Abstract

This paper explores the difficulties of annotating transcribed spoken Dutch-Frisian code-switch utterances into Universal Dependencies. We make use of data from the FAME! corpus, which consists of transcriptions and audio data. Besides the usual annotation difficulties, this dataset is extra challenging because of Frisian being low-resource, the informal nature of the data, code-switching and non-standard sentence segmentation. As a starting point, two annotators annotated 150 random utterances in three stages of 50 utterances. After each stage, disagreements were discussed and resolved. An increase of 7.8 UAS and 10.5 LAS points was achieved between the first and third round. This paper will focus on the issues that arise when annotating a transcribed speech corpus. To resolve these issues several solutions are proposed.

1 Introduction

A key-component to developing low-resource dependency parsers for a specific language-type, is an evaluation treebank. In this paper we will focus on the low-resource language West Frisian which is spoken in the Netherlands. We have used the FAME!-project dataset which was created out of broadcasts from Omrop Fryslân (Frisian radio broadcaster) (Yilmaz et al., 2016). Not only are we dealing here with a low-resource language, we are also dealing with a spontaneous speech dataset that contains code-switching between Frisian and Dutch (the main language spoken in the Netherlands). As Yilmaz et al. (2016) also mention, code-switching often occurs due to the influence of Dutch.

In this paper we will elaborate on the issues that arise with annotating Universal Dependencies (Nivre et al., 2020) on spoken code-switched language. As a starting point, we have randomly selected 150 utterances that contain at least one code-switching point from the FAME! corpus. We have followed the utterance segmentation as can be found in the corpus. The code-switches are also already annotated in these utterances by the annotators of the corpus (Yilmaz et al., 2016). The final goal is to use the annotated data to evaluate a dependency parser for this low-resource (and in this case spoken) language. In this paper we will discuss issues that arose during the annotation and propose possible solutions for these issues.

2 Related work

We are not the first to annotate spoken data. Previous work has annotated English for conversation agents (Davidson et al., 2019), Slovenian data (Dobrovoljc and Martinc, 2018), Komi-Zyrian (Partanen et al., 2018) and Turkish-German (Çetinoğlu and Çöltekin, 2019). Commonly mentioned problems are disfluencies and sentence segmentation (Dobrovoljč and Martinc, 2018). Two main types of solutions can be identified; adapting the existing guidelines (Çetinoğlu and Çöltekin, 2019) versus extending them (Davidson et al., 2019).

Previous research also focuses on creating treebanks for code-switch data. Çetinoğlu and Çöltekin (2019) focus on the issues that arise when annotating a spoken Turkish-German code-switch treebank and make a distinction between issues that are code-switch specific or related to spoken language. They conclude that they use dependencies that rarely occur in monolingual Turkish or German treebanks. Seddah et al. (2020) create a treebank for an Arabic dialect which contains a high amount of code-switching and language variation. Partanen et al. (2018) create a spoken treebank for Komi-Zyrian with code-switching to Russian. They argue that some language-specific issues might be difficult to fully address with Universal
3 Annotations

Overall, we tried to closely follow the existing Universal Dependency guidelines and the existing annotations of the Dutch Alpino and LassySmall treebanks (Van der Beek et al., 2002; Van Noord et al., 2013). But as we will show, some phenomena in spoken language may not be easy to annotate with an appropriate label.

3.1 Inter Annotator Agreements

We have both annotated in total 150 randomly selected utterances from scratch. After every batch of 50 sentences we discussed issues and adjusted our annotation scheme. We report accuracy over Universal Parts-of-speech tags, Unlabelled Attachment Score (UAS) and Labelled Attachment Score (LAS) (Zeman et al., 2018) in Table 1. Even though the scores improve over time, the final agreements are still relatively low; previous work on social media data reached an LAS of 84 (Liu et al., 2018), and for code-switched data an LAS of 92 is reported (Bhat et al., 2017).

We found that the four main sources of disagreement were due to 1) difficulties in ungrammatical constructions 2) sentence segmentation 3) interpretation of the utterances (ambiguity) 4) annotators had to learn the guidelines. In fact, there were very few issues with the code-switch aspect of this data. The reason for this could be that only very short parts of the utterance (e.g. only a content word) are switched and that there is a high degree of resemblance between the two languages (Wolf, 1996), making the switches not directly an issue while annotating. In the following section, we will discuss how we overcame issues in the first and second sources of disagreement.

3.2 Annotation Issues

In this section we will discuss the two most common sources of disagreement we encountered.

| Round | POS  | UAS  | LAS  |
|-------|------|------|------|
| Round 1 | 69.5 | 72.3 | 60.9 |
| Round 2 | 87.1 | 76.1 | 64.6 |
| Round 3 | 89.7 | 80.1 | 71.4 |

Table 1: POS, UAS and LAS scores between the two annotators.

This first example shows a phenomenon that occurred often and was often annotated differently:

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benammen eh foarsitter eh Van Raaij dy hat eh oare plannen
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A common source of confusion was when something/someone is referred to by name (in this case "foarsitter Van Raaij") and it is later referred to again with a relative pronoun ("dy"). There are multiple ways to annotate this. Our first choice was to annotate "foarsitter Van Raaij" as being the subject and "dy" as being in a determiner relation. A second option would be to annotate "dy" as the subject of the sentence and the other part as being in an appos relation, defining the "dy". Eventually, we chose to annotate "dy" as expletive and keep "foarsitter Van Raaij" as the subject.

The second example shows a couple of different issues that were specific to spoken language:

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hoe dan ek jongens dy moties dy eh dy moatte der trochkomme en
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The first thing to notice is that it starts with "hoe dan ek" which is an expression that is mainly used in spoken speech. Therefore we decided to label this as discourse. The most striking phenomenon in this utterance is the fact that it doesn’t seem to have a proper ending, it seems to go on "en" ("and"). This is something that happens a lot because of the spoken data and because of segmentation. We have chosen to attach these elements to the root with the dislocated label. Normally you would have elements on the right to which most of these dislocated elements would attach.

4 Conclusion

In this paper we have discussed some of the issues that arise when annotating a code-switch spoken treebank. As we have discussed we follow the general Universal Dependency guidelines and existing Dutch annotations. Annotating is still work in progress and our LAS and UAS scores leave room for improvement. Eventually we would like
to annotate a larger amount of utterances that can be used to evaluate a dependency parser in a low-resource setup.

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