

See if you can spot the metaphors

Until the tenth generation they did not bear fruit

Detecting Metaphors in Hebrew Poetry



The Henry and Marilyn Taub
Faculty of Computer Science



There is a large volume of late antique and medieval Hebrew texts. They represent a crucial linguistic and cultural bridge between Biblical and modern Hebrew. Poetry is prominent in these texts and one of its main characteristics is the frequent use of metaphor. Distinguishing figurative and literal language use is a major task for scholars of the Humanities, especially in the fields of literature, linguistics, and hermeneutics.

In this work, we present a new, challenging dataset of late antique and medieval Hebrew poetry with expert annotations of metaphor, as well as some baseline results

The dataset

Metaphors in corpus	Literal Translation to English	Figurative Translation English
טבענו בגזרות, בשטופי ים	We drowned in decrees, like sea washed	There are too many decrees
הצית נשמה ויבער נר	Ignite a soul, file a candle	Activate a soul
עד דור עשריו לא עשו פרי	Until the tenth generation they did not bear fruit	For ten generations, did no good deed



Inter Annotator Agreement

The second expert annotated 27.7% of the Piyyut corpus (12,104 words) and the calculated Cohen's kappa score is 0.618.

Examples (Hebrew)	Literal translation	Meaning
<u>חוֹפָה חֲדִירֵן תְּחִדְשֶׁ</u>	Room canopy will be renewed	Renovate the temple
<u>מָקוֹם נַהֲרָ לְהַטָּ</u>	River place glow	River of fire
<u>וְטַבְּלִתָּם לְהַטָּ</u>	Fiery immerse	Immerse in a river of
<u>הַרְחֹורִי לְבָ וּמְרָאִית עַין</u>	Hearts ponders eye sees	Sees and ponders

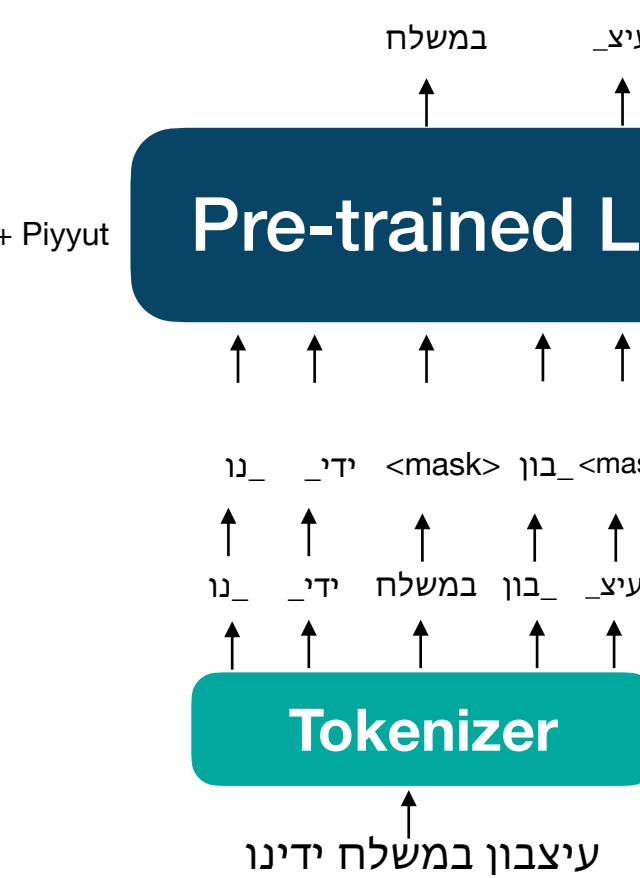
Examples from our dataset of sentences with expert disagreement in metaphor annotations. Metaphor labels are underlined for annotator A and **bold** for annotator B.

Models

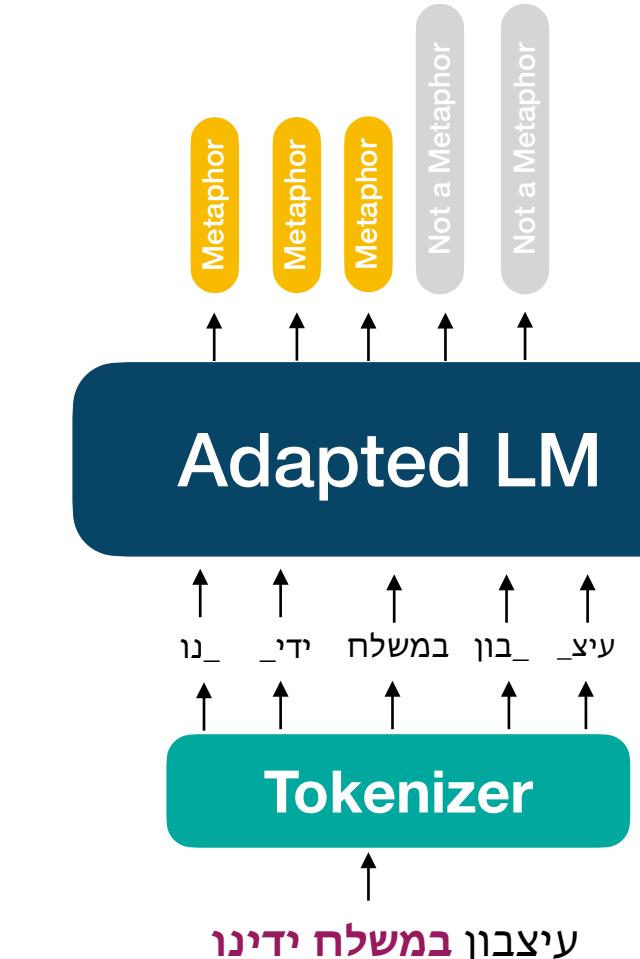
	Data Size (words)	Data Type
BEREL	220 Milion	medieval
AlephBERT	2 Bilion	Modern
AlephBERT Adapted	2 Bilion + 10 Milion	Modern + medieval

