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Introduction

The Cathedral Theorem Proving Platform is composed of a semi-automatic theorem prover (The Saint Thomas Aquinas Machine [23]) and an upper level language compiler (Fr William of Moerbeck's Compiler [24]). This dissertation presents this platform in its present form.

The Saint Thomas Aquinas Machine is a graph based generic virtual machine. It was made to execute implementations of special theorem provers, semi-automatic and strategy based theorem provers. Graph based means that it supports theorem provers based on graph transformations, overcoming the existing tree based machines. Semi-automatic and strategy based means that it builds proofs, automatically going through the trivial steps, and asking for agent choice in the crucial deductions, as well as guided by some provided strategy.

It is expected that a theorem prover can handle proofs in any logic, given its derivation rules. Fr William of Moerbecks Compiler defines a high level language for writing reduction rules. It compiles a logic defined as a set of derivation rules written as intuitive graph transformations into the machine's assembly language.

Theoretical studies in proof compression arrived in new approaches. On them, circuit-structured systems are much better than tree-structured systems. In order to move forward these studies, a graph based proving platform is desired.

The Cathedral Theorem Proving Platform definition and implementation is presented in this work. It fulfills the requisite of a graph based platform.