AN OPTIMIZED TESTING TECHNIQUE FOR TEST DATA GENERATION
USING FUSION OF UML DIAGRAMS AND GENETIC ALGORITHMS

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Keynote Abstract

The growing role and importance of software testing has led to the design and development of new software testing techniques for all software development paradigms. Controlling and minimizing software complexity are the most important objectives of each software development paradigm because they affect all other software quality attributes, such as reusability, reliability, testability, and maintainability. 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 as an evolving paradigm where emphasis is to maximize reuse of code of the existing components and to effectively design new components. As the development of component-based software improves, more testing techniques are being developed.

The keynote speech focuses on a testing technique which generates test data for software by using UML diagrams and genetic algorithms. Test data is generated by the fusion of three UML diagrams, namely, the Activity Diagram, the Sequence Diagram and the Use-Case Diagram. A 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 software and can use testing resources more effectively. Therefore, this technique helps in the development of good quality software and may be very useful for software industry.

Brief Bio: 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 Master’s 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, Sonepat 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.