Fomal Verification of Dynamic Web Pages

Skyler Griffith
University of Utah

UUCS-21-006

School of Computing
University of Utah
Salt Lake City, UT 84112 USA

22 April 2021

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.