A Generic Process Model for Clone Detection in Unified Modelling Language Diagrams

Al-Fahim Mubarak Ali, Shahida Sulaiman
Department of Software Engineering
Faculty of Computer Science and Information Systems
Universiti Teknologi Malaysia
81310 Skudai, Johor
fahimbhai86@gmail.com, shahidasulaiman@utm.my

ABSTRACT
Model based development has been increasingly used in major domains such as embedded systems. Major parts of the embedded system codes are generated from specified models with domain specific modelling language. This makes model development has an important role in software development and maintenance process. Nevertheless, the development and maintenance of software has been severely hampered by an issue; cloning. Clones can be said as identical copies of the same instances or fragments. Cloning has not only contributed to maintenance issue but also has given the negative impact to program performance. Rapid progress has been done in detecting and removing clone at code based development but very least at model based development especially Unified Modelling Languages (UML). Due to lack of emphasize of clone detection at model-based development makes cloning a major issue in software design. Therefore, we propose a generic process model that will be used for model clone detection specifically for UML diagram. We propose a formal definition of model clones, a set of clone detection algorithm and process that will be used for clone detection in UML diagrams and implement it prototypically. Finally, a case study will be used to test and evaluate our approach.

Keyword: Maintenance; Cloning; UML diagrams; generic process model