

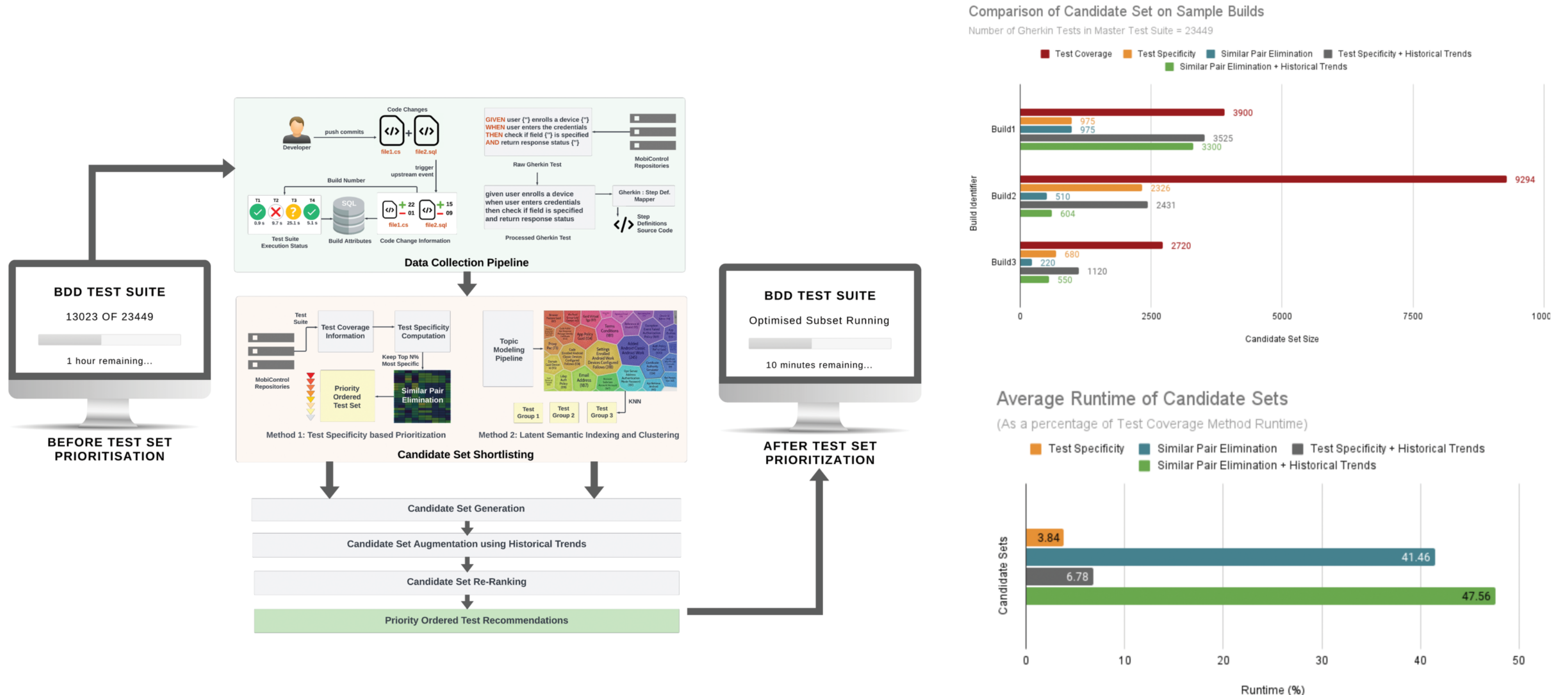
Cracking the Code: Gherkin Test Prioritization for Improved CI/CD Efficiency

Expediting regression and acceptance testing for incoming code changes by using software metrics and NLP methods to pinpoint an optimal Gherkin test subset.

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PROJECT SUMMARY

SOTI MobiControl, an Enterprise Mobility Management solution, grants control over vital mobile devices, enabling app deployment, device enrollment, security risk identification, data protection, and downtime reduction. Over the past thirty years, the MobiControl teams have developed thousands of Behavior Driven Development (BDD) tests in Gherkin. However, running the complete suite for every check-in consumes significant amount of time and computational resources. While manual test selection can help, it is not a scalable solution for each Continuous Integration (CI) and Continuous Delivery (CD) build. The proposed solution is structured in a two-step manner. First, using coverage data, a candidate set is identified by retaining Gherkin tests with code execution flows most specific to the affected methods, reducing the average candidate set size to 25% of the currently deployed solution. The second methodology employs clustering and Latent Semantic Indexing to identify test candidates based on intersection of key themes from Gherkin tests and the incoming code check-ins. By merging results from these methodologies and accounting for test execution history, a candidate set is prepared that ensures comprehensive scenario coverage specific to the code changes that, as a beneficial side effect, reduces the overall average test suite execution time to 10% of the current solution. During the development of this pipeline, two additional by-products emerge: a data collection pipeline is established to gather historical trends at scheduled intervals, and an association between Gherkin tests and their corresponding C# step definitions is established to enhance the knowledge base for information extraction.