

Machine Translation Assessment

Q3
2021

Summary



- **Machine Translation Playground**
- **Dataset**
- **Methodology**
- **Study Results**
- **Conclusion**
- **Appendix**

Machine Translation Playground



Generic Models

AISA	DeepL	GTCom	Lindat	Niutrans	PangeaMT	SAP	Tilde
Alibaba	eBay	IBM	LingvaNex	Naver	Process9	SDL*	XL8
Amazon	Fujitsu	iFlyTec	Microsoft	NICT	Prompsit	Sogou	Yandex
AppTek	Globalese	Kakao	Mirai	NTT	PROMT	Systran	YarakuZen
Baidu	Google	Lesan	ModernMT	Omniscien	Rozetta	Tencent	Youdao

Custom Models

Alibaba	Omniscien
Baidu	PROMT
Microsoft	SAP
Iconic	Systran
CloudTranslation	

Auto Domain Adaptation

Amazon	IBM
Globalese	Kantan
Google	Microsoft
ModernMT	SDL*
Omniscien	Systran

Manual Domain Adaptation

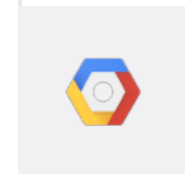
Alibaba	Omniscien	SDL*
AppTek	PangeaMT	Tilde
Baidu	Prompsit	Yandex
CloudTranslation	PROMT	
Iconic	Systran	

The list shows MT products with API services. All product names and brands are property of their respective owners. All brands, products and services used in this report are for identification purposes only. Use of these brands does not imply endorsement.

Machine Translation Playground



Analyzed in this Study



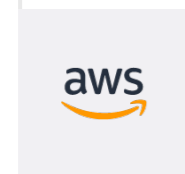
Google Cloud
Translation API



ModernMT
Translate Text API



Yandex
Translate API



Amazon
Translate

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Dataset

Corpus

Training set is collected from OPUS and TAUS.

Each data record has following aspects;

- Source Text
 - Reference Human Translation
 - Language Pair
 - Industry
-



Datasets

Language Pair

14 language pairs,
~150K sentences for
8 industries.

Why we choose this language pairs?

