Intelligent Systems: Reasoning and Recognition

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Lesson 11 - Exercise   18 March 2011

Exercise : Family Relations

The goal of this exercise is to program a set of classes and message handlers that can respond to questions about the relations within a family. Family relations, such as father, mother, brother and sister are represented by slots. Answers are determined by "handlers"

a) Define an abstract class for person with slots name, father, mother, brother and sister. The slots for brother and sister must be multi-slots so that they can contain a list.

Define a concrete class for MAN as a subclass of person, with the slots "wife" and "gender" having fixed values of "male".

Define a concrete class for WOMAN as a subclass of person, with the slots "husband" and "gender" having fixed values of "female".

b) Create a rule to build the family structure by asking for the wife for a man, and the husband for a wife, and the father and mother for each person.

c) Define the message handlers for the class PERSON that can determine the objects that represent the paternal Grandmother and Grandfather.

d) Define the message handlers that return the Names of the paternal grandfather and grandmother.

e) Define a message handler to determine the pointers to the uncles of a person. (brother of father and brothers of mother). Hint : a list can be created with the function create$. Ex : (a b c) <- (create$ a b c)

f) Define a message handler to determine the names of the uncles.

g) Define the message handler to determin the list of names for all of the grandparents.