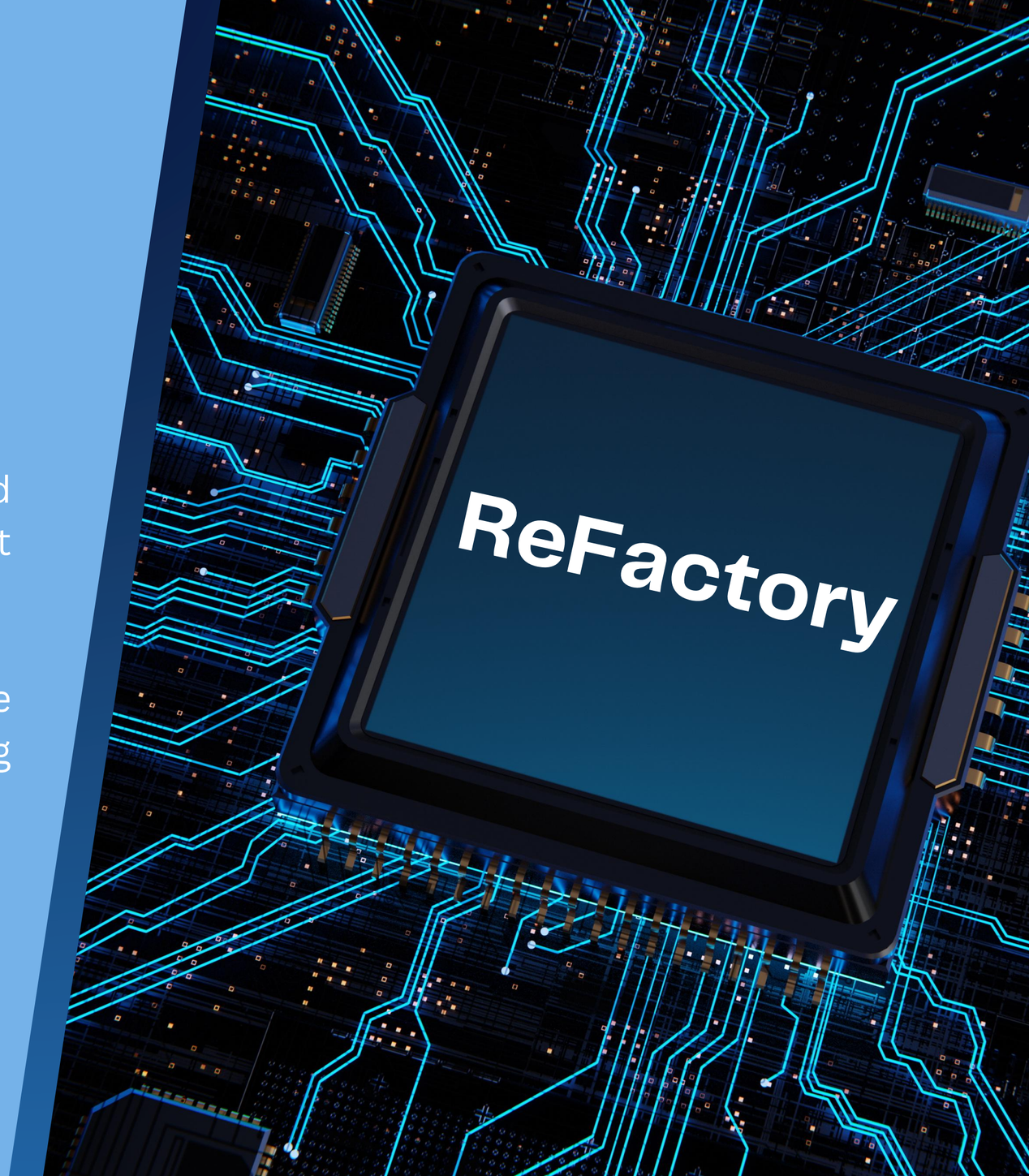
ReFactory

ReFactory

What ?

- ReFactory is a fully automated tool designed for real-time program repair of buggy student programs.
- It works by leveraging correct/reference solutions to generate repairs without requiring manual intervention.



