Iterated Process Analysis over Lattice-Valued Regular Expressions

We present an iterated approach to statically analyze programs of two processes communicating by message passing. Our analysis operates over a domain of lattice-valued regular expressions, and computes increasingly better approximations of each process's communication behavior. Overall the work extends traditional semantics-based program analysis techniques to automatically reason about message passing in a manner that can simultaneously analyze both values of variables as well as message order, message content, and their interdependencies.