

Using Abduction to Evolve Inconsistent Requirements Specification

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Abstract

Requirements specifications are often inconsistent. Inconsistencies may arise because multiple conflicting requirements are embodied in these specifications, or because the specifications themselves are in a transient stage of evolutionary development. In this paper, undesirable, are actually useful drivers for changing the requirements specifications in which they arise. We present a formal technique to reason about inconsistency handling changes. Our technique is an adaptation of logical abduction - adapted to generate changes while leaving others. We represent our specifications in quasi-classical (QC) logic - an adaptation of classical logic that allows continued reasoning in the presence of inconsistency. The paper develops a sound algorithm for automating our abductive reasoning technique. A library system case study.

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