

**AN UNIFIED APPROACH FOR COMPARING AND
EVALUATING GRAPH COVERAGE CRITERIA**

A PROJECT REPORT

Submitted by

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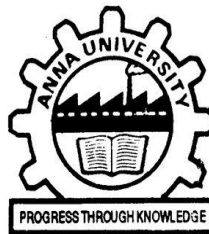
in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY



DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY COLLEGE OF ENGINEERING-BIT CAMPUS

TIRUCHIRAPPALLI-620 024

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APRIL 2019

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BONAFIDE CERTIFICATE

Certified that this project report titled “**AN UNIFIED APPROACH FOR COMPARING AND EVALUATING GRAPH COVERAGE CRITERIA**” is a bonafide work of **MS.R.CHARUMATHI (810015205017)** and **MS.M.DHIVYABHARATHI (810015205019)** who carried out the project work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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DECLARATION

We hereby declare that the work entitled “**AN UNIFIED APPROACH FOR COMPARING AND EVALUATING GRAPH COVERAGE CRITERIA**” is submitted in partial fulfilment of the requirement for the award of the degree in B.Tech, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli, is record of our own work carried out by us during the academic year 2018– 2019 under the supervision and guidance of **Dr.C.P.INDUMATHI**, Assistant Professor, Department of Information Technology, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli. The extent and source of information are derived from the existing literature have been indicated through the dissertation at the appropriate places. The matter embodied in this work is original and has not been submitted for the award of any degree, either in this or any other University.

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ACKNOWLEDGEMENT

It is a great opportunity to express our sincere thanks to all the people who have contributed to the successful completion of our project work through their support encouragement and guidance.

Our first and foremost thanks goes to **Dr.T.SENTHIL KUMAR**, Dean, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli for providing us the necessary facilities and supportive atmosphere for the completion of this project work.

It is our privilege to render our sincere thanks to **Dr.D.VENKATESAN**, Head of the Department of Information Technology, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli for providing us with excellent lab facilities and constantly encouraging us to pursue new goals and ideas.

We wish to record our heartfelt gratitude to our esteemed guide **Dr.C.P.INDUMATHI**, Assistant Professor, Department of Information Technology, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli for his excellent guidance, enterprising and valuable suggestions, encouragement and inspiration offered throughout the project.

It is our responsibility to thank our project co-ordinator **Mr.M.PRASANNA KUMAR**, Teaching Faculty, Department of Computer Science and Engineering, deserves a special vote of thanks for his constant inspiration that she has been all through the project period. We also thank the faculty members of the Department of Information Technology, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli for their remarkable help in completing the project.

We thank all our friends who have very understood, co-operative and appreciative and also understood with us as pillar of support during our good and bad times. On the whole, we express our heartfelt gratefulness to our parents without whom we cannot be shaped up this in our carrier. Last but never the least once again we thank one and all who have helped us either directly or indirectly in completing this dissertation.

ABSTRACT

In Software Development Life Cycle, Mutation testing plays an important role to compare and find the fault, during the testing phase. Path testing is one of the methods used in white box testing. In our proposed project, Control Flow Graph technique is used to find the path. To find the fault with effectiveness, the three structural graph coverage criteria: Edge Coverage (EC), Edge Pair Coverage (EPC), and Prime Path Coverage (PPC) are used. Metrics used to evaluate the path are cost and effectiveness. Cost is analyzed with the help of test requirements. Effectiveness is analyzed through complete set of mutants and minimal set of mutants. In this proposed work compare EC and EPC. Number of Test Requirements (TR) for Edge Pair Coverage is higher than Edge Coverage. But Prime Path Coverage detects more faults significantly. Thus it leads to higher cost. Prime Path Coverage has a much number of Infeasible Test Requirements, which may be an impediment for its practical use.

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LIST OF ABBREVIATIONS

CFG	Control Flow Graph
COR	Conditional Operator Replacement
EC	Edge Coverage
EPC	Edge Pair Coverage
LOC	Lines of Code
MIN MUT	Minimal Mutants
MS	Mutation Score
MUT	Mutants
PPC	Prime Path Coverage
ROR	Relational Operator Relation
SDLC	Software Development Life Cycle
TC	Test Case
TR	Test Requirements
UOI	Unary Operator Insertion