



SYSTEM AND METHOD FOR PERFORMING SELF-STABILIZING COMPILATION IITM Technology Available for Licensing

Problem Statement

- Mainstream compilers perform multitude of optimizations and transformations.
- In the present era, the existing compiler frameworks need manual stabilization of abstractions which leads the optimization writer to take on additional burden of identifying various factors related to stabilization.
- In addition to this, the existing compilers face issues in ensuring correct stabilization during parallel language compilations which leads to incorrect and unsatisfactory results.
- Therefore, there is a need for requirement of a system and method for performing self-stabilizing compilation to address the above issues.

Technology Category/ Market

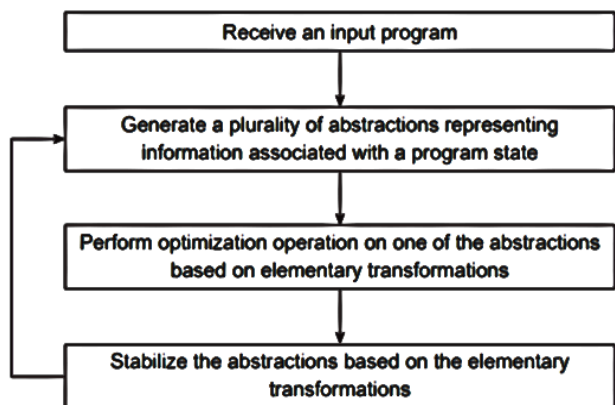
Computer Science - Self-stabilization Compilation
Computer Science & Engineering - Compiler software

Applications – Programming Software, Application Software, System Software

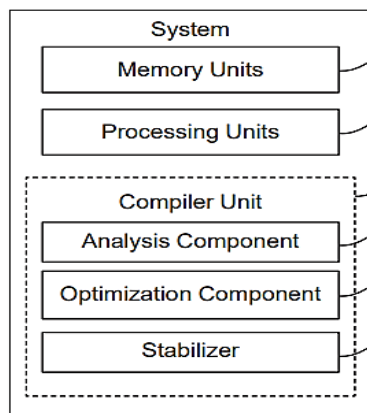
Market – The Source Code Compiler Market was worth **USD 656.7 million** in 2022 and is expected to reach **USD 1.3 billion** by **2030**, growing at an **8.6% CAGR** from 2022 to 2030.

Technology

The method for self-stabilizing compilation comprises steps to perform one or more optimization operations on a plurality of abstractions of input program and stabilizing one or more of the plurality of abstractions by using other inter-related process, depicted in the **flowchart** hereinbelow:



System for automatic self-stabilizing compilation



Intellectual Property

IDF Ref: 2053

IN Patent No. 383458 (Granted)

PCT Application No. PCT/IN2021/051108

Key Features / Value Proposition

- Self-stabilizing compiler framework **eliminates manual stabilization** process
- **Easy to Extend:** The compiler framework design is easily extended to any industry-level compiler frameworks (for example, LLVM compiler, Roslyn compiler, and so on).
- The compiler is **more reliable output, secure** while compilation process.
- The self-stabilizing compilation software has been tested on **IMOP** (IIT Madras OpenMP Compiler Framework) successfully.
- The compiler provides **error-less processed output in less time** compared to manual stabilization
- The performance of the compiler process is faster due to less memory consumption.

TRL (Technology Readiness Level)

TRL- 3/4 Proof of concept ready Stage

Research Lab

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