Task Description MA

(draft version)

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Abstract

Deep-Models@runt.time as described in *Deep Models@run.time for End-User-Driven Flexible Software* lead to a high flexibility of business-models by allowing concurrent instance and model modifications. However, a known weakness of the proposed design-concept is the missing ability to restrict properties of both instances and models beyond basic object-oriented principles such as associations with multiplicities. The task of this work is to research, compare and evaluate principles to express and realise instance- and model-constraints and to extend the existing framework implementation by one of the found solutions.

Outline

The task is strucutred as follows:

- Introduce the idea of end-user driven modelling of constraints in a wider sense and regarding the concept of deep-models at runtime and why wide-spanning constraints are required in such a context.

- Conduct a background research on models at runtime, multilevel-metamodels and with main focus on constraint/restriction modelling.

- Analyse which types of constraints/queries/models would be required to formualte useful restrictions on a deep-model at runtime. Evaluate how end-user can interact with such techniqes. Find useful selection and comparison creteria. The problem of instance-model co-evolution should be noted.

  - The starting point and minimal result should be constraining instance attributes, instance-state and instance nets.
  - A Subsequent goal is to use the results of this thesis for (A) modelling of behaviour (workflows, trigger-functions with state-like transitions) were a before and after system state must be compared for validity and (B) distingusing invariant and variant model-parts that stable model contracts can be guaranteed. Those ideas are not part of the reasearch focus of this work, but should be noted if possible.

- Choose a technique and extend/modify it for application in the codi-native (modicio) framework.

- Develop a prototypical framework-extension.

- Create a new or extend the exisitng case-study.

- Conduct a summarising evaluation / if possible, model and present constraint sets on exemplary usecases.