DETECTION OF INACCURACY IN A MEDICAL KNOWLEDGE BASE USING A CLASSICAL THEOREM PROVER

Pavel Rusnok\textsuperscript{1}  Klaus-Peter Adlassnig\textsuperscript{1,2}

\textsuperscript{1}Section for Medical Expert and Knowledge-Based Systems
Medical University of Vienna, Austria
pavel.rusnok@meduniwien.ac.at

\textsuperscript{2}klaus-peter.adlassnig@meduniwien.ac.at
CADIAG systems

- Computer-Assisted DIAgnosis
- designed at the Medical University of Vienna, Adlassnig
- internal medicine
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CADIAG-1

- Classical Logic
- knowledge base checking
- 17 inaccuracies found
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CADIAG-1

- Classical Logic
- knowledge base checking
- 17 inaccuracies found

CADIAG-2

- medical expert system based on Fuzzy Logic
- knowledge base to be checked
## Rules

### CADIAG-1 rules

<table>
<thead>
<tr>
<th>Rule type</th>
<th>IF-THEN statements</th>
</tr>
</thead>
<tbody>
<tr>
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<td>if (\alpha) then (\beta)</td>
</tr>
<tr>
<td>(\alpha) ON (\beta)</td>
<td>if not (\alpha) then not (\beta)</td>
</tr>
<tr>
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<td>if (\alpha) then not (\beta)</td>
</tr>
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<td>if (\alpha) then possibly (\beta)</td>
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**CADIAG-2 rules**

- one uniform rule

IF $\alpha$ THEN $\beta$ WITH $soc, foo, soc, foo \in [0, 1]$
Checking of the knowledge base

Representation

- CADIAG-2’s rules $\mapsto$ form of CADIAG-1’s rules
- first-order logic formulas
Checking of the knowledge base

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Consistency Checking

- Prover9
- 10 groups of inaccuracies