**CSC 499 Project Proposal**

**Project Title:** Attack Surface Vulnerability Classification

Dr. Laurie Williams has agreed to work with me on this project. I will be supporting one of her PhD students, Chris Theisen, who will supervise the details of the project and manage deliverables and grading.

**Course:** Substituting CSC 499 for 3 credit hours of Computer Science Restricted Elective.

**Prerequisites:** Project depends on basic knowledge of Object and Procedurally Oriented programming attained from CSC 116, 216, and 230, as well as additional knowledge of data organization and graphs from CSC 316.

**Description:** I will be assisting with a project designed to locate and map security vulnerabilities in a software system. The goal is to provide a list of security flaws that can be used to guide research into the prioritization of security efforts by software teams. During this process, I will also experience how the research process works.

**Timeline:** Throughout the summer I will be working in the Software Engineering lab (EB2 3228) on Centennial Campus. My plan is to work 9 to 5, four days a week. Over a ten-week summer session, I should accumulate around 300 hours of experience, well over the suggested amount.

The first weeks of the project will be onboarding as I learn about computer security, different kinds of software attacks, and the necessary coding languages. These are all areas that I will continue to grow my knowledge in throughout the summer.

Once I have a foundation, I will begin drafting my research plan as if I were conducting my own experiment. This stage should take about a week for the initial components, as well as a final write-up when I complete my data set. My goal is to use this summer as an opportunity to learn more about the research process as a whole.

Over the course of the summer, I will be cataloging different security vulnerabilities for Mozilla Firefox by:

1. The vehicle for attack
2. The consequence of the attack
3. The severity of the resulting attack

This will be vital in assisting Chris with his research in mapping data flow pathways of large-scale on-premises software systems.

**Deliverables:** I will be communicating regularly with both Mr. Theisen as well as my faculty advisor, Dr. Laurie Williams, in order to report on my progress. I plan to deliver an organized dataset of different coding vulnerabilities and the methods of exploiting them by the end of the term. This dataset will be placed in the tera-PROMISE repository (<http://openscience.us/repo/>) for the community to use for future research efforts.

I am creating the research plan for my project that I will draft myself and get peer-edited by my peers. I will present the results of my work to the Software Engineering research group at NCSU, in the style of a 15 minute conference presentation in the field.

**Grading:** Grading for this independent study will be measured by the datasets generated, the quality of the documentation detailing how the datasets were created, and the communication of the research performed (in the form of a research plan and a presentation).

Vulnerability Dataset: 20%

Documentation: 20%

Research Plan: 30%

Presentation: 30%