**CMPSC 600**
**Senior Thesis I**
**Fall 2018**

**Project Two**
**Assigned: Tuesday, September 18, 2018**
**Due: Tuesday, October 2, 2018 at 2:30 pm**

## Senior Thesis Title

Automatic Detection of Common Layout Failures in Responsively Designed Web Pages

## Senior Thesis Abstract

As the number and variety of devices being used to access the World Wide Web grows exponentially and there is an ever-increasing volume of mobile web traffic, ensuring the functionality of web pages across a myriad of devices has become paramount. Through complex style sheets, responsive web pages dynamically modify their appearance to accommodate a device's current viewport, aiming to provide a high-quality user experience across a wide range of devices. Due to the inherent difficulty of developing and testing mobile-ready pages, many of those in production use evince layout failures. To address the important challenge of testing responsive web pages, this paper presents an automated technique, comprised of four algorithms, that detects five common layout failure types. To evaluate this approach, it was integrated into a tool called ReDeCheck, and applied to 25 real-world web pages representing a wide range of domains and complexities. In addition to highlighting the presented method's efficiency and broad applicability, the experimental evaluation of ReDeCheck revealed that it could find layout failures in 13 of the 25 studied production pages, detecting a total of 24 failures overall, including one on the front page of the well-known language-learning company, Duolingo.

## Demonstrations of Feasibility

1. First feasibility indicator
2. Second feasibility indicator
3. Third feasibility indicator