

# **A New Technique to Transform Users Requirements “Stories” Into UML Models**

**By**

**Mutaz Hakam Mherat**

**Supervisor**

**Dr. Mohammad Muhairat**

**Co-Supervisor**

**Dr. Ahmad AL-Thunibat**

## **Abstract**

UML diagrams is a general-purpose, developmental, modelling language in the field of software engineering, which is intended to provide a standard method to visualize the design of a system. UML was originally motivated by the desire to standardize the disparate notational systems and approaches to a software design. Therefore, this research investigated the issue of transforming user stories into UML class diagrams, by analyzing the user stories to determine which requirements can be used in the transformation.

Building UML diagrams from the natural language is a hot topic. In the software development process, number of Computer Aids Software Engineering (CASE) tools have been available, particularly, to construct different types of UMLs from natural language requirements, but all those tools have restricted effects like that required by the programmer in some specific part of the software. Some of these instruments are also manual or semi-automatic. So, we need a technique to help transforming the user’s stories to Unified Modeling Language (UML) diagrams. In this thesis, we developed a new technique that

allows developers to use a predefined template to model their intended system using user stories and apply a module- to- module transformation to produce a UML class model. Our User Stories UML Generator (USUG) receives input in the form of user story that covers only the structural view of the intended system. Furthermore, the use of extraction algorithm and Natural Language Processing (NLP) helps to extract specification from user requirements, while the planned ontologies produce a traceable module. In addition, the produced module (ontology module) comprises all the required elements to transform these concepts to UML class model. Further evaluating our technique in user studies about reducing development time and maximizing the requirements coverage, indicates that our system can greatly facilitate the development of UML class model.

**Keywords:** User Stories, NLP, UML diagrams, Ontology, Requirements, Transformation.