**KyotoEBMT System Description for the 2nd Workshop on Asian Translation**

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**KyotoEBMT System Pipeline**

1. Parallel Corpus → Parser → Alignment → Translation Memory
2. Input → Parser → Example retrieval → Initial Hypotheses → n-best translations → Replacer → Final Translation
3. Decoder → Tuner → Reference Translations

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**Web Interface of Translation**

Example based machine translation system based on dependency structure are introduced in this paper.

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**Conclusion and Future Work**

**KyotoEBMT system**
- source code available under a GPL license at [http://nlp.ist.i.kyoto-u.ac.jp/kyotoebmt/](http://nlp.ist.i.kyoto-u.ac.jp/kyotoebmt/)  
  (version 1.0 just released!)
- uses both source and target dependency analysis  
- online example retrieving  
- availability of full translation examples at run time  
- can use forest parses of input

**Future work**
- use a target-side tree language model  
- online tuning of weights  
- target-side structural features  
- use of neural network language models in decoding

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**WAT2015 Official Results**

<table>
<thead>
<tr>
<th>Dependency Types</th>
<th>BLEU</th>
<th>RIBES</th>
<th>HUMAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JE</strong></td>
<td>21.31 (+0.71)</td>
<td>70.65 (+0.53)</td>
<td>16.50</td>
</tr>
<tr>
<td><strong>EJ</strong></td>
<td>22.89 (+1.82)</td>
<td>72.46 (+2.56)</td>
<td>32.50</td>
</tr>
<tr>
<td><strong>JC</strong></td>
<td>30.69 (+0.93)</td>
<td>76.78 (+1.57)</td>
<td>40.50</td>
</tr>
<tr>
<td><strong>KJ</strong></td>
<td>33.06 (+1.97)</td>
<td>78.95 (+2.99)</td>
<td>51.00</td>
</tr>
<tr>
<td><strong>KC</strong></td>
<td>29.99 (+2.78)</td>
<td>80.71 (+1.58)</td>
<td>16.00</td>
</tr>
<tr>
<td><strong>KJ</strong></td>
<td>31.40 (+3.83)</td>
<td>82.70 (+3.87)</td>
<td>12.50</td>
</tr>
<tr>
<td><strong>KJ</strong></td>
<td>36.30 (+2.73)</td>
<td>81.97 (+1.87)</td>
<td>16.75</td>
</tr>
<tr>
<td><strong>KJ</strong></td>
<td>38.53 (+3.78)</td>
<td>84.07 (+3.81)</td>
<td>18.50</td>
</tr>
</tbody>
</table>

(Improvement over WAT2014 in parentheses)

Remark: For WAT2014, J->C was the only direction for which reranking was worsening BLEU and Human Evaluation. For WAT2015, J->C is still the only direction for which reranking worsens Human Evaluation (although it now does improve BLEU)

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**Translation with Lattice Rules**

Each path in this lattice corresponds to different choices of insertion position for X2, morphological forms of “be”, and the optional insertion of “at”.

- designed to handle an arbitrary number of non-terminals  
- able to handle ambiguities of translation hypotheses  
  - which target word is going to be used

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**Illustration of Translation Process**

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**Web Interface of Translation**

Example based machine translation system based on dependency structure are introduced in this paper.