



# Towards a Better Learning of Near-Synonyms: Automatically Suggesting Example Sentences via Filling in the Blank

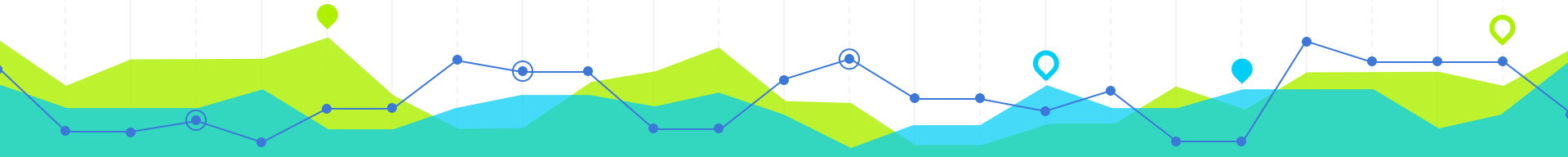


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# Outline

- ◉ **Introduction**
- ◉ **GiveMeExample**
- ◉ **Learner Study**
- ◉ **Conclusion**





# Introduction

1

# Introduction

- Language Learners are always confused by near-synonyms because near-synonyms usually **have the similar translation but are used in different ways.**



# Introduction

- ◉ **Refuse** – 拒絕  
**Disagree** – 拒絕 / 不同意 } **Similar Translation**
- ◉ The council **refuse** to undertake  
a careful approach.  
The state court **disagree** with all of them. } **Different Usage**



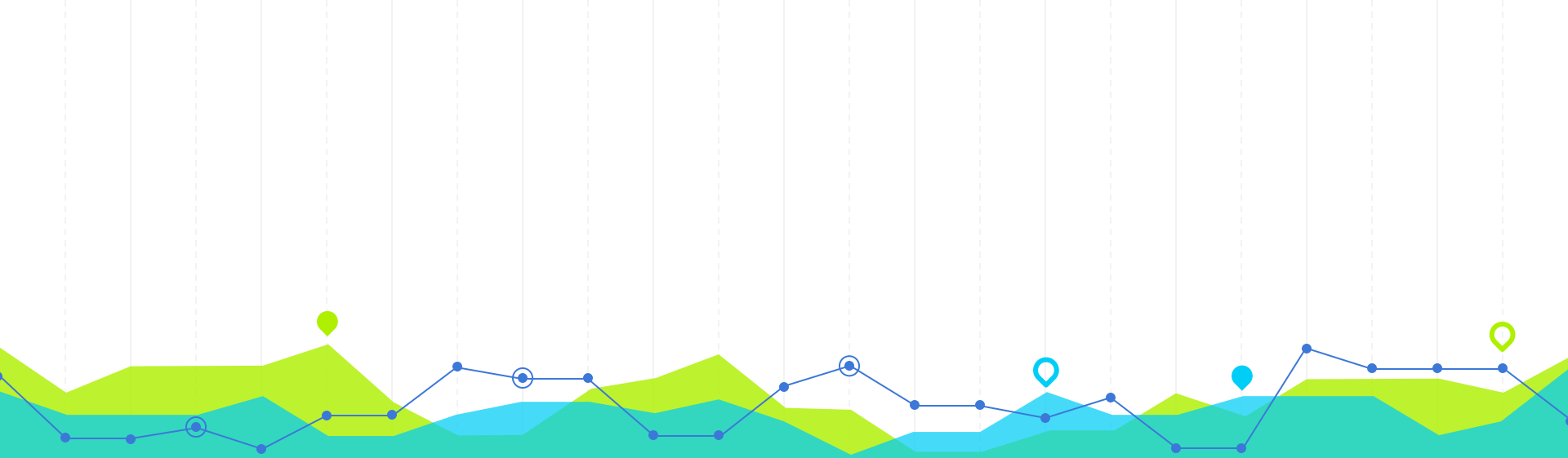
# Introduction

- We found that learning near-synonyms by reading **example sentences** is very useful.
- However, not every example sentences is informative.



**Suggest good example sentences to help language learner understand near-synonyms.**





# GiveMeExample 2

# GiveMeExample

We want to find example sentences which are ...

