

REFACTORAI

AI-based Refactoring of Legacy Systems for Digital Transformations



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MOTIVATION & GOALS

- Challenges of maintaining legacy systems include outdated technologies, architectural degradation, high costs, and barriers to modernization.
- Refactoring legacy systems is necessary to ensure long-term sustainability, efficiency, and market competitiveness.
- RefactorAI seeks to harness AI to accelerate modernization by **reducing time and costs**, **mitigating risks of technical debt and system vulnerability**, and **assisting developers in the complex refactoring tasks** required to **transition legacy systems into more adaptable, future-ready architectures**.

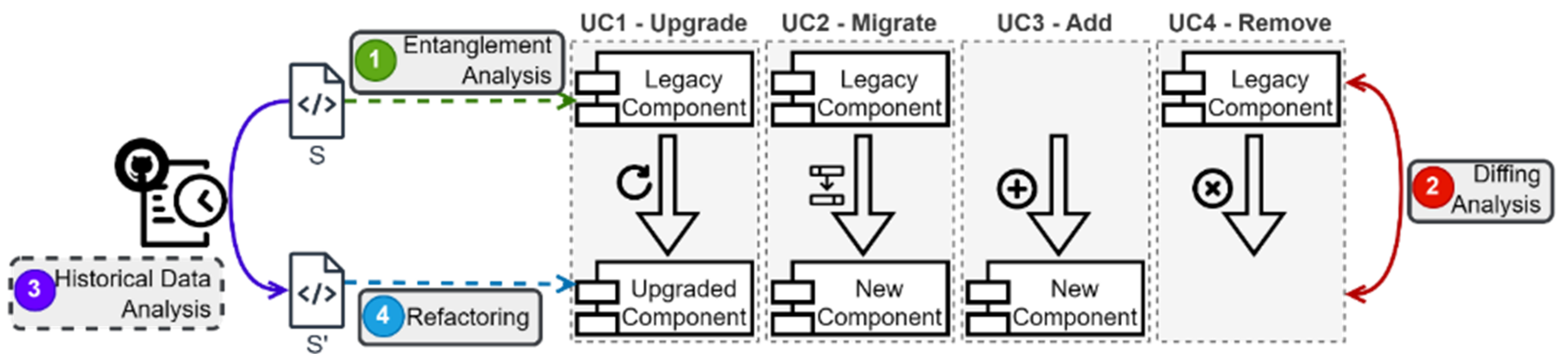
Project FactBox

Project Name RefactorAI
Project ID FFG 921370
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Area 2
Area Orchestration

Project Lead
DI Dr. Ouidane Guiza

APPROACH



Understanding the interaction between the system and a given component (e.g., library, SDK, etc.) and analyzing the potential impact of the component's evolution on the system.

In the case of UC1 and UC2, where two versions of the same component are available, a comparison of the source code, release notes, etc., can be performed to deepen the understanding.

Refactoring opportunities are identified, prioritized, and executed in a way to minimize the negative impact of changes in the systems. Developers can review and request the automated executions of these changes.

Gaining additional insights through identifying and observing cases where similar components have already evolved in other systems.

CONTRIBUTION

Scientific contribution

- Propose a novel AI-driven approach to support the refactoring of legacy systems.
- Explore the combination of AI techniques with existing SE methods for streamlining the modernization process.

Economic contribution

- Lower modernization and maintenance costs.
- Reduce manual effort by optimizing human involvement.
- Improve security by easing dependency updates and reducing vulnerabilities.

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