

Search Result Presentation for Non-Native Language Documents

Tetsuya Sasaoka¹, Yoko Yamakata², Keishi Tajima¹
¹Kyoto University and ²The University of Tokyo, Japan

1. Background

When users search for documents in non-native languages, reading **snippets in a non-native language** can be time-consuming and stressful, making it harder to quickly identify relevant documents.

Fast domain adaptation for neural machine translation

Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

snippets in a non-native language

2. Proposed Solution

Search result presentation for helping **non-native language users** identify relevant documents.

(1) Machine Translation of Snippets (2) Keyphrases in the Native Language

Fast domain adaptation for neural machine translation

Neural Machine Translation (NMT) は、ある言語から別の言語へのテキストの自動翻訳のための新しいアプローチです。NMTの基本的な概念は、与えられた対話コーパス上で翻訳パフォーマンスを最大化する大きなNeuralNetworkを訓練することです。NMTは...

Machine Translation

Fast domain adaptation for neural machine translation

Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

ドメイン適応に焦点・ドメイン外トレーニング・小さなドメインデータ

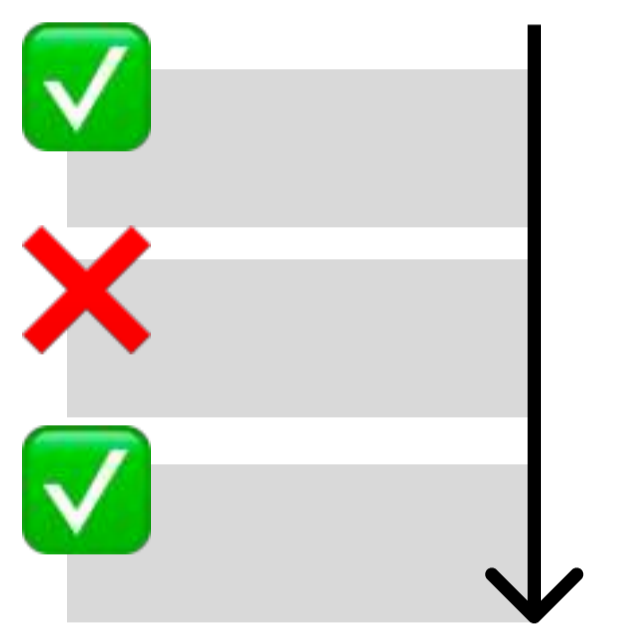
Document's Keyphrases

▶ Help users filter out irrelevant ones.

Steps to Find Relevant Documents

First:

Take a quick look at results to filter out obviously irrelevant ones



Second:

Read remaining potential relevant ones in detail



3. Evaluation Experiment

Fast domain adaptation for neural machine translation

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

A: baseline

Fast domain adaptation for neural machine translation

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

B: machine-translated snippet

Fast domain adaptation for neural machine translation

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

C: keyphrases to the right

Neural Machine Translation
 focus on domain adaptation
 large out-of-domain training data
 small in-domain training data

Fast domain adaptation for neural machine translation

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

D: translated keyphrases to the right

Neural Machine Translation
 ドメイン適応に焦点
 ドメイン外トレーニング
 小さなドメインデータ

Fast domain adaptation for neural machine translation

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

E: keyphrases underneath

Markus Freitag, Yaser Al-Onaizan - arXiv preprint arXiv:1612.06897, 2016 - arxiv.org
 Neural Machine Translation (NMT) is a new approach for automatic translation of text from one human language into another. The basic concept in NMT is to train a large Neural Network that maximizes the translation performance on a given parallel corpus. NMT is...

