State-of-the-art rule-based experiments on bridging resolution
Anaphoricity not a prerequisite

Newsweek said it will introduce the Circulation Credit Plan, which awards space credits to advertisers on renewal advertising. The magazine will reward advertisers who in 1990 meet or exceed their 1989 spending.

**Diverging definitions of bridging**

**Referential bridging**
- Bridging at the level of anaphoric referring expressions
- Filling an implicit argument slot with material from the context
- Relational or functional nouns
  \[ x = f(y) \]

1. Our correspondent in Egypt is reporting that the opposition in Egypt is holding a rally against the constitutional referendum.
2. Starbucks has a new take on the unicorn frappuccino. One employee of Starbucks accidentally leaked a picture of the secret new drink.
3. In Europe, Spain is the fourth largest country.

**Lexical bridging, meronymy**
- Lexical-semantic relations at the word/concept level, e.g. meronymy (whole-part)
- Anaphoricity not a prerequisite

**Subset relations, lexical givenness**
- Often, no anaphoricity involved
- Relation at word level is synonymy, hyponymy or word repetition

4. Newsweek said it will introduce the Circulation Credit Plan, which awards space credits to advertisers on renewal advertising. The magazine will reward advertisers who in 1990 meet or exceed their 1989 spending.

**Rule-based experiments**

**Bridging resolver**
- Re-implementation of rule-based approach
- Additional rule to find more general pairs, based on automatically predicted meronymy pairs
- Experiments on ISNotes corpus

**Available corpus resources (EN)**

<table>
<thead>
<tr>
<th>Corpus</th>
<th>Antecedent-anaphor pairs</th>
<th>Type</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISNotes</td>
<td>663 all</td>
<td>referential</td>
<td>news</td>
</tr>
<tr>
<td>ARRau</td>
<td>5,512 all</td>
<td>lexical</td>
<td>news, narrative, dialogue</td>
</tr>
<tr>
<td>BASHI</td>
<td>459 all</td>
<td>referential</td>
<td>news</td>
</tr>
<tr>
<td>SCiCorp</td>
<td>1366 definite</td>
<td>referential</td>
<td>scientific text</td>
</tr>
<tr>
<td>CorefPro</td>
<td>188 definite</td>
<td>referential</td>
<td>news, narrative, medicine</td>
</tr>
<tr>
<td>GUM</td>
<td>(growing) all</td>
<td>referential, some lexical</td>
<td>dialogue, narrative, informative</td>
</tr>
</tbody>
</table>

**References**
- Rösiger 2018 (CRAC@NAACL)
  - Rule- and learning-based methods for bridging resolution in the ARRAU corpus
- Rösiger et al. 2018 (CRAC@NAACL)
  - Integrating predictions from neural-network relation classifiers into coreference and bridging resolution
- Rösiger 2018 (LREC)
  - BASHI: A corpus of Wall Street Journal articles annotated with bridging links
- Hou et al. 2014 (EMNLP)
  - A rule-based system for unrestricted bridging resolution: recognizing bridging anaphors and finding links to antecedents

**Non-compatibility of bridging definitions has a very negative influence on the performance of the bridging resolver.**