**Senior Project Proposal**

**Department of Computer Science**

**Calvin College**

Title: Calvin Scouting Report

Author: Ethan Clark and Mitch Stark

Date: September 26, 2017

Mentor: Professor Victor Norman

Honors Project: n/a

# Vision and General Overview of Proposal

## Background and Problem

The issue we are trying to address with this project is the lack of simple, convenient methods to produce a scouting report on athletic teams in the MIAA Conference. Currently, the Men’s Soccer team at Calvin uses a template word document, that is manually filled in to show the starting line-up, top-goal scorers, and other key players. To do this, the coaching staff generally has to go onto the other team’s website, search through games played and see who’s started the most, and then continue looking through the stats to determine the “best” players. This is inefficient and inconvenient to do multiple times in a single week. Furthermore, because of the manual work required, the coaching staff usually does not have time to dig through deeper and more meaningful statistics, like goals per game average for each player, saves per game for goalies, etc. Finally, many games include small descriptions of all of the goals that have been scored. This could be extremely useful to find out the most common ways that teams score (close-range, off of crosses, etc.) which is simply too much work to do manually.

## Brief Description of Solution Being Provided

The solution that we are going to provide is going to be a simple, convenient, time-saving application that produces scouting report like information about MIAA Athletic Teams. We want to include at least two sports in the application; more if time-permitting. The solution will be scraping data off of the various MIAA teams websites, including team statistics, individual player statistics, goal summaries, and substitutions. This will allow Calvin coaches to get a much more in-depth view of a team on a player-by-player basis with a simple click of a button. The end product will be a web application with a minimal user interface that includes a drop down menu of teams to scout, and a button that will then generate the scouting report. One extension goal would be to generate this scouting report into a printable document template, with room at the bottom for the coach to jot down any other notes about the opposition that the statistics do not cover.

## Your Interest and Qualifications

Our main interest in this project is because Mitch is on the soccer team at Calvin and believes this tool could be useful for both coaches and players at Calvin College. Ethan is passionate about sports and wants to take a further dive into combining programming with athletics. Ethan and Mitch are both seniors at Calvin College with programming experience in front-end programming (for the user interface experience) and back-end programming (data analysis and databases).

# Mentor Selection, Expert User and Collaboration

The mentor for this project is Professor Norman. Professor Norman is Mitch’s academic advisor and he frequently attends sporting games at Calvin College. Since Mitch Stark is on the soccer team at Calvin, we are planning on collaborating with Coach Ryan Souders about specifically the user interface experience portion of our project and what data/information he thinks would be useful for a soccer scouting report. Based on the other sport(s) we want to incorporate, we may meet with other coaches at Calvin to discuss their ideas of useful data/information. Depending on time availability, we may meet with Calvin student athletes to discuss their ideas on user interface experience. The only dependency we have on outside sources would be finding meeting times to meet with these coaches.

# Development Approach

The development approach that will be used on this project will be a combination of a phased approach and an iterative approach. The first phase contains the data collection and storage of the statistics required to make this application. The second phase will then include the analysis of the data that has been collected and the presentation of the analyzed data with a user interface. Both of these phases will have two-week iterations which have deadlines set for various goals such as completing plans, prototypes, and features. Finally, the development approach will be somewhat agile as there will be meetings scheduled with various coaches from the Calvin Athletics’ Department to get feedback on statistics being collected and the user interface design. As these coaches will be the end users of the solution, the development will be altered slightly to fit the needs of these users.

**Development Timeline:**

* October 6: Back-End & Front-End Development Plan Complete
  + Web Scraping Language/Library
  + Database
  + Front-End Language/Library
* October 20: Web Scraper Prototype Complete
* November 3: Database Schema & Populating Database Complete
* November 17: First Phase Front-End Layout Complete & Begin API Development
* December 1: First Phase Front-End API Development Complete
* December 15: First Phase Front-End CSS Complete & Project Status Report
* January: Tentatively off (unless bored)
* February 9: Data Analysis Plan Complete
* February 23: Data Analysis Prototype Complete
* March 9: Data Analysis Development Complete
* March 23: User Testing Complete
* April 6: Updates to App from User Testing
* April 20: Research into App Extendsions
  + PDF
  + Other
* May 4: All Development Complete & Prepare for Presentation
* May 18: Final Deliverables

# Quality Assurance

## Critical Delivery Dates

September 30: Submit Project Proposal

December 5: Senior Project Progress Report Presentation

December 15: Project Website Draft

Project Status Report

February: Second Status Report

May: Final Senior Project Presentation

May 15: Final Deliverables

## Reviews

We will do code reviews with each other (through either paired-programming and pull requests in GitHub) and potentially Professor Norman.

## Testing

Our approach to testing will be to do lots of internal testing for the back-end system and external testing for our front-end system(s). We will create a test plan for the back-end system(s) during this fall semester and a test plan for our front-end system(s) during the spring semester.

# Resources

|  |  |  |
| --- | --- | --- |
| **Resource** | **Source/Provider** | **Cash Cost** |
| n/a | n/a | n/a |
| n/a | n/a | n/a |
| n/a | n/a | n/a |
| **Total Cash Cost** | ------------------------------ | $$$$ |

# Risk Analysis

|  |  |  |
| --- | --- | --- |
| **Risk** | **Exposure Analysis** | **Mitigation Strategy** |
| Do you have a dependency on others completing work for your project to be a success? | No | N/A |
| Is there any doubt about the availability of financial resources? | No | N/A |
| Do you have a dependency on an expert user to provide advice and who may not always be available at critical times? | Yes, looking for usability advice from Coach Ryan Souders and maybe other coaches or student athletes. | Plan ahead accordingly. Schedule times well in advance to meet with coaches or student athletes. |
| If success depends on testing by an outside source, are there any barriers to completing testing? | N/A | N/A |
| Will this project involve new skills for you? | Yes, some sort of programming language/libraries for data analytics. | Dedicate time during fall semester to researching/learning the language that we decide. |
| Will there be anything preventing you from investing at least twenty hours a week on this at a minimum? | No | N/A |
| Is there any potential of physical resources you have listed of not being available? | Potentially: Hosting either Database or Web Scraper or Front-End | Depends on chosen languages/resources on where they may need to be hosted |
| Other |  |  |