Recent Improvements in the CMU Large Scale Chinese-English SMT System
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Setup
- CMU SMT phrase based beam search decoder
- MT03 for dev test, MT06 NIST part (incl. audio) as unseen
- GALE parallel data: 10M sentences, 260M words
- LM data: GigaWordV3 + bilingual

Translation Model Training
- Parallelized GIZA++
- Speedup from 169 hours to 39 hours by using on average 11 CPUs in parallel opposed to 2 CPUs
- Allows for retraining of the full system on a regular basis

Language Model Training
- 2.7 Gigawords training data
- SriLM toolkit, 5-gram LM, interpolated Kneser Ney smoothing
- Interpolation of different sources

POS based Reordering
- Decode source lattice containing reordering alternatives
- Allows for long distance reordering without slowing down decoding

1. POS tag training corpus
2. Automatically extract POS based reordering patterns
3. Use left and right context of patterns
4. Score patterns with relative frequencies
5. Apply patterns to source sentence to build lattice

<table>
<thead>
<tr>
<th>System</th>
<th>MT03</th>
<th>MT06</th>
</tr>
</thead>
<tbody>
<tr>
<td>260M, standard</td>
<td>32.20 / 60.59</td>
<td>30.22 / 60.81</td>
</tr>
<tr>
<td>260M, lattice</td>
<td>33.53 / 59.74</td>
<td>31.74 / 59.59</td>
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</tbody>
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<thead>
<tr>
<th>System</th>
<th>MT03</th>
<th>MT06</th>
</tr>
</thead>
<tbody>
<tr>
<td>67M baseline</td>
<td>31.45 / 60.93</td>
<td>27.61 / 62.18</td>
</tr>
<tr>
<td>test data tagged</td>
<td>--</td>
<td>26.06 / 63.36</td>
</tr>
<tr>
<td>260M, 5gram</td>
<td>29.07 / 62.52</td>
<td>25.97 / 63.39</td>
</tr>
</tbody>
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Did not work: Number Tagging
- Tag and pretranslate testdata only
- Tag training data and test data
- Unbalanced number tags in training data