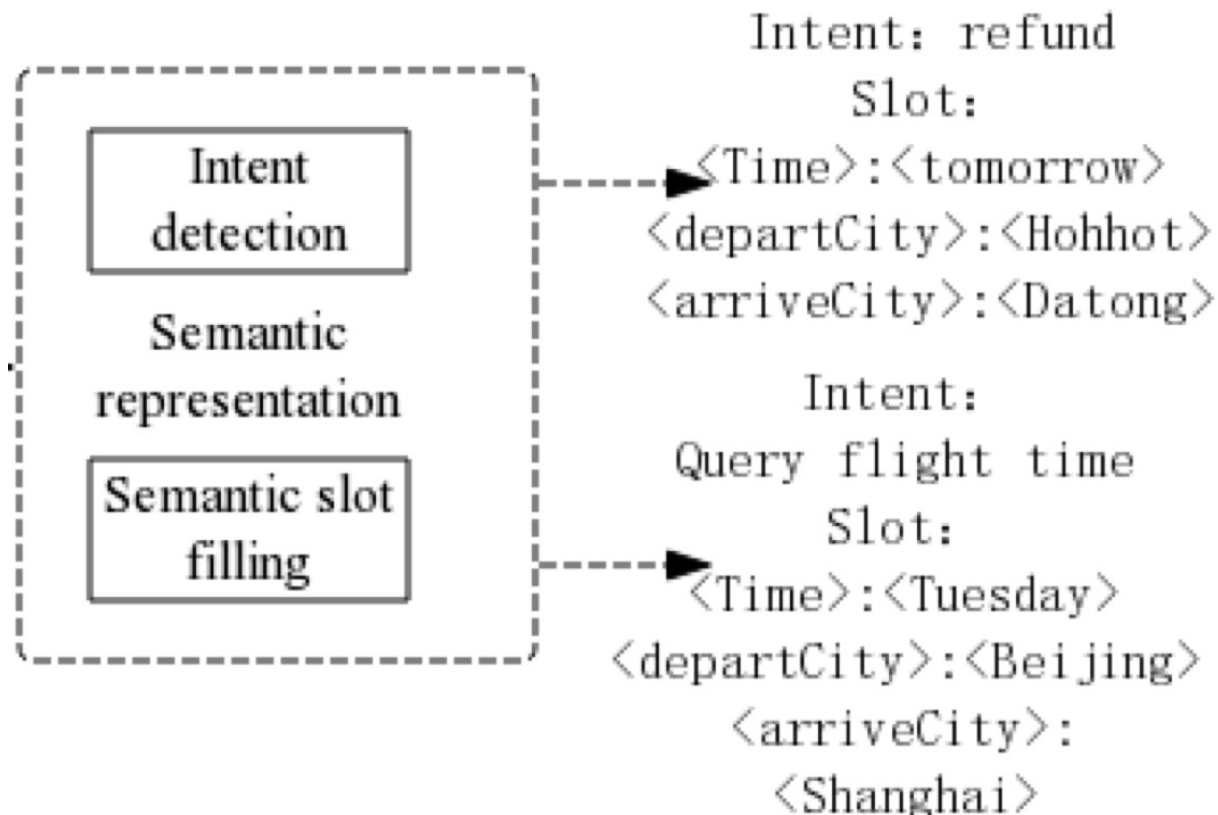


Overview



Today's Hackathon

Spoken Language Understanding



- **Intent detection**
 - Identify the customer's intention, whereby the voice interface module follows
 - \Rightarrow Document classification
- **Slot filling**
 - Extract semantic entities related to the customer's intent
 - \Rightarrow Sequence prediction

Task

Task Description

Utterance	I	want	to	listen	to	Hey	Jude	by	The	Beatles
Slot	O	O	O	O	O	B-SONG	I-SONG	O	B-ARTIST	I-ARTIST
Intent	PLAY_SONG									

Table 1: Example of SF and IC output for an utterance. Slot labels are in BIO format: B indicates the start of a slot span, I the inside of a span while O denotes that the word does not belong to any slot.

