Form 3: Methodology

1. Team No: 15

2. Project Title: Incorporating Artificial Intelligence in Test Case Generation for Improved Path Coverage

3. Proposed Method:

Step 1 Step 1: Code Analysis and Path Identification

Step 2 Training Data Collection.

Step 3 Model Selection and Training.

Step 4 Test Case Generation Algorithm Design.

Step 5 Implementation and Integration.

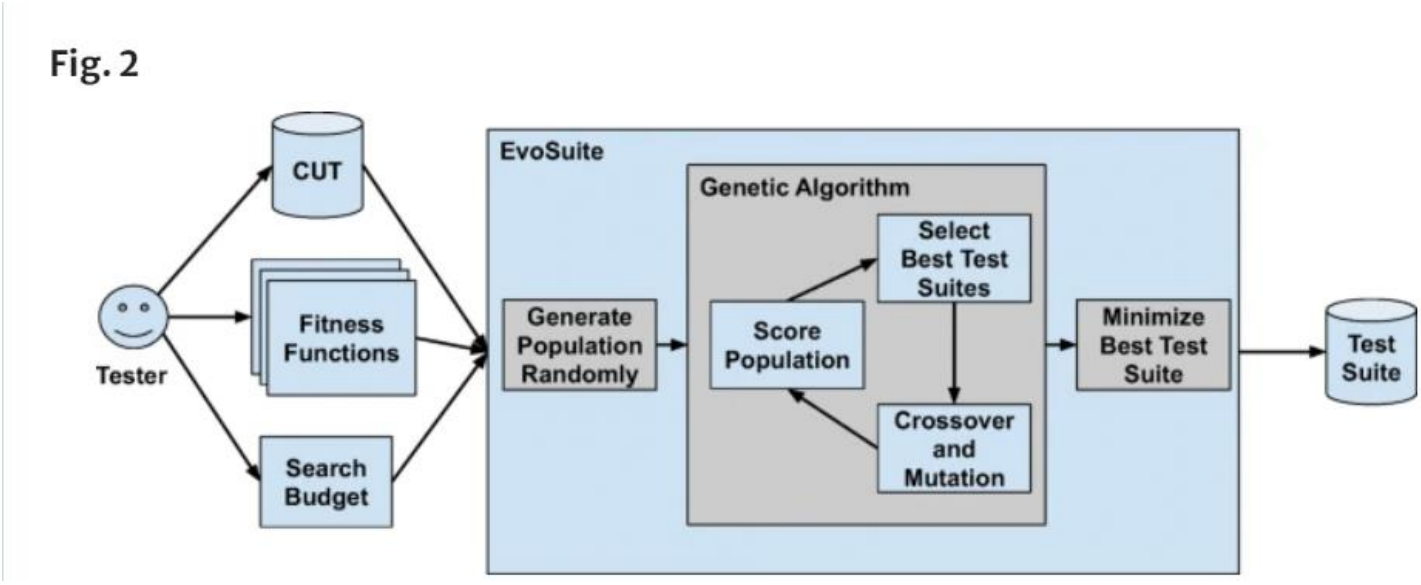
Step 6 Validation and Evaluation.

Step 7: Fine-tuning and Optimization

Step 8: Deployment and Continuous Improvement

4. Proposed Method illustration:

Fig. 2



5. Parameter Formulas

$$\textbf{Accuracy} = \frac{TruePositives\ (TP) + True\ Negatives\ (TN)}{Total\ number\ of\ samples}$$

This measures the proportion of correctly predicted observations (both true positives and true negatives) to the total observations.

Path coverage percentage

Path coverage = (Number of statements exercised / Total number of statements) * 100%
Path coverage percentage refers to the proportion of all possible paths within a software program that are exercised by the generated test cases, indicating the comprehensiveness of the testing approach..

Resource Efficiency = (Total Path Coverage Achieved) / (Time Taken for Test Case Generation)

This formula calculates the amount of path coverage achieved per unit of time, providing a measure of how efficiently the test cases are generated in terms of the time invested. However, depending on the specific context of your project and the resources you want to measure