جامعة الإسراء
Isra University

Faculty of Information Technology

A Framework for the Generation of Class Diagram from Text Requirements using Natural Language Processing

Prepared by

Fatima Said Sultan Alharbi

Supervised by

Dr. Shadi R.Masadeh

This Thesis is Submitted to Faculty of Information Technology as a Partial Fulfillment of the Requirement for Master Degree in Software Engineering

September 2020

The undersigned have examined the thesis entitled 'A framework for the Generation of Class Diagram from Text Requirements using Natural Language Processing presented by Fatima Said Sultan Alharbi , a candidate for the degree of Master of Science in Software Engineering and hereby certify that it is worthy of acceptance.

Date

3/9/2020

Dr. Shadi R.Masadeh
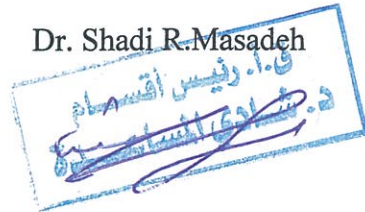
Date

3/9/2020

Dr. Faiz Alshrouf

Date

3/9/2020

Dr. Farhan Alabesat

اقرار تفويض

انا فاطمه بنت سعيد بن سلطان الحربيه افوض جامعة الاسراء للدراسات العليا بتزويد نسخ من رسالتي ورقيا و الكترونيا للمكتبات او الهيئات و المؤسسات المعنيه بالابحاث و الدراسات العليا عند طلبها.

فاطمه بنت سعيد بن سلطان الحربيه

التوقيع: فاطى الحربيه

التاريخ: 2/9/2020

Authorization Statement

Fatima Said Sultan Alharbi authorizes Isra University to provide hard
and soft copies of his thesis to libraries for the institutes or individuals
upon their request.

Fatima Said Sultan Alharbi

Signature فاطمة سعيد سلطان الحربي

Date: 2/9/2020

A Framework for the Generation of Class Diagram from Text Requirements using Natural language Processing

Abstract

The software development scheme starts with identifying the requirements for the analysis and starts the development processes. The requirements' process levels begin from analyzing the requirements to sketch the program's design, which is an essential task for programmers and software engineers. Also, many errors will occur during the requisite analysis cycle before transferring to other stages, which leads to a higher cost of the process than the initial particularized process. The motivation behind this is because of the designations of software requirements created in the natural language. To minimize these errors, we can transfer the software requirements to a computerized form using the UML diagram. To overcome the mentioned problem, a device has been produced. Plans can provide semi-automatized aid for designers to offer a UML class version from software program specifications using natural language processing techniques. The proposed method outlines the class diagram in a known configuration and, additionally, figures out the relationship between the instruction and the class diagram. In this research, we aim to enhance the procedure of producing the UML diagrams by utilizing the natural language, which will help the software developers analyze the software requirements with fewer errors and efficient way. The proposed approach will use the parser analysis and Part of Speech (POS) tagger to analyze the user requirements entered by the user in the English language. Next, select the verbs, phrases, etc. from the user's text. The obtained results confirmed that the proposed method got more reliable results than other techniques published in the literature. The proposed approach provides a better analysis of the

given requirements and better diagrams, while also helping the software engineers.