

Project Title: Comparative Evaluation of Automated Test Case Generation Tools for Python: TestGen, Pynguin, and Pythagoras, Java: Evosuite

Project Overview: This project aims to compare three cutting-edge tools that automatically generate test cases for Python code: TestGen, Pynguin, and Pythagoras and Evosuite for Java code. Automated test generation is becoming essential for modern software development, as it helps developers ensure that their programs function correctly by identifying bugs and improving code reliability. However, not all tools are created equal. Each of these tools offers unique features, and understanding their strengths and limitations is crucial for making informed decisions in real-world applications.

The project will evaluate these tools based on criteria such as the quality and completeness of the generated test cases, how easy they are to integrate into development workflows, their performance in detecting code issues, and their ability to improve overall code coverage. By analyzing these aspects, the research will help developers and teams choose the most effective tool for their specific needs.

The study will provide practical insights and recommendations for Python and Java developers, whether they are working on small projects or large-scale software. The findings of this project will contribute to a deeper understanding of automated test generation tools and help the software development community improve their testing processes, ultimately leading to more reliable and robust software solutions.