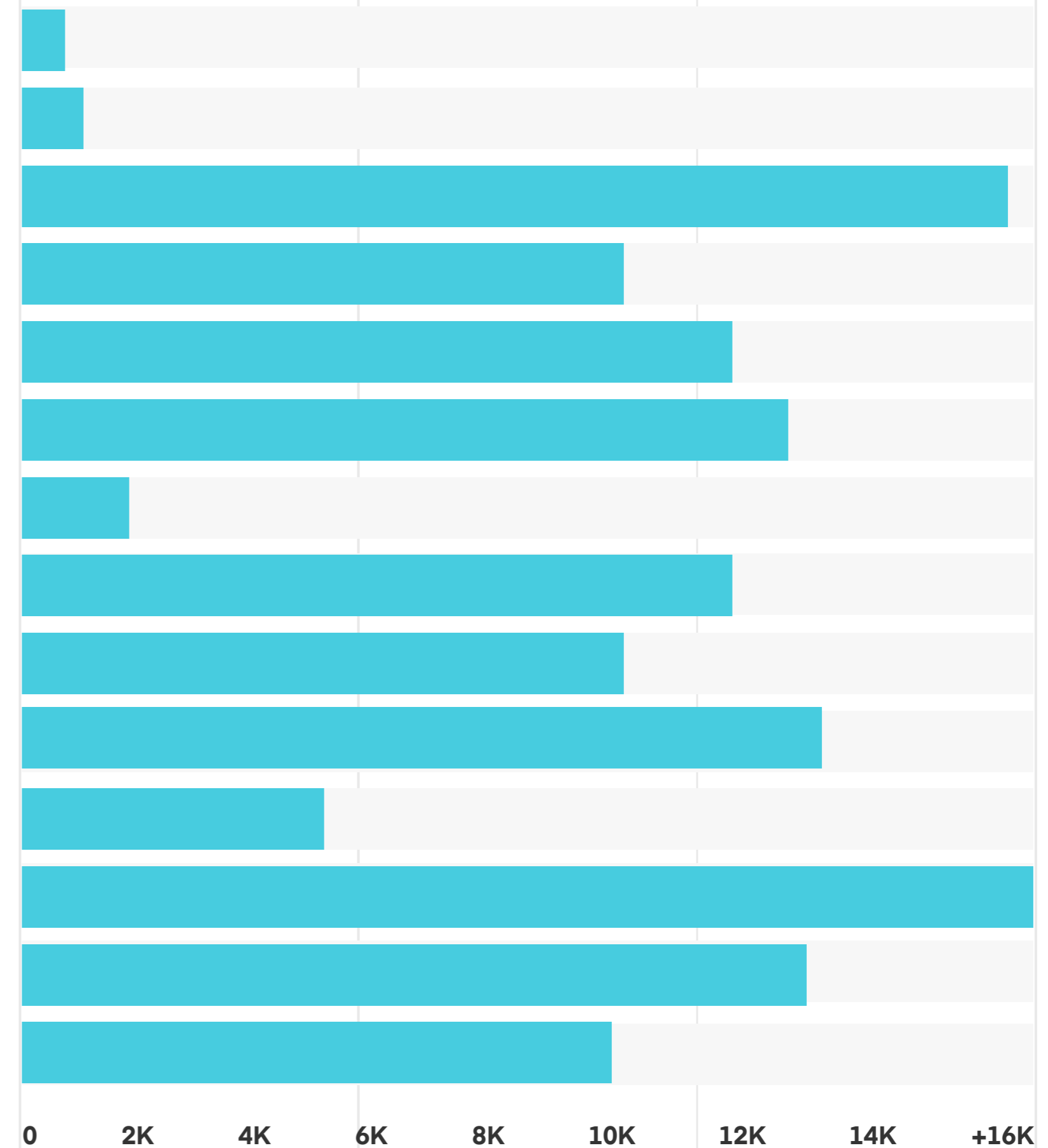
Most of the international brands prepare the content in English as a first direction. That's why we choice English as source language.

The target languages are most spoken languages in the world. 74% of all the world's languages are these pairs. It is a fundamental fact when planning a global expansion strategy.