F: translated keyphrases underneath

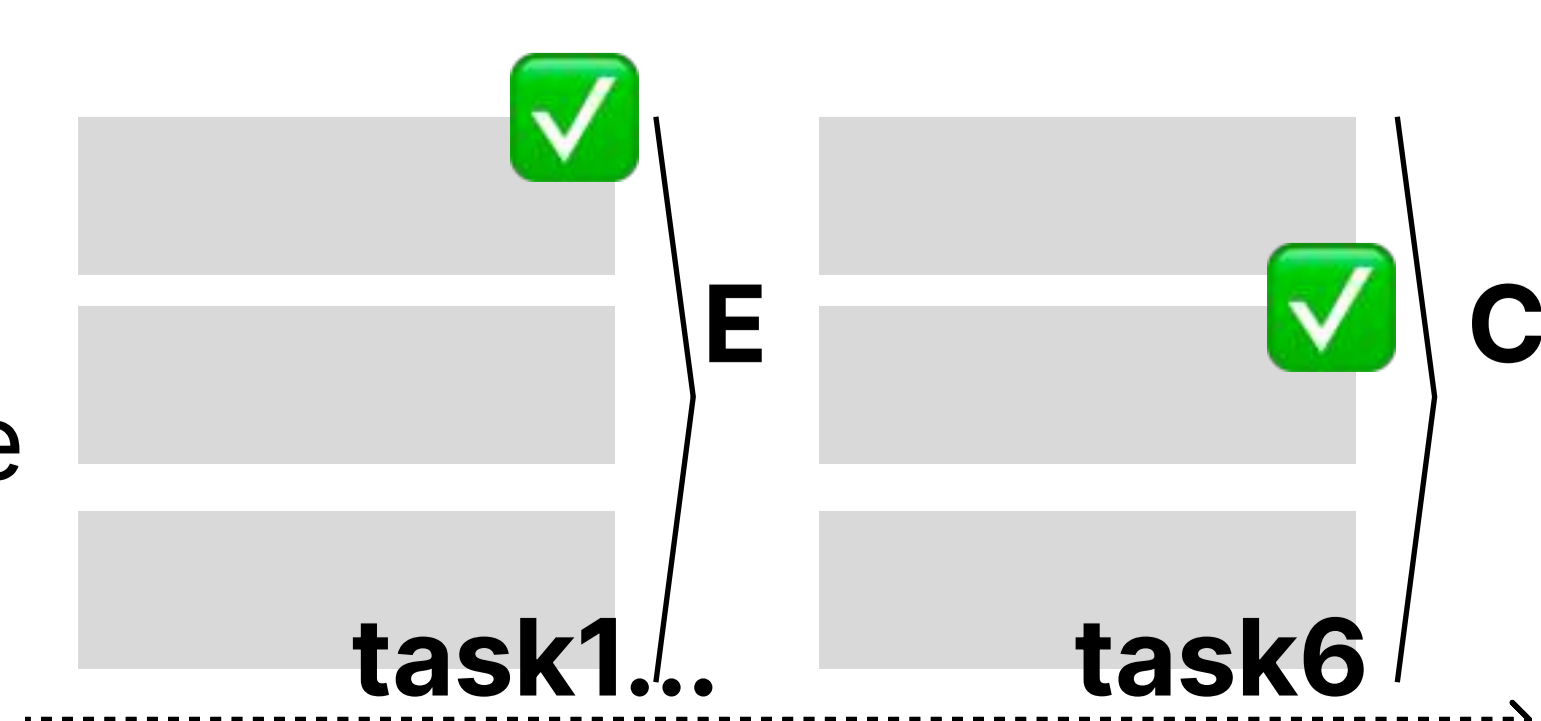
- Situation: Search for papers on certain topics
- Participants are shown the query and intent

Query
link prediction problem

Query Intent
link prediction in social network analysis

- Find a relevant paper from ten search results
- An interface changed in each task

