



**Department of Information Technology**

**Failures Prediction Approach in Agile Software  
Development**

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**This Thesis is submitted to the Faculty of Information  
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The undersigned have examined the thesis entitled "FAILURES PREDICTION APPROACH IN AGILE SOFTWARE DEVELOPMENT" presented by Bulqees Al-Ajaleen, a Candidate for the degree Master of Science in Software Engineering and hereby certify that it is worthy of acceptance.

  
  
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## **DEDICATION**

I dedicate this message to the great mother, the honorable nanny, the generous lady, who endured the pressures of life without getting bored to realize the wishes, who did not hesitate for a moment to provide all means of assistance, comfort and continuous support for the purposes of my arrival at this moment..

To the great one , my father, who planted in us all the good, beautiful meanings that he seeks in life trying to provide all means of comfort and success for us, I cannot help to describe you at this moment.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Full Expression</b>
SVM	Support Vector Machine
CC	Correlation Coefficient
MTBF	Mean time between failures
ADT	Administrative Delay Time
V&V	Validation and Verification
AI	Artificial Antelligence
WWW	World Wide Web
ASD	Agile software development
XP	Extreme Programming
FDD	Feature-Driven Development
DSDM	Dynamic Systems Development Method
LNN	Linguistic Neutrosophic Numbers
DP-CNN	Predictive Defect over the Convolutional Neural Network
HCI	Human-Computer Interaction

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## ABSTRACT

Software failure prediction is an important activity during agile software development as it can help managers to identify the failure modules. Thus, it can reduce the test time, cost and assign testing resources efficiently. To ensure that the development of the software is likely to fail in a specific level, there are two techniques are used in this work, Support Vector Machine (SVM) to determine the factors leading to failure, and to define the dependent and independent variables the correlation coefficient (CC) has been used.

RapidMiner Studio9.4 has been used to perform all the required steps from preparing the primary data to visualizing the results and evaluating the outputs, as well as verifying and improving them in a unified environment.

Two datasets are used in this work, the results for the first one indicate that the percentage of failure to predict the time used in the test is for all 181 rows, for all test times recorded, is 3% for Mean time between failures (MTBF). Whereas, SVM achieved a 97% success in predicting compared to previous work whose results indicated that the use of Administrative Delay Time (ADT) achieved a statistically significant overall success rate of 93.5%. At the same time, the second dataset result indicates that the percentage of failure to predict the time used or experiment in the test is for all 1091 rows, for all test times recorded, is 1.5% for MTBF, SVM achieved 98.5% prediction.

**Keywords:** Software Failure, Agile, Support Vector Machine, Correlation Coefficient