- In this competition, you are assigned to develop two models: intent detection and slot filling
- The dataset used in this competition is a modified version of SNIPS ([Coucke et al., 2018](#))
- This dataset was designed for training smart home assistant devices and contains seven intents

Intents and Slots

Intents	Slots	Description
PlayMusic	album, artist, track, playlist, music item, service, sort, year, genre	Play the specified music
GetWeather	city, country, state, poi, time range, condition, temperature, spatial relation, current location	Display the weather condition of a specified location
BookRestaurant	sort, party size nb, party size description, spatial relation, city, country, state, poi, restaurant type, restaurant name, cuisine, served dish, time range, facility	Book a restaurant
AddToPlaylist	name, artist, playlist owner, playlist, music item	Add a music item to the specified playlist.
RateBook	type, name, rating unit, best rating, rating value, select, series	Rate the specified book with a rating score.
SearchCreativeWork	type, name	Find creative work (e.g. movies and music)
SearchScreeningEvent	object, type, name, location type, location name, spatial relation, time range	Find a screening event for the specified movie.

Data Description

- The dataset is divided into three parts: training set, validation set, and test set
- The training, validation sets, and a small test set, are distributed on the first day
- The full test set will be distributed **12 hours before** the submission deadline

Files	Descriptions	Entries
train.json	Training	13,084
valid.json	Validation	200
test.csv	Test	300

Data Entry

- The attribute **utterance** is an input sentence tokenized, stripped out of the punctuation marks, and joined with spaces
- The attribute **slots** identifies the positions of each slot, whose format is BIO (Begin, Intermediate, and Outside), like NER
- The attribute **intent** identifies the intent of this utterance

```
{  
  "utterance": "book a table for 3  
at one of the restaurants in  
washington d c in riverview",  
  "slots": "0 0 0 0 B-  
party_size_number 0 0 0 0 B-  
restaurant_name I-restaurant_name I-  
restaurant_name I-restaurant_name I-  
restaurant_name 0 B-city",  
  "intent": "BookRestaurant"  
}
```

Evaluation & Submission

Test Set

- Each entry of the test set is in the following format

```
id,utterance  
1,add this tune to my playlist guest list mashable
```

Two Tasks

- Once given the test set, you have to submit TWO predictions to Kaggle: NLU Intent Classification and NLU Slot Filling boards
- Both tasks will be evaluated separately using the F1 score
- The scores will then be averaged with weights to find the winner (40% for intent detection and 60% for slot filling)

Task 1: NLU Intent Classification

- Each line in this file is a predicted intent for the corresponding utterances
 - The first column is the utterance index
 - The second column is the predicted intent
 - Each column is separated by comma

```
id,intent  
1,AddToPlaylist
```

Baseline
= 98.0% F1

Link → <https://www.kaggle.com/t/0626f9dbde2d49ff9f209faf364be1fa>

Task 2: NLU Slot Filling

- The submission file consists of word position in the utterance and the slot label in BIO format
 - The first column is a 'id of utterance'_'word position'
 - The second column is a slot label
 - Each column is separated by comma

```
id_word,slot  
1_1,0  
1_2,0  
1_3,B-music_item
```

Baseline
= 83.9% F1

Link → <https://www.kaggle.com/t/7bdb1eafbf4d41ef813962ed8d201e26>

Rules of Competition

1. The contestants can form a group of 1, 2, or 3 people
2. Train the model with the provided dataset only. Using any other additional datasets is **NOT** allowed
3. Using large language models is allowed e.g. BERT and GPT
4. Submission must strictly comply with our format
5. Both tasks will be evaluated separately using micro F1. The F1 scores will be averaged with weights to find the winner (40% for intent classification and 60% for slot filling)

Parallel Competition

- **Two-league system**
 - Super AI Camp League
 - Contestants from Super AI Engineer Project (All Seasons, Level 2+)
 - Incubation League
 - Student attendees of NLP classes at SIIT, Huachiew Uni, and RMUT Thanyaburi
- Top-5 scorers from each league will get through to the final pitching
- Winner of each league will earn ฿2,500



Any Questions?

Then Good Luck!