Grundlagen der Wissensverarbeitung

Blatt 7

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Exercise 1.2: (CSI Stellingen)

Introduction to Diagnosis: A Murder Investigation.
The question is: "Who is the murderer?"
First, we assign symbols (atoms) to the clues:

g : gardener is murderer
b : butler is murderer
a : gardener was working in the garden all day
r : butler was working in the garage all day
d : gardener has dirt on his hands
i : butler has dirt on his hands

Next we rewrite the clues inside these symbols, and logical operators:
Knowledge Base:
Assumables:
$a \rightarrow \neg g$
$r \rightarrow \neg b$
Observations:
$\neg d$
i
Rules:
$a \rightarrow d$
$r \rightarrow i$
Integrity Constraints:
$d \vee \neg d$
$i \vee \neg i$
From observation $\neg d$ and rule $a \rightarrow d$ we deduce with integrity constraint $d \vee \neg d$ that $\neg a$.
From $\neg a$ and assumable $a \rightarrow \neg g$ we deduce g. So the gardener is the murderer.
Minimal conflict:

Minimal diagnosis:

Exercise 1.3: (Diagnosis)