Creating a conversational Hebrew vocabulary list

A reproducible use of technology to overcome scarcity of data

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Overview

- Why a frequency dictionary?
- What is it?
- How is it created?
- Challenges

WHY

Research applications

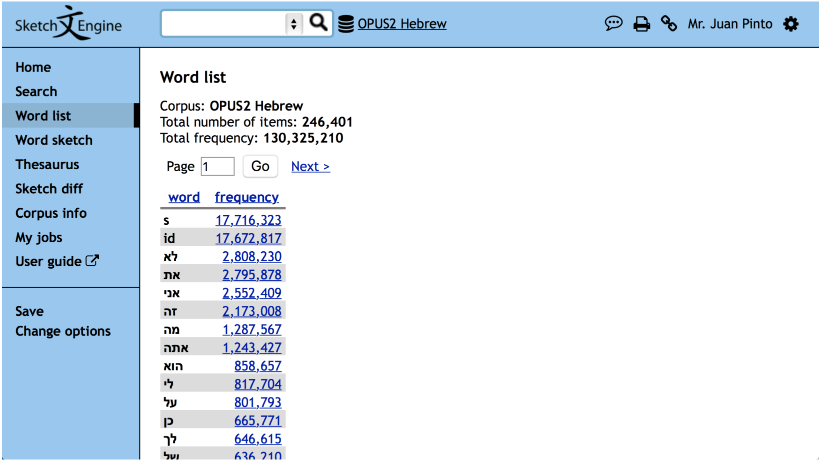
- Traditional linguistic studies that look for common morphological patterns
- Corpus-linguistic studies seeking to understand language through “real world” texts
- Psycholinguistic studies that explore connections between a speaker’s mental lexicon and word frequency

Practical applications

- Curriculum and textbook planning (prioritizing vocabulary)
- Vocabulary selection for graded readers and dictionaries
- Independent language study
- Calculating a text's vocabulary load

- How can vocabulary knowledge be appropriately tested and measured?
- What is the role of extensive reading (as opposed to intensive reading) in incidental vocabulary acquisition?
- What level of vocabulary do learners need in order to read extensively for pleasure?
- What level of vocabulary do learners need in order to succeed in an academic setting?
- What role does specialized vocabulary play in reaching understanding?

Sketch Engine: *https://www.sketchengine.eu*



Word list

Corpus: **OPUS2 Hebrew**
Total number of items: **246,401**
Total frequency: **130,325,210**

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word	frequency
s	17,716,323
id	17,672,817
לא	2,808,230
את	2,795,878
אני	2,552,409
זה	2,173,008
מה	1,287,567
אתה	1,243,427
הוא	858,657
לי	817,704
על	801,793
כן	665,771
לך	646,615
של	636,210

What

The Conversational Hebrew Vocabulary List (CHVL)

OPUS-frequencies repository:
https://github.com/juandpinto/opus-frequencies

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2. **Type =** number of separate and distinct words
3. **Lemma =** "A set of lexical forms having the same stem and belonging to the same major word class, differing only in inflection and/or spelling." (Francis, Kučera, & Mackie, 1982)
4. **Word family =** English taxonomy by Bauer and Nation (1993).

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  - *DP* x *frequency* (Matsushita, 2012, p. 99; Sorell, 2013, p. 89)

$$\mathrm{U}_{\mathrm{DP}} =$$

$$\left(1 - 0.5\sum_{i=1}^{n}\left|\frac{file_i\ tokens}{total\ tokens} - \frac{frequency_x\ in\ file_i}{total\ frequency_x}\right|\right) \times total\ frequency_x$$

HOW

A.K.A. *Methods*

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    - Easy to understand the syntax
    - Widely considered good for beginners because of its simplicity

Steps

1. Find a corpus
2. Clean the corpus
3. Extract data
4. Make calculations
5. Sort and export

1. Find a corpus

OpenSubtitles2018

OPUS: *http://opus.nlpl.eu*

Parsed corpus example

```
<s id="49">
  <time value="00:03:22,280" id="T39S" />
  <w xpos="ADV" head="49.3" feats="PronType=Int" upos="ADV"
      id="49.1" deprel="obj"> </w>
  <w xpos="PRON" head="49.3" feats="Gender=Masc|Number=Sing
      PronType=Prs" upos="PRON" lemma="  " id="49.2" deprel
  <w xpos="VERB" head="0" feats="Gender=Masc|HebBinyan=PAAL
      Person=1,2,3|VerbForm=Part|Voice=Act" upos="VERB" mis
      lemma="  " id="49.3" deprel="root">  </w>
  <w xpos="PUNCT" head="49.3" upos="PUNCT" lemma="," id="49
      deprel="punct">,</w>
  <w xpos="NOUN" head="49.3" feats="Gender=Masc|Number=Sing
      misc="SpaceAfter=No" lemma="   " id="49.5" deprel="ob
  <w xpos="PUNCT" head="49.3" upos="PUNCT" misc="SpaceAfte
      id="49.6" deprel="punct">?</w>
  <time value="00:03:24,120" id="T39E" />
</s>
```

2. Clean the corpus

```
Zipped folder in GZ format
    Folder for year X
        Folder for movie A
            Zipped XML in GZ format
            Zipped XML in GZ format
            Zipped XML in GZ format
        Folder for movie B
            Zipped XML in GZ format
            Zipped XML in GZ format
    Folder for year Y
        Folder for movie C
            Zipped XML in GZ format
        Folder for movie D
            Zipped XML in GZ format
            Zipped XML in GZ format
            Zipped XML in GZ format
        Folder for movie E
            Zipped XML in GZ format
            Zipped XML in GZ format
```

3. Extract data

```
' ': {
          '/he/0/5753574/6853341.xml': 168,
          '/he/0/3607000/5764778.xml': 94},
'  ': {
          '/he/0/5753574/6853341.xml': 3},
'   ': {
          '/he/0/5753574/6853341.xml': 6,
          '/he/0/3607000/5764778.xml': 2,
          '/he/0/1278351/3777598.xml': 1}
```

4. Make calculations

Normalized frequency

$$\left(\frac{raw\ frequency}{total\ frequency}\right) \times\ 1,000,000$$

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Range

4. Make calculations

Dispersion (U_{DP})

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- Translated vs. original language
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- Automatic parser

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- Minimal, simple coding helps

Don't leave all the fun to the English researchers!