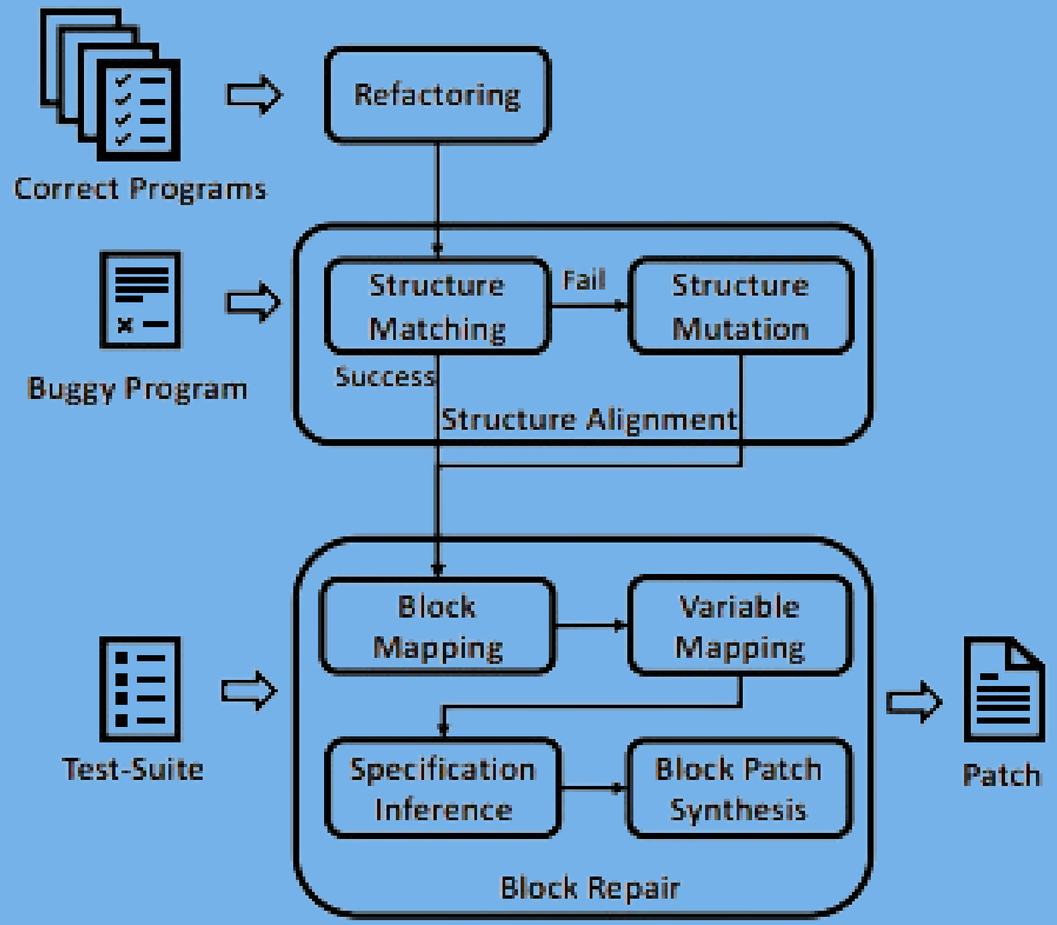
ReFactory

Why?

- Fully Automated – No manual error models required.
- Efficient – Works with fewer correct solutions (often just one).
- Scalable – Tested on 1,800 real student submissions with high success.
- Effective – Generates 30% smaller patches than state-of-the-art tool Clara.

ReFactory

How it works ?