- ⦿ **Easy to learn.** ➡ **Difficulty Scorer**
- ⦿ **Informative.** ➡ **Word Usage Model + Clarification Score**





# GiveMeExample

- Workflow & Example

Refuse / Disagree



## GiveMeExample

1



**Complete  
Sentence Pool**

**Difficulty Scorer**



**Example-oid  
Sentence Pool**

# GiveMeExample

## Difficulty Scorer

- ◉ Used to filter out unsuitable sentences
- ◉ (+) example sentences from Dictionary
- ◉ (-) example sentences from Vocabulary
- ◉ Extract syntactic/lexical features of sentences

**Find out dictionary example-oid sentence from Complete Sentence Pool**



# GiveMeExample

- Workflow & Example

Refuse / Disagree



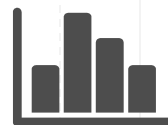
## GiveMeExample

## 2



Complete  
Sentence Pool

Word Usage Model



GMM / BiLSTM  
Model

# GiveMeExample

## Word Usage Model

- ◉ Used to estimate the fitness between a context and a word
- The council **refuses** to undertake a careful approach.
- He **refuses** to pay for her.
- They will **refuse** to negotiate.



# GiveMeExample

## Word Usage Model

- ◉ **GMM**

Gaussian Mixture Model with Contextual Feature

- ◉ **BiLSTM**

Bi-directional Long short-term Memory Model

- The council **refuses** to undertake a careful approach.

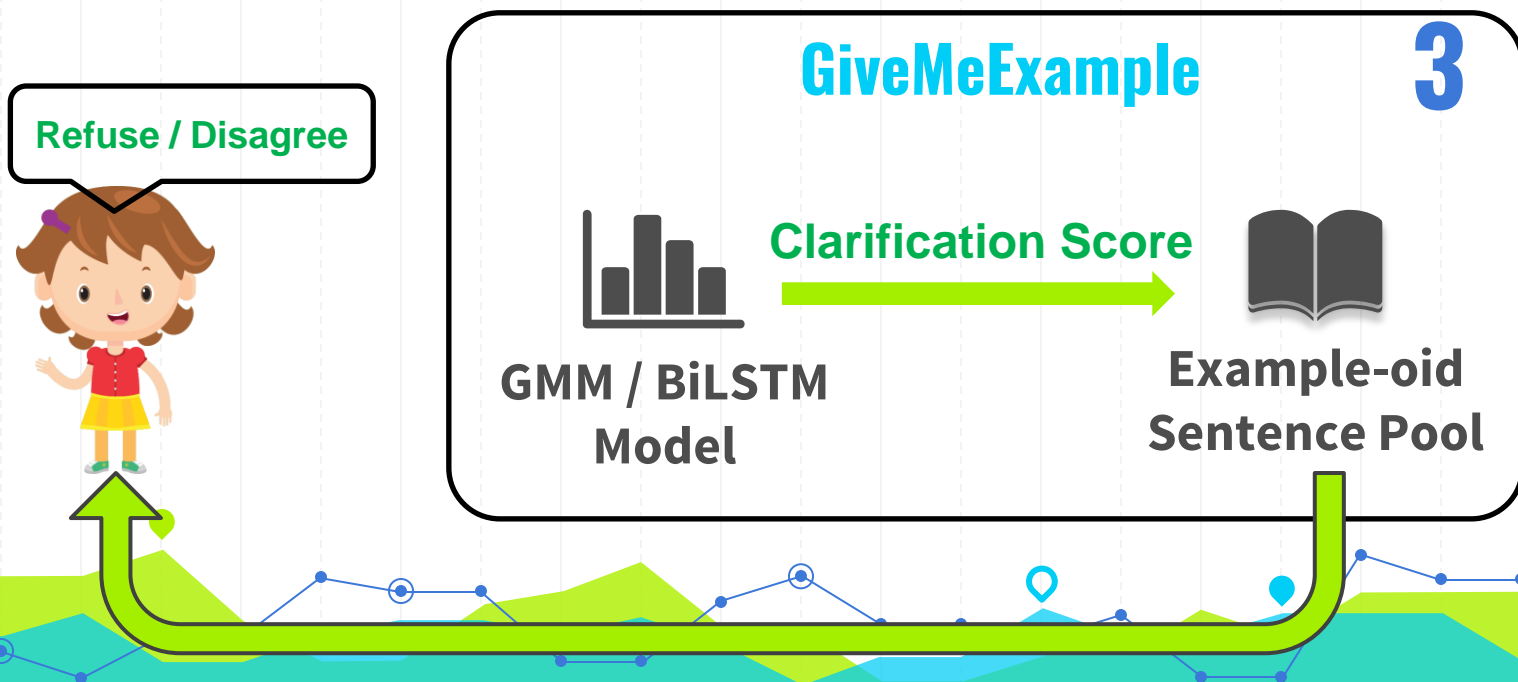
**GMM**

**BiLSTM**



# GiveMeExample

- Workflow & Example



# GiveMeExample

## Clarification Score

### ◉ Fitness Score

✔ **Refuse** + The council \_\_\_\_\_ to undertake a careful approach.

