

Marching Masters

Customer Requirements

Group Members	Brandin Bulicki, Adam Luong, Aparna Mishra, Siddharth Srinivasan, Tumaris Yalikun, Jeffer Zhang
Faculty Advisor	Dr. Filippas Vokolos, Ph. D.
Project Stakeholder	Baiada Institute

Revision History

Name	Date	Reason for change	Revision
Brandin Bulicki, Adam Luong, Aparna Mishra, Siddharth Srinivasan, Tumaris Yalikun, Jeffer Zhang	09 October 2020	First draft: initial outline	1.0
Brandin Bulicki, Adam Luong, Aparna Mishra, Siddharth Srinivasan, Tumaris Yalikun, Jeffer Zhang	18 October 2020	Customer feedback; updates to requirements	1.1
Brandin Bulicki, Adam Luong, Aparna Mishra, Siddharth Srinivasan, Tumaris Yalikun, Jeffer Zhang	17 October 2020	Completion and Reorder of requirements	1.2

Table of Contents

Project Background	4
1.1 Overview	4
1.2 Scope	4
Users	4
2.1 Marching Arts Performers/Staff	4
Features to be Implemented (Functional)	5
3.1 Application Login Page	5
3.2 Users (Instructors/Performers)	5
3.3 Application Dashboard (GUI)	5
3.4 Position Tracking	5
3.5 Visualization	5
3.6 Uploading Documents/Events/Assignments	6
3.7 Viewing Documents/Events/Assignments	6
3.8 Feedback (Critiquing)	6
Features to be Implemented (Non-functional)	6
4.1 Tracking Speed (Performance)	6
4.2 Tracking Accuracy	6
Features not to be Implemented	6
5.1 Exporting of Data	6
5.2 Real-time Chat	7

Project Background

1.1 Overview

Every summer, marching bands and drum corps all around the world learn drills for their season's performance. Then, in the winter, indoor percussion, guard, and wind ensembles prepare their drill for their seasons. As it stands, the only way to effectively learn the coordinates (aka dots) for the show is to go 'set-by-set' and check every performer's positioning for every drill move. What if there was a way to improve efficiency, just by looking at one screen? Marching Masters aims to improve these out-dated methods.

Marching Masters will increase the effectiveness of drill instruction and the proficiency with which a show is performed. This product will ultimately be the first marching based program that will allow for tracking of the performers from drill set to drill set. This system will allow staff and performers to track the movements on the field, analyze for correctness against the written drill, and be able to be reviewed by staff and performers. By obtaining this knowledge, staff will be more equipped to provide instruction and performers will be able to further understand what corrections they must make. These records will be able to be saved for review at a later time. Just because the performers are not at their rehearsal site doesn't mean that the learning must be done. Overall, this product will be an all-in-one stop for all your band needs.

1.2 Scope

Marching Masters is designed to help achieve a greater level of success in the marching arts. The program does this by allowing the director to create groups for each season or group that they instruct. They then are able to upload the drill in the form of pdf dot sheets that Marching Masters then uses to compare the location of the performer. This will inform the staff and performers whether they are accurately performing the drill as written.

The secondary functions include an editable dot book that you can load right on your device. Performers and instructors can add in notes so that the performers can easily know when visuals and other drill enhancements occur. Finally, Marching Masters will act as a social app that will allow instructors and performers to seamlessly communicate with each other. This will allow for questions to be asked and answered, assignments to be posted, and events to be added.

Users

2.1 Marching Arts Performers/Staff

This program will best serve all marching arts performers and staff. Individually, performers can use Marching Masters to better organize themselves and their dot books. Additionally, as a collective, the

performers can better communicate with their sections, officers, as well as their staff to keep the learning going even when not physically together. On the other side, staff will also be able to communicate with other staff members with ease to keep the organization all on the same page. Staff with the necessary permissions will be able to set events, assignments, and even share documents. This all will keep the performers notified of practices and competitions, informed on points of the show that need work, keeping them up to date with all changes in drill and music.

Features to be Implemented (Functional)

3.1 Application Login Page

The application will provide a login page for login capabilities for both instructors and performers. This page will also house user creation along with a password reset in case a user forgets their password. Within the user creation page, the user will have the option to classify themselves as a performer or instructor.

3.2 Users (Instructors/Performers)

There will be two differentiating users each with separate capabilities. Instructors will be able to assign documents and information to performers assigned to him/her. Performers will be able to join a grouping lead under an instructor.

3.3 Application Dashboard (GUI)

The application will have a main dashboard that displays features for viewing account settings, viewing assigned documents, viewing positioning information, and communication sections to communicate with other performers/instructors.

3.4 Position Tracking

The application will track each individual user. This information will then be aggregated into a page that will display the positioning of each performer. The position tracking should be done in real-time.

3.5 Visualization

Data from the real-time positioning of the performers will be aggregated and visualized in a field GUI. This is intended for the staff and performers to be able to get a “birds-eye-view” of the entire field, positioning of each staff, and movement associated. Staff are able to get a high-level overview while performers are able to understand their relative position on the field as well as their proximity to other performers.

3.6 Uploading Documents/Events/Assignments

Users (instructors) will be able to upload documents in PDF, share events, and hand out assignments to specific performers within the application. This can be done on the main dashboard page as an instructional user.

3.7 Viewing Documents/Events/Assignments

Users (performers) should only be able to view documents/events/assignments that are assigned to them.

3.8 Feedback (Critiquing)

After each performance, instructors will be able to give feedback to each performer to assess their performances. Each performer will only be able to view feedback given to them.

Features to be Implemented (Non-functional)

4.1 Tracking Speed (Performance)

Due to the necessity of being able to obtain real-time information on each of the performers, the delay time should not exceed 5ms (the refresh rate of the IMU device). Therefore, for each movement of a performer the information relayed to the main display should be $<5\text{ms}$.

4.2 Tracking Accuracy

The data obtained from the performers will be displayed and aggregated on a main display. This would visualize the field on the device our application is running. Relatively speaking, each dot representing a performer should be scaled to the field displayed on the screen accordingly. Therefore, the distance error between each dot or performer that is received should not exceed 10%.

Features not to be Implemented

5.1 Exporting of Data

Our application is not a data visualization or data analysis application. Although we do intend to collect data from each user this is solely done in real-time for staff to have an understanding of performer positioning during practice. Therefore, our application will not have features to handle data collected such as exporting or data uploading. Everything on our application, including playback, will be contained within the application and not intending for exporting onto other platforms.

5.2 Real-time Chat

Our application is not a communications platform. Our focus is to gather data for performer positioning. Although we do offer critiquing and comments from the instructor to the performers, we will not be implementing a real-time chat feature.