

# TEXTUAL DELTA MODEL INFRASTRUCTURE FOR EXPRESSING CONTROL SOFTWARE VARIABILITY

## Current Situation

V4rdiac uses an Eclipse-based framework to build a textual delta modeling infrastructure. Unfortunately, this framework limits the possibility of external tools utilizing the textual delta modeling infrastructure (such as the parser and code generation engine) in V4rdiac. The current hypothesis is to use a generic framework to facilitate this. Such a generic framework should also provide standard functionalities to develop textual DSLs or programming languages, such as creating a parser and code generation engine.

## Background

Delta modeling is a prominent concept in Software Product Lines (SPLs) for expressing software variability from the implementation perspective. In particular, delta modeling can extend the capability of programming languages and modeling languages to express software variability. This concept is currently used in LIT CPS Lab to develop V4rdiac, a tool that uses delta modeling to manage variants of production automation software.

## Content of the Thesis

The goal of this thesis is to develop a DSL infrastructure (e.g., parser and code generation engine) for textual delta modeling. This infrastructure is intended to be generic and easily integrated with any external plugins or tools. Currently, our efforts are concentrated on creating a DSL infrastructure using Java.

## Requirements

- Java programming skill is required
- Having knowledge in Object-Oriented Design Pattern, Formal Method, and Compiler Theory is a plus
- Fluent English communication skill is required

## Learning Outcomes

- Learn how to develop infrastructure for DSL (e.g., parser and code generator)
- Learn about existing concept and tooling in Software Product Line
- Applying versioning systems in practice (Git)
- Scientific methods and structured

## Betreuung:



H. Sayyid Fadhilillah  
 hafiyyan.fadhilillah@jku.at

## Delta Model

