

TITLE: "Model Counting \geq Symbolic Execution"

ABSTRACT: Although the title is an invariant, since if you can count the number of solution to a constraint, you can obviously tell whether it is feasible, we will look here at a number of other interesting things you can do with model counting. For example, combining model counting and symbolic execution allows one to calculate the probability of a path being executed. This in turn allows one to calculate the reliability of a piece of code. In this talk we will also look at how to use clever sampling of paths to obtain reliability results with a certain confidence and error bound. Lastly, we will consider a number of spin-offs from this research that came from a desire to optimize the analysis, and then turned out to have benefits beyond our initial goals. All the work is done in the context of Symbolic PathFinder (itself an extension of Java PathFinder) and is available as open source.