Toward Continuous Discovery of Semantic Knowledge


Goal: Never-ending language learning

SubGoal considered here:
• Achieving high semi-supervised learning accuracy by coupling the learning of many categories
• Domain: learning semantic classes of NPs

Coupling learning of functions f(x), g(x):
1. Propagate initial labeled examples of f(x) to g(x)
2. Propagate self-labeled examples
3. Use learned instances/patterns of f(x) to assess patterns/instances of g(x)

Multi-task learning with explicit relationships between learning tasks:
• subset(organization(x), university(x))
• exclusive(university(x),person(x))
• inverse(parentOf(x,y),childOf(x,y))
• childOf(x,y) => person(x) ^ person(y)

Bootstrap learning accuracy: iteratively labeling 110 new examples from 8M web pages

<table>
<thead>
<tr>
<th>Coupling</th>
<th>country</th>
<th>city</th>
<th>company</th>
<th>univ.</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>93.6</td>
<td>99.1</td>
<td>100.0</td>
<td>79.1</td>
<td>93.0</td>
</tr>
<tr>
<td>1,2,3</td>
<td>89.1</td>
<td>98.2</td>
<td>100.0</td>
<td>97.3</td>
<td>96.2</td>
</tr>
</tbody>
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