Fomal Verification of Dynamic Web Pages

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Abstract

Web pages are widely used and error prone pieces of software, making them opportune for formal verification techniques. However, much of the prior literature, such as a project called Cassius, focuses on verifying static pages while largely ignoring dynamic ones. This presents a gap in the research, as the vast majority of the modern web is made up of dynamic pages. In this project we expand upon Cassius to show that it can also work on dynamic pages. We take a simple dynamic page with a growing list and build havoc and induct tactics into Cassius' proof framework to give it the power to formally verify facts about the dynamic page. In addition to successfully verifying a dynamic web page, we also considerably improve Cassius' performance on large static pages.