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Nota di contenuto	-- Some Achievements of the International Joint Research Project ” Formal Analysis and Verification of Post-quantum Cryptographic Protocols”. -- Developing the industrial-strength tools for modeling, testing and verification: A formal-methods perspective. -- A Methodology for Rating Maintainability Metrics of SOFL Formal Specifications. -- An Executable Operational Semantics of Quantum Programs and Its Application. -- Automated Software Test Input Generation with Diffusion Models. -- Blockchain Solutions for Cash-on-Delivery: Utilizing Encrypted NFTs, Smart Contracts, and IPFS Technology. -- Revolutionizing Animal Health Privacy: Blockchain and Encrypted NFTs. -- Improving and Evaluating Sparse Decision-Based Black-Box Attacks and Defenses. -- Recovery of Trace Links Between a SOFL Formal Specification and its Corresponding Incomplete Java Code. -- S3DA: A 3D point cloud based PCB solder defect detection algorithm. -- Consistency Naming between Requirements Analysis and Specifications. -- A Framework for Standardized Partitioning Analysis in Integrated Modular Avionics Systems. -- A Common Declarative Language for UML State Machine Representation, Model

Transformation, and Interoperability of Visualization Tools. -- The Three-point Optimization Algorithm:A novel Physics-based metaheuristic approach. -- Generating Simulink Models from Hybridised Event-B Models. -- Formal Specification and Model Checking of a Synchronous Leader Election Protocol in Maude. -- Relational Denotational and Algebraic Semantics Based on UTP. -- ASTD Patterns for Integrated Continuous Anomaly Detection In Data Logs. -- Towards a Novel Approach to Railway Safety using STPA and Promise Theory. -- Functional Modelling of the Matroid and Application to the Knapsack Problem.

Sommario/riassunto

This book constitutes the refereed proceedings of the First International Symposium on Software Fault Prevention, Verification, and Validation, SFPVV 2024, held in Hiroshima, Japan, during December 2–3, 2024. The 18 full papers included in this book were carefully reviewed and selected from 39 submissions. This SFPVV 2024 symposium encourages the exchange of ideas and discussion on how formal methods, testing-based techniques, AI-driven approaches, and their combinations can be explored, established, and refined to achieve the goals of software fault preven tion, verification, and validation.