EN

AR
DE
ES
FI
FR
JA
KO
NL
PL
PT
RO
RU
TR
ZH

SEGMENTS PER PAIR

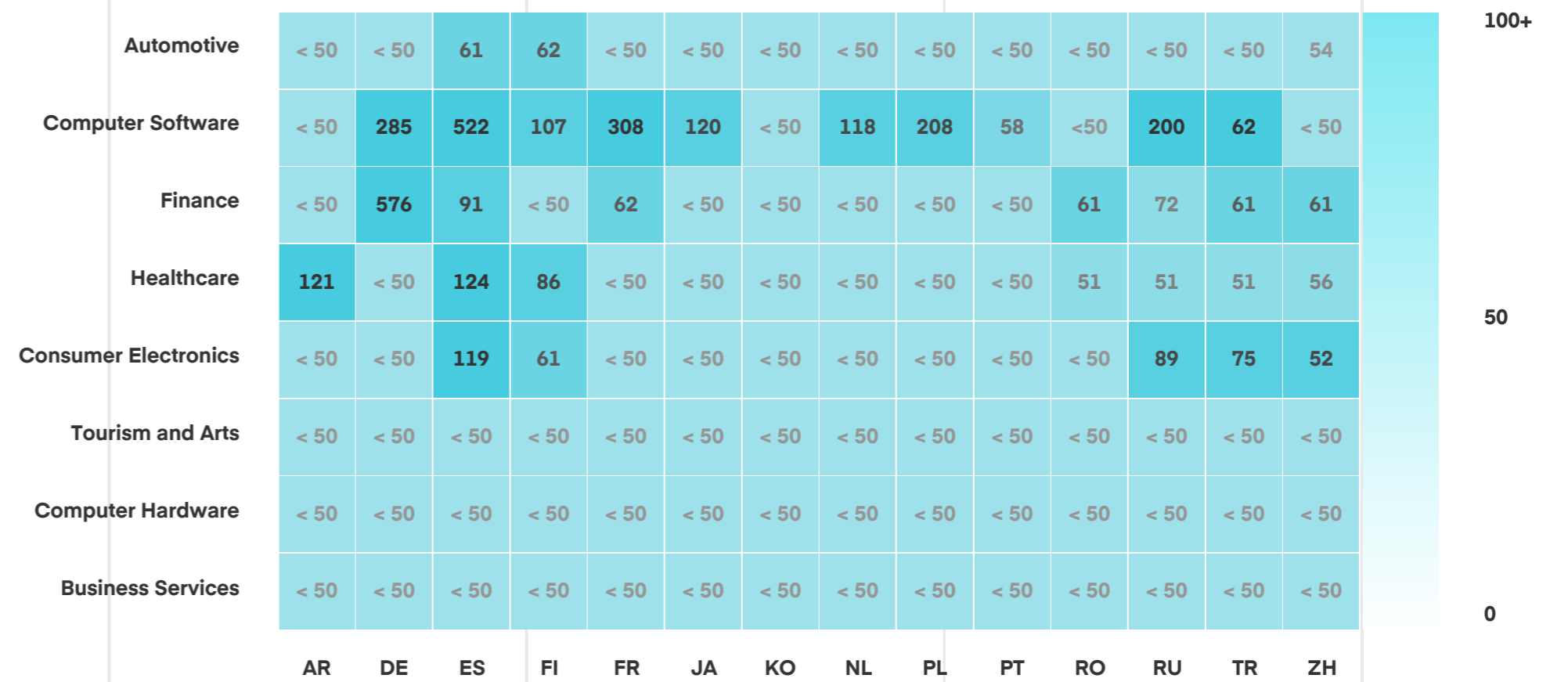


Datasets

Industry

8 industries

~ 50 segments per language pair for all industries



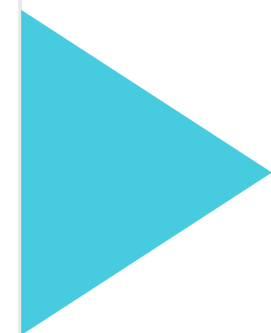
Methodology

1

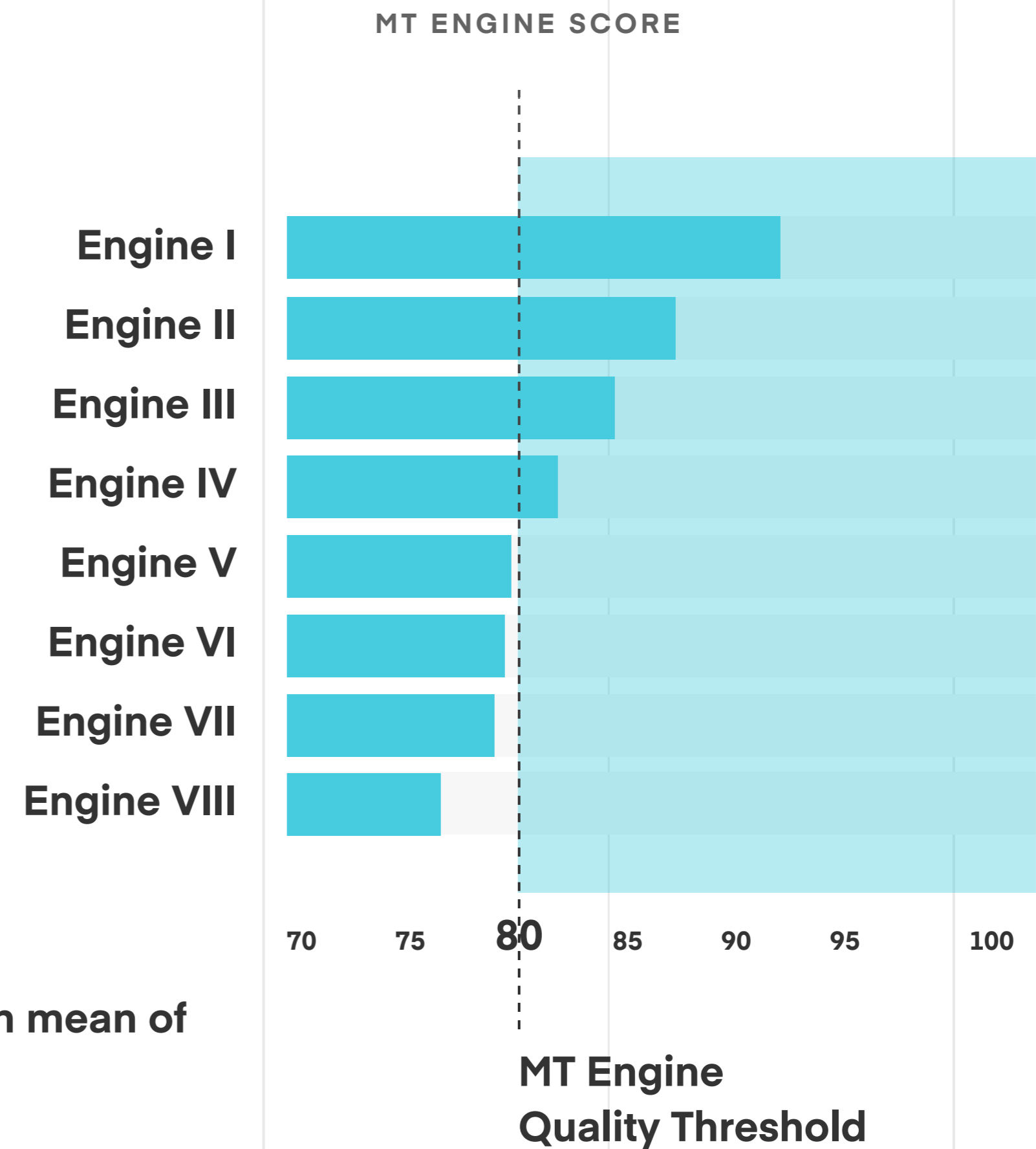
We are sending all source texts in training set to MT Engines for translation and collecting translated target sentences.

2

After, we are calculating the similarity scores between target sentences and human references that are located in training set.



MT Engine level score is calculated with mean of sentence level scores.



Methodology



How the sentence similarity is calculated?

Lexical Similarity Algorithms

BLEU

These methods mainly focus to the number of **common words between two sentences**. The advantages of the lexical similarity methods are that they **perform well in capturing the translation fluency**. **Low data** need and **low costs** for calculation but **not enough for capturing the adequacy**.

Syntactic Similarity Algorithms

hLEPOR

These methods **combining lexical similarity** methods with **POS(part-of-speech) tags**. **Focusing more to synonyms of common words**. **Need dictionary** to understand the verb, noun, adjective, adverb or preposition. The main advantage is the syntactic methods are that they **perform more than lexical similarity** algorithms **in capturing the translation adequacy**. **Higher data** need than lexical methods and **low cost** for calculation. **Still not enough** for capturing the **paraphrases**. Sentence length also affect the score.

