# Symbolic explanation of similarities in case-based reasoning

<table>
<thead>
<tr>
<th>Title</th>
<th>Symbolic explanation of similarities in case-based reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publication Type</td>
<td>Journal Article</td>
</tr>
<tr>
<td>Year of Publication</td>
<td>2006</td>
</tr>
<tr>
<td>Authors</td>
<td>Armengol E [1], Plaza E [2]</td>
</tr>
<tr>
<td>Journal</td>
<td>Computing and Informatics</td>
</tr>
<tr>
<td>Volume</td>
<td>25</td>
</tr>
<tr>
<td>Number</td>
<td>2-3</td>
</tr>
<tr>
<td>Pagination</td>
<td>153-171</td>
</tr>
</tbody>
</table>

**Abstract**

CBR systems solve problems by assessing their similarity with already solved problems (cases). Explanation of a CBR system prediction usually consists of showing the user the set of cases that are most similar to the current problem. Examining those retrieved cases the user can then assess whether the prediction is sensible. Using the notion of symbolic similarity, our proposal is to show the user a symbolic description that makes explicit what the new problem has in common with the retrieved cases. Specifically, we use the notion of anti-unification (least general generalization) to build symbolic similarity descriptions. We present an explanation scheme using anti-unification for CBR systems applied to classification tasks. This scheme focuses on symbolically describing what is shared between the current problem and the retrieved cases that belong to different classes. Examining these descriptions of symbolic similarities the user can assess which aspects are determining that a problem is classified one way or another. The paper exemplifies this proposal with an implemented application of the symbolic similarity scheme to the domain of predicting the carcinogenic activity of chemical compounds.