Master's thesis project: Domain-Specific Modeling and Languages

Domain-Specific Modeling (DSM) is a software engineering methodology with the aim of raising the level of abstraction beyond programming. This is often done using domain concepts. These domain concepts are represented in a Domain-specific programming language (DSL), which are often graphical in nature. Usage of DSM often includes automating the generation of executable source code from the models.

TRAKLA2 is an environment for learning data structures and algorithms. The system provides algorithm simulation exercises that can be automatically graded. The grading is based on comparison between the learner made simulation sequence and a sequence produced by an actual algorithm. Currently, the main effort in developing the system further goes into the development of new exercises. This process requires deep knowledge of Java and the underlying Matrix application framework that is employed to create new algorithm simulation exercises.

In this work, the goal is to lower the effort needed to produce new exercises by developing a Domain-specific programming language for the domain of algorithm simulation (exercises). The work starts with an extensive literature survey in order to have a good understanding of DSM and different ways to develop a DSL. After this, a new DSL is designed, implemented, tested and evaluated in the project. The different phases are reported on M.Sc. thesis.

Supervisor: Docent Ari Korhonen, D.Sc. (Tech)

Instructor: Researcher Ville Karavirta, Lic.Sc. (Tech)

Please, contact the supervisor for more information.