Automated Synthesis of Normative Systems

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Abstract

Normative systems (norms) have been widely proposed as a technique for coordinating multi-agent systems. The automated synthesis of norms for coordination remains an open and complex problem, which we tackle in this paper. We propose a novel mechanism called IRON (Intelligent Robust On-line Norm synthesis mechanism), for the on-line synthesis of norms. IRON aims to synthesise conflict-free norms without lapsing into over-regulation. Thus, IRON produces norms that characterise necessary conditions for coordination, without over-regulation. In addition to defining the norm synthesis problem formally, we empirically show that IRON is capable of synthesising norms that are effective even in the presence of non-compliance behaviours in a system.