Model Checking
Proving system correctness, automatically

One of the goals of computing as a whole is to develop computing systems that perform the tasks they were designed to do in a reliable manner. Model checking is an area of research in Theoretical Computer Science that has had huge impact on achieving that difficult goal.

WHAT IS MODEL CHECKING?

Examples of systems
- critical systems
- security protocols
- data

Verification algorithm

Algorithms are used to automatically explore all the states of a system to check whether it satisfies a specification or to provide counterexamples when it does not.

Logical specification

Logic is used to express the properties that a system should have, or should not have.

WHAT DOES THE CHECKING?

Software tools carrying out this analysis are called model checkers and have been used to find and fix bugs in many mission-critical hardware and software systems, in program synthesis, and in security. Examples of model checkers are Alloy Analyzer, BLAST, CADP, FDR2, SPIN, Java Pathfinder, HYTEC, KeY, Klee, Mini, OMEN, SLAM, and TEMPAL.