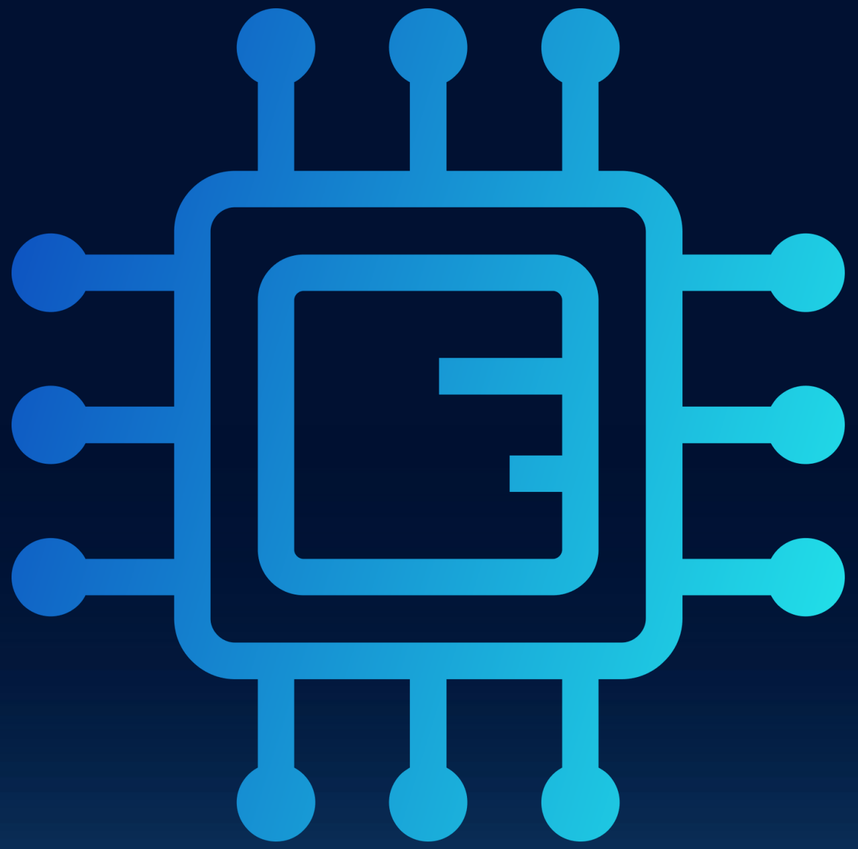


- Input: One or more correct/reference programs.
- Refactoring: Transforms correct solutions into semantically equivalent versions.
- Matching: Finds the closest correct program based on control flow structure.
- Specification Inference: Extracts input-output behavior from aligned basic blocks.
- Program Repair: Uses search-based synthesis to modify incorrect program blocks.
- Output: Automatically generates program repairs with minimal manual intervention.

ReFactory

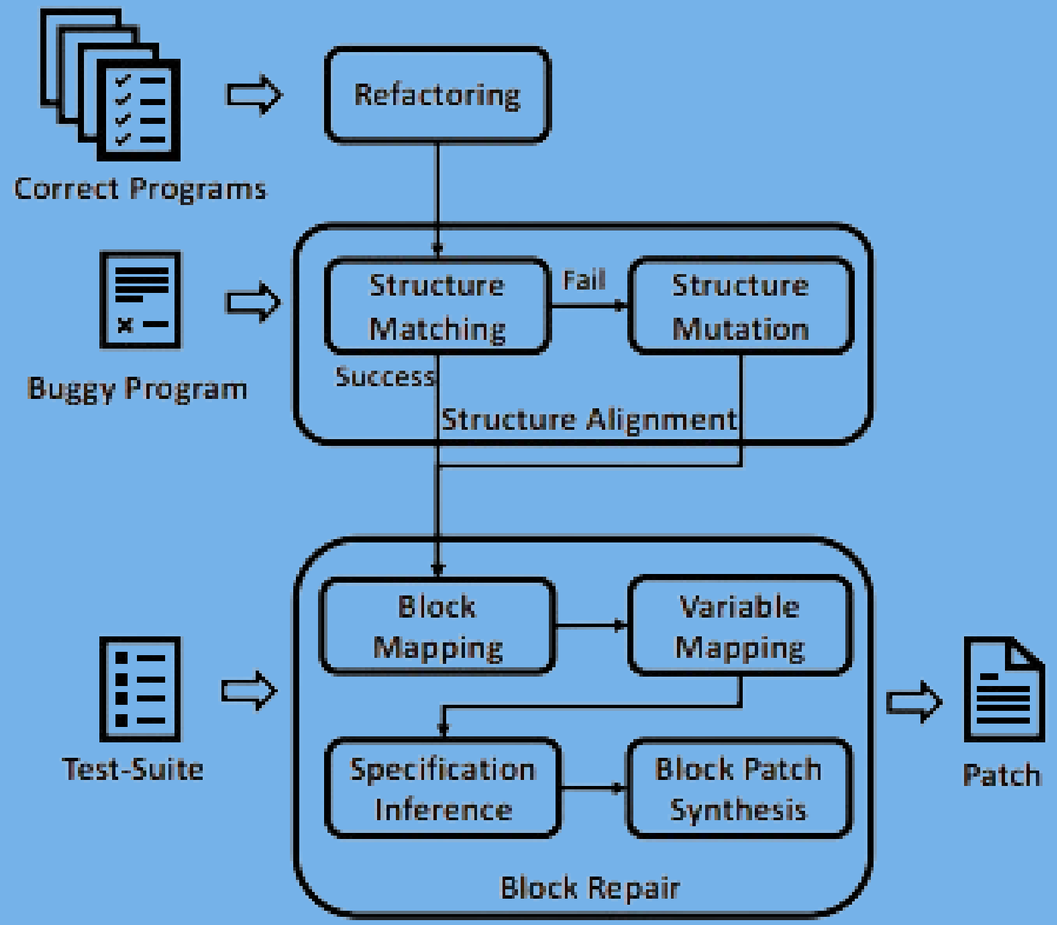
How to install ?

Install



ReFactory

How it works ?



- Input: One or more correct/reference programs.
- Refactoring: Transforms correct solutions into semantically equivalent versions.
- Matching: Finds the closest correct program based on control flow structure.
- Specification Inference: Extracts input-output behavior from aligned basic blocks.
- Program Repair: Uses search-based synthesis to modify incorrect program blocks.
- Output: Automatically generates program repairs with minimal manual intervention.