Semantic Similarity Algorithms

BERTScore

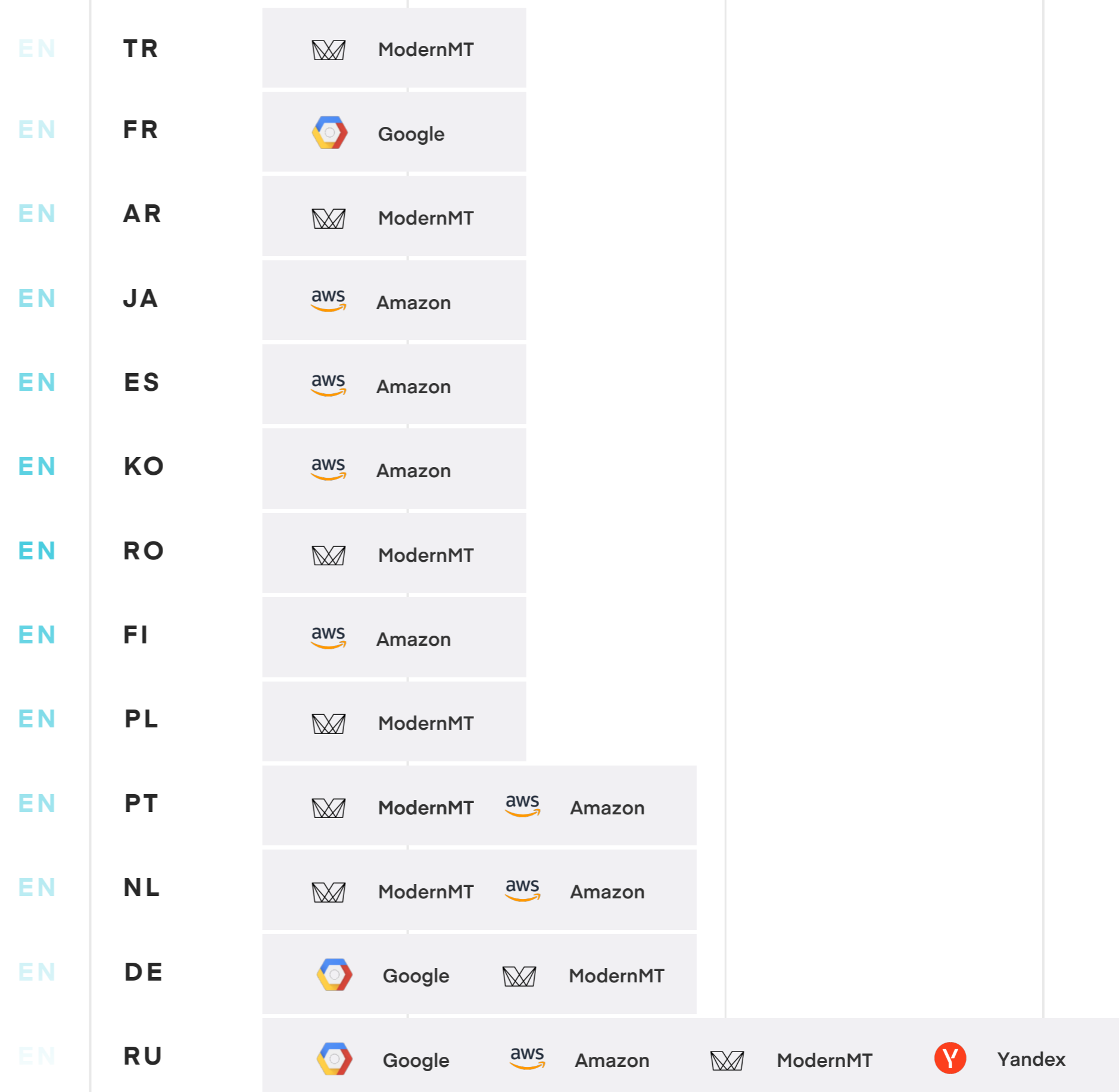
These methods **combining syntactic similarity** algorithms **with machine learning**. People can make sentences via using different words or words order for same meaning. Focusing to capture these scenarios. **High data** need and **high cost** for calculation.

Most of the algorithms have trade-offs. We are using combined strategy to evaluate the sentence similarity for detecting the best performing MT engine.

Study Results

Best MT Engine Per Language Pair

Test data includes all industries that we mentioned before in this study for each language pair.