### ◉ Relative Closeness Score

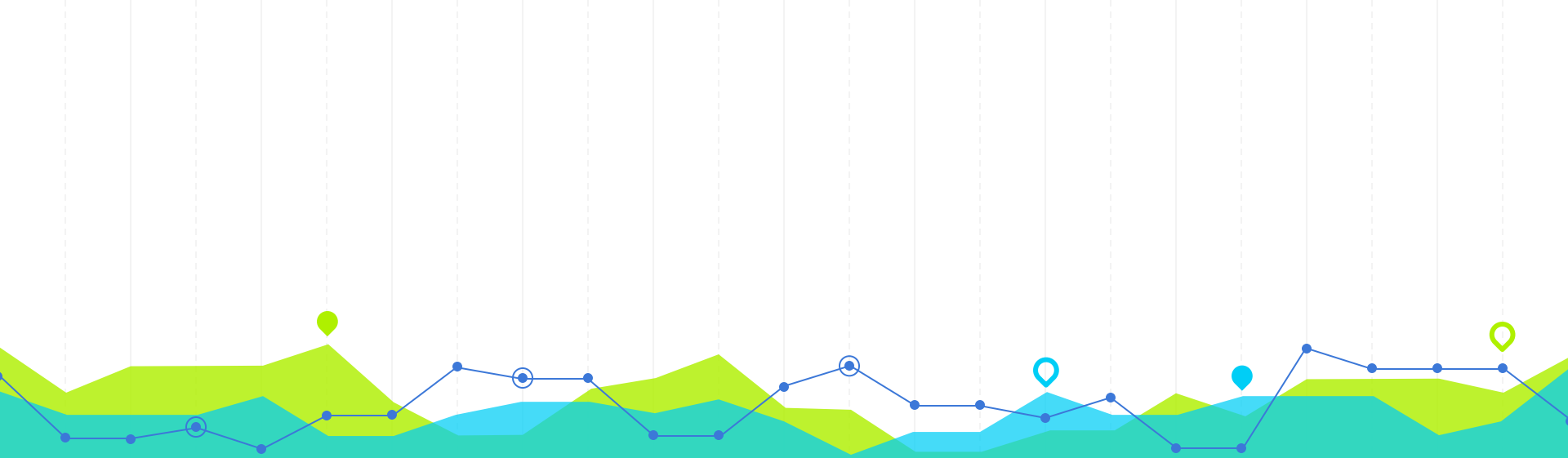
✔ **Refuse** + The council \_\_\_\_\_ to undertake a careful approach.

**Disagree** + The council \_\_\_\_\_ to undertake a careful approach.

✗ **Refuse** + They shot him after he \_\_\_\_\_.

**Disagree** + They shot him after he \_\_\_\_\_.





# Learner Study

# 3



# Learner Study

- Learners were asked to answer several cloze questions twice, pre-test and post-test.
- In post-test, we provided them example sentences to help them answer the questions.



# Learner Study

There are four types of example sentences.

- ◉ Give-GMM
- ◉ Give-BiLSTM
- ◉ Vocabulary
- ◉ Dictionary



# Learner Study

Result shows that ...

- ◉ **Learner Improvement**

Give-GMM > Vocabulary > Give-BiLSTM > Dictionary

- ◉ **Learning Time**

GiveMeExample < Vocabulary





# Conclusion 4

# Conclusion

- We proposed **GiveMeExample**, a sentence suggestion system for better learning of near-synonym.
- By combining the **Difficulty Scorer**, **Word Usage Model**, and **Clarification Scoring Function**, we successfully suggest useful sentences.
- The result of learner study shows that GiveMeExample can really help learner to learn near-synonym better.





# THANKS!

**Any questions?**