Rhetorical Parallelism Detection: Parallelism Error Analysis Guidelines

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1 Introduction

In this document, we provide guidelines for performing an error analysis of parallelism data.

2 Main Content

2.1 Terminology

Before we begin, we describe some terminology.

- Given a document, a **span** is a sequence of words in that document.

- A **branch** is any span which is involved in a parallelism. In other words, every branch is a span, but not every span is necessarily a branch.

- A **parallelism** is a group of spans, called branches, which relate to each other in two respects: proximity and linguistic similarity. Note that all spans contained in a parallelism must be distinct; a span cannot be parallel with itself.

  - *Proximity* has to do with the idea that the two spans of text occur close together—they are close enough that, in conversation, one might reasonably remember an earlier span which relates to a later span.
  - *Linguistic similarity* concerns the way in which two texts relate in terms of their phonology, morphology, syntax, and semantics. Two spans are linguistically similar if they share a sufficient amount of such features.

- A parallelism is *synchystic* if the relations of words in branches are in-order. Meanwhile, a parallelism is *chiastic* if the relations of words in branches are reversed.

2.2 Guidelines

To perform an error analysis of parallelism data, we propose a general error analysis approach with three levels of granularity and three types of errors. In this context, a level of granularity refers to the level at which the parallelism error exists. We define three levels of granularity: parallelism, branch, and word. Meanwhile, the error types are inherited from traditional views of classification tasks. On the one hand, we could have a *false negative* in which material is missing that should be present; on the

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*The date presented here is the "last updated" date.

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other hand, we could have a *false positive* in which material is present that should not be. However, depending on the granularity, it is possible to both add and remove a branch. As a result, we also add the *false mixture* category where relevant.

We present a list of all possible error cases below, naming the conditions under which we may categorize an error by a combination of these granularities and error types.

1. **Parallelism**: An error is on this level if:

   - **False Negative**: A parallelism is entirely missing, meaning that it is not independently recognized by some hypothesis parallelism.
   - **False Positive**: A parallelism was added erroneously, meaning that an additional parallelism was included that does not readily match to any reference parallelism.
   - **False Mixture**: It is not possible to be both a parallelism that is entirely missing and added erroneously, so this category is not possible.

2. **Branch**: An error is on this level if:

   - **False Negative**: One or more (but not all) branches are completely missing from a parallelism. This could be either because the branches were not tagged, because they exist but were not linked, or because properly-tagged branches were grouped into single branches.
   - **False Positive**: One or more branches are added to a parallelism. This could be because they were improperly linked or because properly-tagged branches were subdivided into more branches.
   - **False Mixture**: One or more branches are completely missing from a parallelism *and* one or more branches are added to a parallelism.

3. **Word**:

   - **False Negative**: One or more (but not all) words are missing from a branch of a parallelism.
   - **False Positive**: One or more words that are not part of a parallelism are added to a branch of a parallelism.
   - **False Mixture**: One or more branches are completely missing from a parallelism *and* one or more branches are added to a parallelism.

If a matching between a hypothesis and reference parallelism has multiple issues (*e.g.*, it adds a branch *and* adds or removes words from branches), we select the error classification applying to the largest unit. In the case of the example, we would call that a branch-level false positive.

2.3   Software Notes

At the current time, we perform this work manually. However, it should be possible to convert the data to a format of choice for annotation.