6. D E D U C Knowledge Processing System

Brief User Introduction

Full documentation of the DEDUC system and its application to knowledge processing is found in two German books:


The DEDUC system and several sample knowledge bases are provided on a computer disk (IBM-PC format) which comes with this set of books.

DEDUC can be used for

1. Processing factual knowledge in the sense of deriving conclusions from existing knowledge: These conclusions are used to derive further conclusions, until all possible implications have been derived (impact analysis). Factual knowledge is stored in the 'knowledge module'.

2. Assessing impacts with respect to value criteria (orientors): Knowledge about orientors and their relationships to potential impact variables is stored in the 'orientor module'. The results of the impact analysis can be transferred into the corresponding orientor module in order to assess what the impacts mean for system development (impact assessment).

In the example below we document both a simple knowledge module and corresponding orientor module, and demonstrate the use of DEDUC by working with these modules.

Knowledge bases should be written using a text editor (unformatted). They must then be copied into one of nine special files DEDF.1 ... DEDF.9, from which they can be read into DEDUC by using the corresponding commands RF 1 ... RF 9 (see below). The knowledge bases may contain comments enclosed in '!'.

The following program parts are required for running DEDUC:
DEDUC.EXE, DEDUCF.DAT, DEDUCF.TEX.
DEDUC Knowledge Processing System

!DEDUC-DEMONSTRATION I - KNOWLEDGE MODULE - DEMKNOM!

!Object Structure Definitions!

rawMaterial (coal, oil, iron), fertilizer, wheat is resource.
indProduct (fertilizer), agricProduct (wheat), bread is product.
indCountry (Germany, USA), developpCountry (India) is country.
present, nearFuture, farFuture is tim.

!Implications!

if (scarce (resource, country, tim) or expensive (resource, country, tim))
and required (resource, product, country, tim)
then expensive (product, country, tim).

!Premises!

prem scarce (oil, country, nearFuture),
required (oil, fertilizer, country, nearFuture),
required (fertilizer, agricProduct, indCountry, tim),
required (wheat, bread, Germany, tim).

!DEDUC DEMONSTRATION II - ORIENTOR MODULE - DEMORIM!

!Object structure!

physExistence, security, freedom, efficiency, adaptivity
is basicOrientor.
health, nutrition, socialSecurity is orientor.
bread, potato is basicFood.

!add Object Structure Definitions of knowledge module:

rawMaterial (coal, oil, iron), fertilizer, wheat is resource.
indProduct (fertilizer), agricProduct (wheat), bread is product.
indCountry (Germany, USA), developpCountry (India) is country.
present, nearFuture, farFuture is tim.

!Implications!

if expensive (basicFood, country, tim)
then threat (nutrition, country, tim).

if threat (orientor, country, tim)
and important (orientor, basicOrientor, country, tim)
then threat (basicOrientor, country, tim).

!Premises!

prem important (nutrition, physExistence, country, tim),
expensive (bread, Germany, nearFuture).