Clustering of Analogies for Inter-Language Similarities

Software project - 3rd presentation

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04.11.2021

Summary of the project

Subject: Analogies between morphological rules

to stay -> stayed PST
to play -> ? PST
= PLAYED

Main goal: continuation of work done by Safa et al. to find out more about the closeness of languages and if they have common rules

Final product: Predict if two languages will transfer well, based on the rules they share

What was done before

- read some articles about classification of languages
- tried running the baseline
- experimented with some visualisation methods

- adapted new dataset to baseline
- ran a full transfer on new languages
- read articles about language similarities
- listed many possibly close pairs of languages
- started studying some rules in these pairs

Adapt the dataset

Problems:

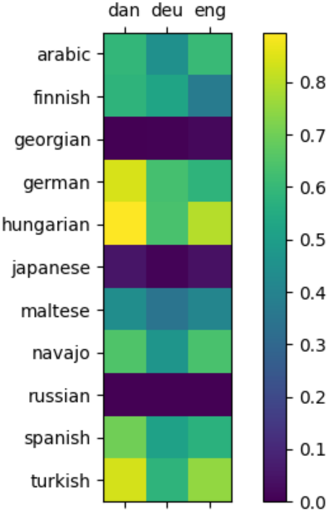
- SIGMORPHON 2020 is much bigger
- A little bit different format of data

Overall solution:

- Dictionary of sets to store classes of analogies for each tag
- Restriction on number of analogy pairs taken from each class (1 000 000)

Transfer on new dataset

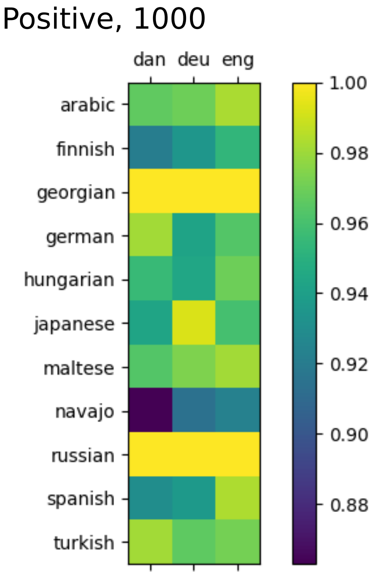
Full transfer, 1000 negative analogies on new Danish, German and English

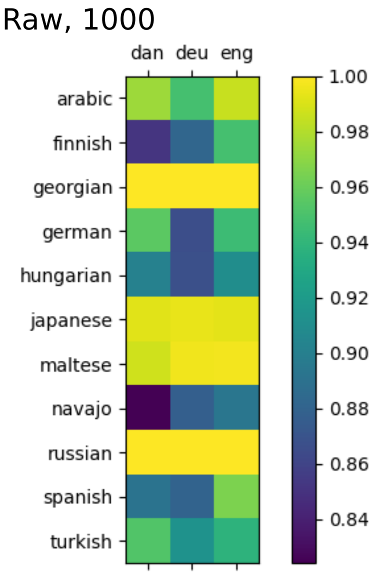


Interesting things

- German did not transfer well
  - New German dataset is much bigger and has a better representation of different morphological rules
- From Hungarian to Danish the best transfer

Transfer on new dataset





Language pairs

Papers read :

-

Examples of pairs:

-

Similar morphological rules - Example

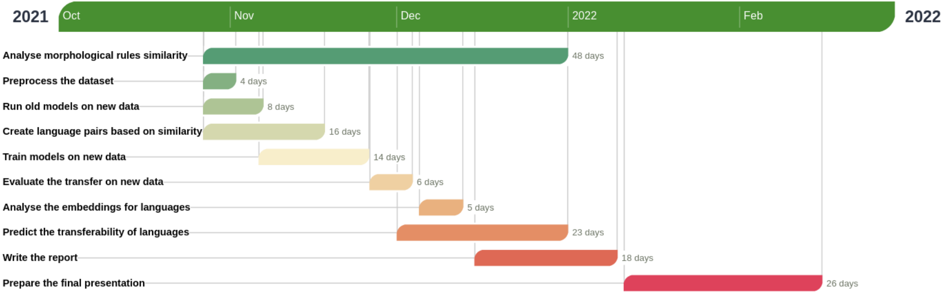
Comparison between verbs in Cebuano and Hiligaynon:

- Hiligaynon: ∅obra -> *nag*obra V;PST
- Cebuano: *mog*unit -> *nag*unit V;PRF;PST

- Hiligaynon: ∅ -> nag
- Cebuano: mog -> nag

30 to 50% words in common between the two languages

Timeline


2021
Oct
Nov
Dec
2022
Feb
2022
Analyse morphological rules similarity
48 days
Preprocess the dataset
4 days
Run old models on new data
8 days
Create language pairs based on similarity
16 days
Train models on new data
14 days
Evaluate the transfer on new data
6 days
Analyse the embeddings for languages
5 days
Predict the transferability of languages
23 days
Write the report
18 days
Prepare the final presentation
26 days

Thanks

Thank you for your attention.