Some boys want to go.

Graph-Structured Semantic Representations
- Use graphs to represent semantic information.
- Abstract Meaning Representation, Elementary Dependency Structure, Dependency-based Minimal Recursion Semantics

Synchronous Hyperedge Replacement Grammar
- A mathematically sound framework to construct semantic graphs
- Context-free rewriting system that rewrites one hyperedge into a graph in a step
- A hyperedge is an extension of a normal edge which can connect to more than two nodes or only one node.

Grammar Extraction
- Data: English Resource Semantics (ERS), which follows the principle of compositionality
- We propose an SHRG extraction algorithm that requires and only requires alignments between edges and surface strings.

Neural SHRG-Based Semantic Parsing
A two-step architecture:
- Syntactic parsing: to obtain the shared derivation
- Semantic interpretation: to map the syntactic derivation to the corresponding semantic derivation

Syntactic Parsing
- Span-based parser with LSTM-Minus feature
- CKY decoder to ensure that the output agrees with the known rules

Semantic Interpretation
- Three model: Count Based, Greedy Search and Beam Search
- Scoring correspondents using span embedding and rule embedding

Practical Parsing

<table>
<thead>
<tr>
<th>Model</th>
<th>EDM</th>
<th>EDM</th>
<th>EDM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91.82</td>
<td>86.92</td>
<td>89.58</td>
</tr>
<tr>
<td>Boys and Blunsom, 2017</td>
<td>88.14</td>
<td>82.20</td>
<td>85.48</td>
</tr>
<tr>
<td>EDS</td>
<td>93.15</td>
<td>87.59</td>
<td>90.35</td>
</tr>
<tr>
<td>Ours</td>
<td>92.08</td>
<td>86.77</td>
<td>89.64</td>
</tr>
<tr>
<td>Ours</td>
<td>93.11</td>
<td>86.01</td>
<td>89.51</td>
</tr>
</tbody>
</table>

Table 1: Accuracy on the test set of DeepBank.

Acknowledgments
This work was supported by the National Natural Science Foundation of China (61772036, 61331011) and the Key Laboratory of Science, Technology and Standard in Press Industry (Key Laboratory of Intelligent Press Media Technology).

Contact Information
{yufei.chen,ws,wanxiaojun}@pku.edu.cn