

# An Optimized Testing Technique for Test Data Generation Using Fusion of UML Diagrams and Genetic Algorithms

## Keynote Address

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## Abstract

The growing role and importance of software testing has led to design and development of new software testing techniques for all software development paradigms. Controlling and minimizing software complexity is the most important objective of each software development paradigm because it affects all other software quality attributes like reusability, reliability, testability, maintainability etc. For this purpose, a number of software testing techniques have been designed to report different types of faults based on complexity.

In recent years, component-based software development (CBSD) has emerged an evolving paradigm where emphasis is to maximize reuse of code of existing components and effective designing of new components. As the development of component-based software is rising, more and more testing techniques are being developed for the same.

The keynote speech focuses on a testing technique which generates test data for a software by using UML diagrams and genetic algorithm. Test data is generated by fusion of three UML diagrams namely, Activity diagram, sequence diagram and Use-Case diagram. Genetic algorithm is used to optimize the test cases/data. In this way, this technique generates optimized and better test data/cases based on wider coverage of software. By using this, we can improve the quality of a software and can use testing resources more effectively. Therefore, this technique helps in development of good quality software and may be very useful for software industry.

## Bibliography

Professor (Dr.) Rajender Singh Chhillar is a Professor at Department of Computer Science & Applications, Maharshi Dayanand University (MDU), Rohtak, Haryana. He has been teaching in the fields of Computer Science and Engineering since 1987 and is one of the founder members of the Department. He obtained his Masters degree from Kurukshetra University, Kurukshetra and Ph.D (Computer Science) from Maharshi Dayanand University, Rohtak, Haryana. He received his Master of Business Administration (MBA) degree from Sikkim Manipal University. During his service in Maharshi Dayanand University, Rohtak, Professor Chhillar held important positions as: Head, Dept. of Computer Science, Maharshi Dayanand University (MDU), Rohtak; Director, University Institute of Engineering & Technology (UIET), MDU, Rohtak; Director, Computer Centre, MDU, Rohtak; Professor-Incharge, Computer Centre, MDU, Rohtak; Chairman, P.G and U.G Board of Studies, MDU, Rohtak; Member, Executive and Academic Councils, MDU, Rohtak; and Outside Expert, PGBOS, Central University Jammu, DCRUST, Murthal, Sonapat and Ch. Ranvir Singh University, Jind. He has visited many countries including France, Romania, Hong Kong, China, Dubai, Thailand and Nepal, delivering keynote speeches at international conferences.