- Record
- the task completion time
 - the average link clicks

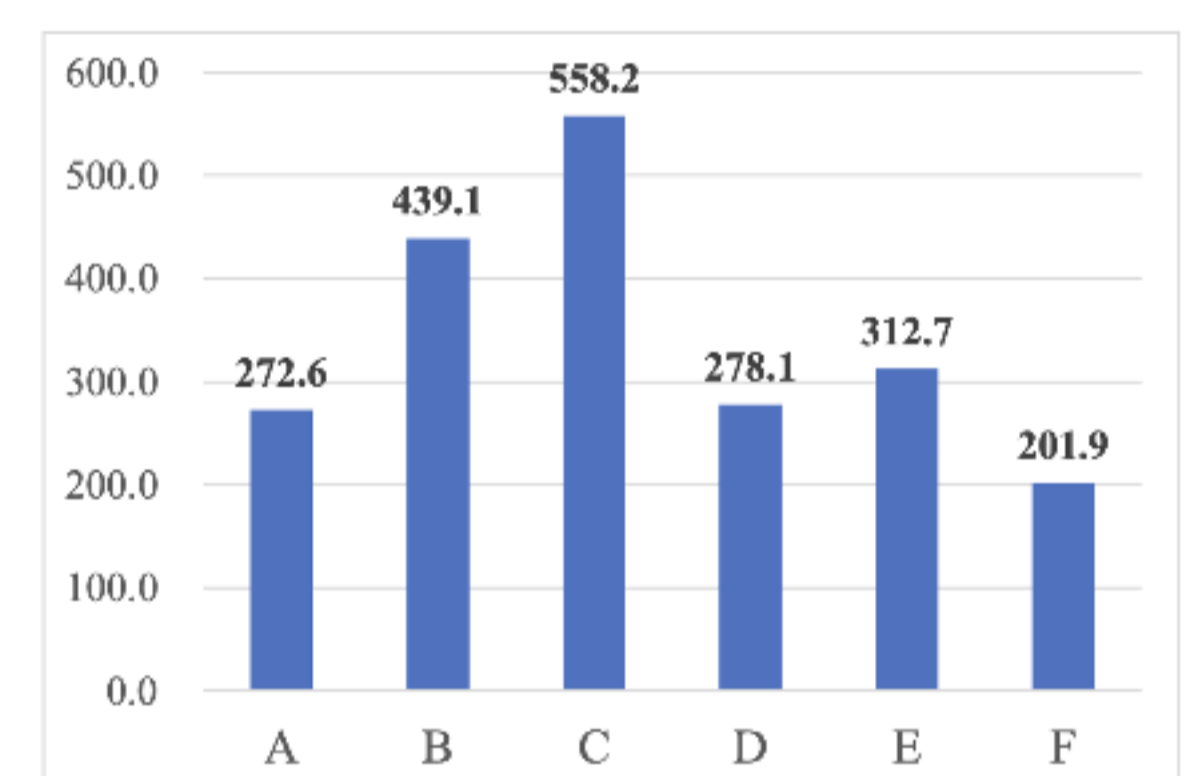


4. Result

the completion time

- F is the shortest
- B did not improve the efficiency

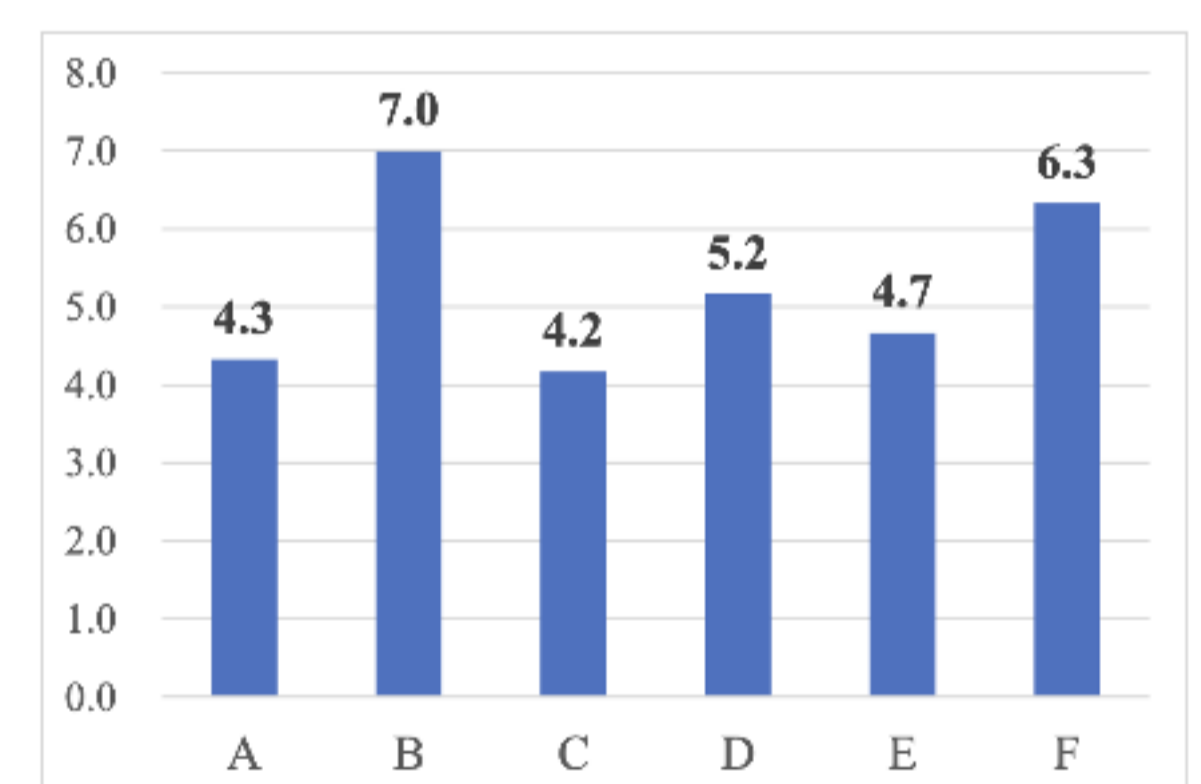
▶ Keyphrases in the users' native language help them quickly find relevant documents



the completion time

the average clicks

- The smaller number means that the participants could predict which results are relevant more accurately only from the search result display
- Participants accessed more documents with F than with A and E, despite F's shorter completion time.



the average clicks

▶ Keyphrases in participants' native languages did not enhance decision accuracy but made their decisions faster.

5. Conclusion

- We conducted an experiment where non-native users searched for academic papers in English.
- Results indicate that displaying keyphrases in the user's native language doesn't enhance relevance prediction accuracy but speeds up their decision-making, thereby reducing the overall task completion time.