GernEdit – The GermaNet Editing Tool

Verena Henrich and Erhard Hinrichs
University of Tübingen
Department of Linguistics

LREC 2010, Malta, May 2010
Introduction

• *GernEdit* (GermaNet Editing Tool)
  • User-friendly visual editing tool for GermaNet
  • To facilitate internal consistency

• Traditional development of GermaNet
  • Based on lexicographer files
  • Error prone due to a complex data format
  • No automatic consistency checks
GermaNet

- GermaNet is a lexical semantic wordnet that is modeled after the Princeton WordNet for English
- Covers 3 word categories: adjectives, nouns, and verbs
- Word meanings are represented by *lexical units*
- Lexical units are grouped into semantic concepts (*synsets*) according to their meaning
- A synset is a set of (near-)synonymous words
GermaNet: Lexical Units and Synsets
GermaNet: Relations

- Two types of semantic relations: conceptual and lexical relations
- Lexical relations hold between two lexical units, e.g., synonymy, antonymy, or pertonymy
GermaNet: Relations

- Conceptual relations hold between two synsets, e.g., hyperonymy, part-whole relations, entailment, or causation

- GermaNet is hierarchically structured in terms of the hyperonymy-hyponymy relation of synsets
Lexicographer Files Example

(** Nüsse ***)

{Nuss, Nuß*o, Nusskern, ?festes Nahrungsmittel,@ nomen.Pflanze:Nuss,@ ('der essbare Kern einer Nuss')}

{Haselnuss, Haselnuß*o, Haselnusskern, Haselnußkern*o, Nuss,@ nomen.Pflanze:Haselstrauch,#}

{Kokosnuss, Kokosnuß*o, Nuss,@ nomen.Pflanze:Kokospalme,#}

{Betelnuss, Betelnuß*o, Nuss,@ Genussmittel,@}

{Erdnuss, Erdnuß*o, Erdnusskern, Erdnußkern*o, Nuss,@ nomen.Pflanze:Erdnusspflanze,#}

{Cashewkern, Cashewnuss, Cashewnuß*o, Nuss,@ nomen.Pflanze:Acajubaum,#}

...
Lexicographer Files: Shortcomings

• Three main problems

1. No visualization
   → Difficult to insert new items

2. Complex data format
   → Syntax errors and semantic inconsistencies

3. No versioning
   → Impossible to track back changes
GernEdiT – The GermaNet Editing Tool

• Developed to overcome these shortcomings

1. No visualization

   →

2. Complex data format

   →

3. No versioning

   →
GernEdiT – The GermaNet Editing Tool

• Developed to overcome these shortcomings

1. No visualization
   → Graphical tool (search and browse GermaNet)

2. Complex data format
   →

3. No versioning
   →
GernEdiT – The GermaNet Editing Tool

• Developed to overcome these shortcomings

1. No visualization
   ➔ Graphical tool (search and browse GermaNet)

2. Complex data format
   ➔ User-friendly tool (with internal consistency checks)

3. No versioning
   ➔
GernEdiT – The GermaNet Editing Tool

• Developed to overcome these shortcomings

1. No visualization
   ➔ Graphical tool (search and browse GermaNet)

2. Complex data format
   ➔ User-friendly tool (with internal consistency checks)

3. No versioning
   ➔ Editing history
GernEdiT: Conceptual Relations Editor

### All Conceptual Relations

<table>
<thead>
<tr>
<th>Type</th>
<th>To/From Synset</th>
</tr>
</thead>
<tbody>
<tr>
<td>hyperonymy</td>
<td>geologisches Phänomen [41135]</td>
</tr>
<tr>
<td>one(meronymy)</td>
<td>Brandherd [17032]</td>
</tr>
<tr>
<td>both(association)</td>
<td>Brandrodung [21302]</td>
</tr>
<tr>
<td>one(holonymy)</td>
<td>Brandursache [38913]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Schwelbrand [41143]</td>
</tr>
<tr>
<td>hyperonymy</td>
<td>Großbrand, Großfeuer [41144]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Schmiedefeuer [41145]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Strohfeuer [41146]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Flächenbrand [41147]</td>
</tr>
<tr>
<td>hyperonymy</td>
<td>Kaminfeuer [41148]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Feuersbrunst [41149]</td>
</tr>
<tr>
<td>hyponymy</td>
<td>Lagerfeuer [41150]</td>
</tr>
<tr>
<td>one(holonymy)</td>
<td>Flamme [41151]</td>
</tr>
<tr>
<td>one(holonymy)</td>
<td>Funke [41153]</td>
</tr>
<tr>
<td>one(holonymy)</td>
<td>Glut [41156]</td>
</tr>
<tr>
<td>hyperonymy</td>
<td>Lauffeuer [41157]</td>
</tr>
<tr>
<td>hyperonymy</td>
<td>Waldbrand [41183]</td>
</tr>
<tr>
<td>one(holonymy)</td>
<td>Qualm, Rauch [48463]</td>
</tr>
</tbody>
</table>

### Create Conceptual Relation

**From:** 41142, [Brand, Feuer]

**To:** 47781, [Feuer]

- `causation`
- `Reverse Direction`
- `Clear`
- `Save`
## GernEdit: Examples and Frames

### Examples

<table>
<thead>
<tr>
<th>Example Id</th>
<th>Text</th>
<th>Frame Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>8401</td>
<td>Sie hat die Augen geöffnet.</td>
<td>NN.AN</td>
</tr>
<tr>
<td>8402</td>
<td>Er öffnet die Weinflasche mit einem Korkenzieher.</td>
<td>NN.AN.Bs</td>
</tr>
<tr>
<td>8403</td>
<td>Er öffnete ihr die Tür.</td>
<td>NN.AN.Dn</td>
</tr>
<tr>
<td>12185</td>
<td>Er öffnete das Buch.</td>
<td>NN.AN</td>
</tr>
</tbody>
</table>

### Frames

<table>
<thead>
<tr>
<th>Frame Id</th>
<th>Frame Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>8367</td>
<td>NN.AN</td>
</tr>
<tr>
<td>8368</td>
<td>NN.AN.Bs</td>
</tr>
<tr>
<td>8369</td>
<td>NN.AN.Dn</td>
</tr>
</tbody>
</table>

[Add New Example] [Delete Example] [Edit Example]

[Add New Frame] [Delete Frame] [Edit Frame]
Conclusion

• More efficient and accurate work
• The tasks of the lexicographers are simplified
  • No more need for syntactic work
  • Navigation through the GermaNet graph
• Additional functionalities
  • Search functionalities
  • Consistency checks
  • Collaborative annotation and trace back changes
  • Export formats
References