BEST MT ENGINES

Study Results

Best MT Engine Per Industry



Amazon
Translate



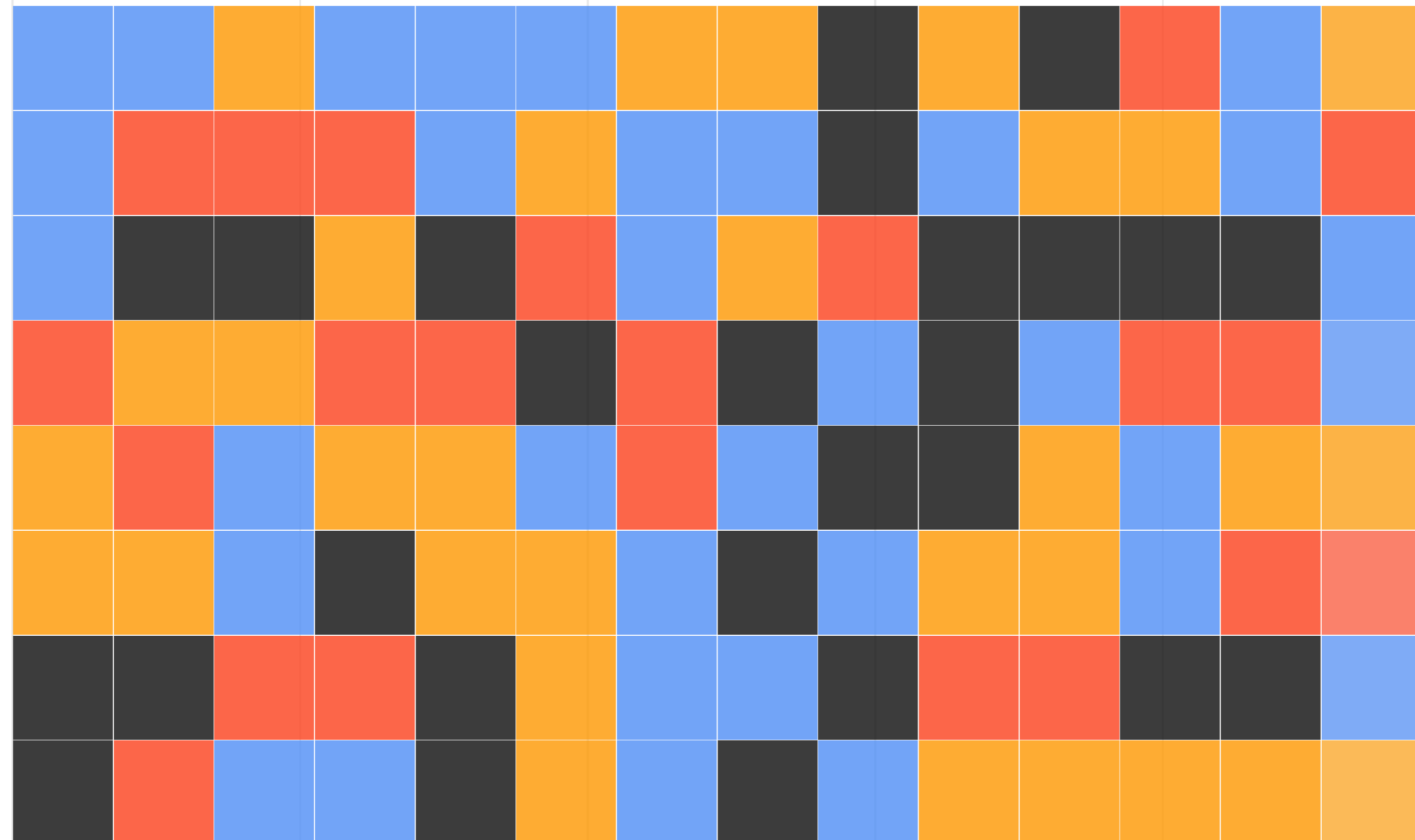
Google Cloud
Translation API



ModernMT
Translate Text API



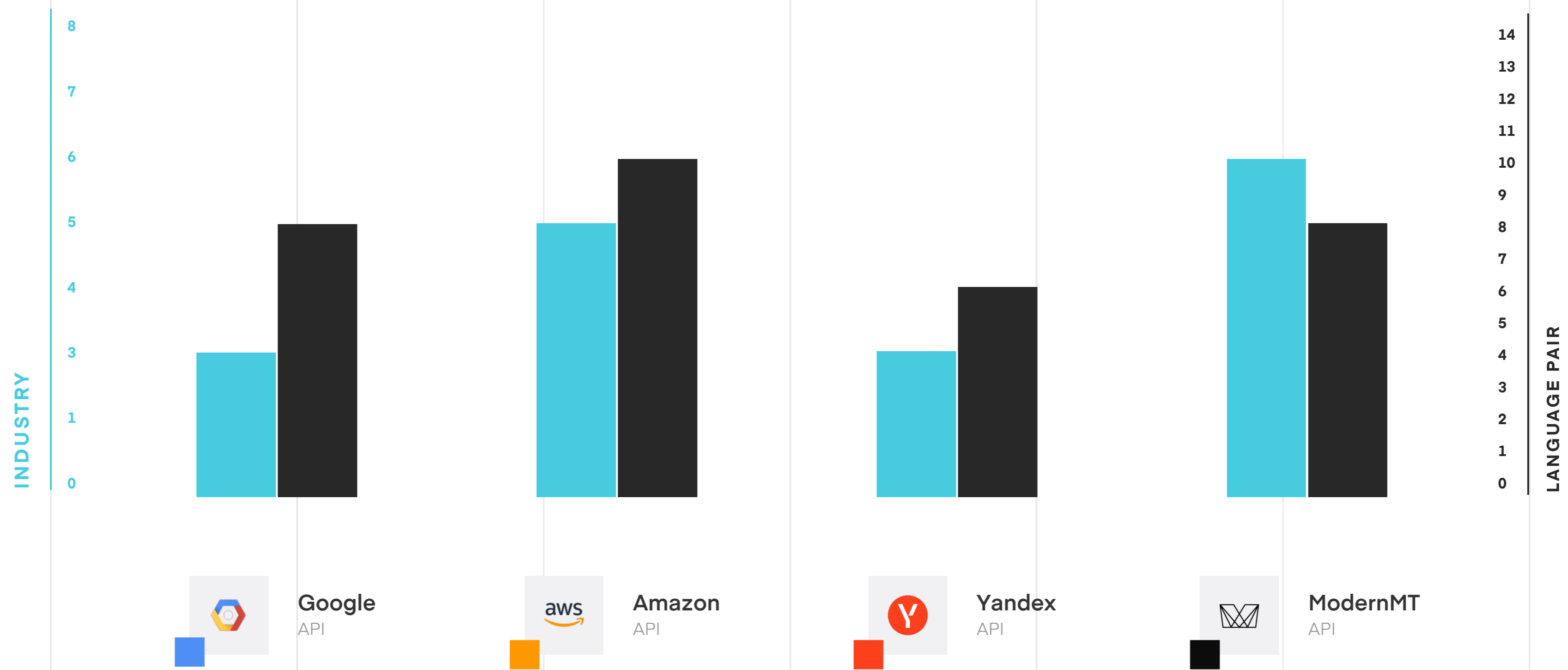
Yandex
Translate API



AR DE ES FI FR JA KO NL PL PT RO RU TR ZH

Study Results

Top Performing MT Engines



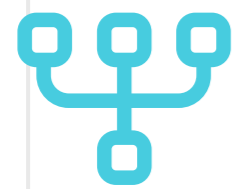
MT Engine Coverage according to industry or language pair.

The success score threshold considered as 80 (in range of 0-100) to filter the best performed MT engine.

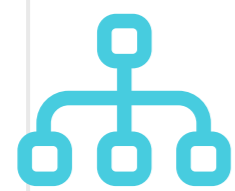
Appendix

Information

Although no machine translation engine has been able to produce the best translation results for all industry and language pairs, Lugath delivers the best-known machine translation experience.



Access to All
MT Services



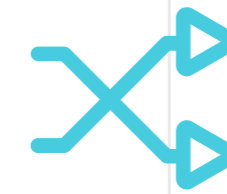
SDK and API Support
for Digital Platforms



Documents & Files
Translation



Software Localization
Bundles Management



Intelligent Forwarding &
Fallback



Automatic
Translation Memory

for more information, info@lugath.com

