

Abstract of **Babak Ravandi** B.S. thesis <http://ravandi.ir/>

Thesis Title: Provide a method for transferring UML model to Alloy model

Abstract

Deploying software is a very costly and laborious process and it can be even more laborious and costly if there is an undiscovered design fault in the modeling stage of software development.

Consequently, many software development methodologies have been generated to design better model for software systems and reduce faults in modeling stages. When software is deployed, however, after doing all of the modeling stages, because of undiscovered design faults in business model or software model we faced to many problems in runtime which will be cause lots of trouble. So, below question had been made in my mind:

Although there are many modeling tools such as UML and OCL, why still design faults exists in software models?

The answer is simple “in the modeling stages, business processes and rules only will be declared, **but they won’t be analyzed**”

Alloy is a declarative modeling language which has been designed to analyses abstraction model of the systems. If we transfer the UML with OCL model to Alloy model, we will be able to analyze UML model which is the most popular modeling language in software industry. As a result, we will be able to provide more accurate model by discovering more faults in software models.

In addition, this method can be used to transfer the Independent Model (Part 3) to Platform Dependent Model (source code in a particular language such as C++) by using MDA (Model Driven Architecture), but it should not be taken for granted, owing to the fact that there are many differences between Alloy and UML viewpoints so it is difficult to do this transformation completely automatic.

The Achievement of this thesis is providing a method to transfer UML Class Diagram with OCL to Alloy in order to analyze UML Class Diagram.