Method

Step 1 - language model adaptation

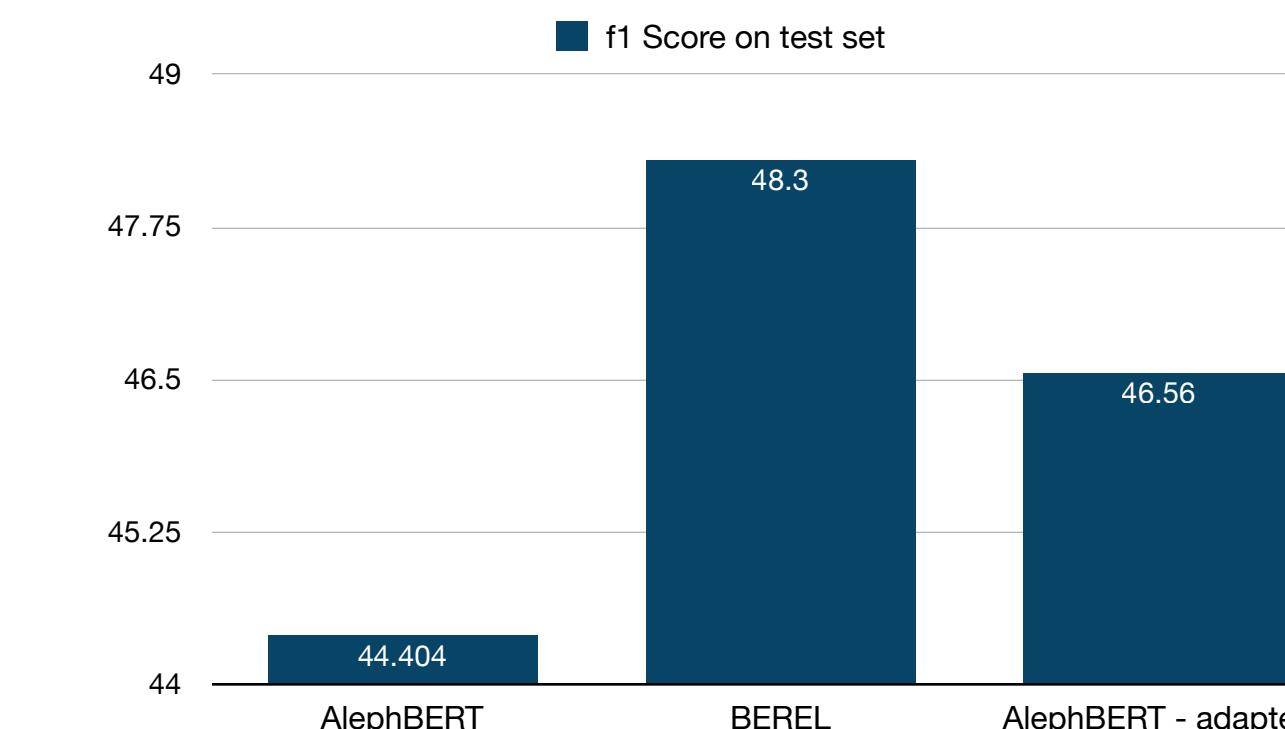


Step 2 - fine tuning to detect metaphors



Results

- AlephBERT is outperformed by **BEREL**.
 - Adapt the model to medieval texts.
 - Training the model together with the tokenizer on relevant data got the best results.



Error Analysis

Examples (Hebrew)	Literal translation	Expert annotator analysis
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ילד לניחוח שקיתיו A child to the smell of his desires the child here is a non-metaphorical nickname for Isaac. "smell" here is a non-metaphorical term for the victim. 'desires' can be

לא לנצח קצץ	Not for eternity foam	The word foam also can be interpreted as 'angry', and thus can be interpreted as a metaphor or literal
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