

Towards Efficient Reasoning about Families of Class Diagrams Using Union Models

Authors : Tejush Badal, Sanaa Alwidian

Abstract : Class diagrams are useful tools within the Unified Modelling Language (UML) to model and visualize the relationships between, and properties of objects within a system. As a system evolves over time and space (e.g., products), a series of models with several commonalities and variabilities create what is known as a model family. In circumstances where there are several versions of a model, examining each model individually, becomes expensive in terms of computation resources. To avoid performing redundant operations, this paper proposes an approach for representing a family of class diagrams into Union Models to represent model families using a single generic model. The paper aims to analyze and reason about a family of class diagrams using union models as opposed to individual analysis of each member model in the family. The union algorithm provides a holistic view of the model family, where the latter cannot be otherwise obtained from an individual analysis approach, this in turn, enhances the analysis performed in terms of speeding up the time needed to analyze a family of models together as opposed to analyzing individual models, one model at a time.

Keywords : analysis, class diagram, model family, unified modeling language, union model

Conference Title : ICSEDM 2023 : International Conference on Software Engineering and Domain Modeling

Conference Location : Toronto, Canada

Conference Dates : September 18-19, 2023