

The Music Assistant

Milestone 6 • April 20, 2020

Overview

- No new features
- Extensive documentation
- Code cleanup
- Poster
- E-book page
- Video

A scenic view of the Florida Tech campus. In the foreground, there's a pond with a fountain in the center. To the right, a large, modern building with a white dome and brickwork is visible. The sky is clear and blue. The overall atmosphere is bright and sunny.

Milestone 6 Tasks

Website Documentation

- Used JSDoc
 - Using an extension to document React code
- JS Metrics
 - 94 files
 - 6,200 lines of code
 - 4,500 lines of comments
- CSS Metrics
 - 48 files
 - 1,900 lines of code
 - 300 lines of comments

Server Documentation

- Used JSDoc
- JS Metrics
 - 38 files
 - 8,874 lines of code
 - 1,844 lines of comments

End-User Manual

- We tried to keep the website simple
- No need for an extensive manual

A scenic view of Florida Tech's campus. In the foreground, a calm lake reflects the surrounding environment. On the right, a large, modern building with a prominent white dome and brickwork is visible. The sky is clear and blue. The overall atmosphere is bright and sunny.

User Testing

Background

- Our client is the Director of Choral and String Studies at Florida Tech
- Our website was given to the Florida Tech choir and EFSC choir
- Total Number of Users: ~40

Difficulties

- Our first release was buggy
- Very few users (~2/day)
- COVID-19
- Can't get in touch with our client (see above point)

Results

- Not enough data to show results
- Recent Daily Active Users: ~3
- Cleansing algorithm was not doing enough data smoothing
 - The ML library is very good at picking up all sounds
- Performance analysis algorithm still needs some tweaking

A scenic view of a large, calm lake on a university campus. In the background, there are several modern buildings with brickwork and glass windows. A fountain is visible in the center of the lake. The foreground is filled with lush green trees and bushes, with sunlight filtering through the leaves.

Lessons Learned

Lessons

- A lot of the software exists, weaving it together is difficult
- Sometimes, people are not as excited about your project as you are.
- Keeping functionality separate from the tools themselves is important.
- Learning new tools and technologies takes time and combining multiple new technologies together at a time is difficult.

Documentation

The Music Assistant

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Summary

- The Music Assistant is a tool that assists students in practicing music for their choir outside of class time. The Music Assistant also helps instructors by identifying where the students need guidance.

Motivation

- Choir students need to practice their performances outside of class, but it can prove difficult to know whether or not they are improving

Accomplishments

- Created a complete experience that includes a website, server, and database
- Provide real-time feedback to students as they sing along with sheet music
- Present the user with a performance progress summary for each piece of sheet music

Future Improvements

- Detect similarities in sheet music to better identify problematic patterns for students
- An OCR that can digitally encode sheet music for a choir
- Create statistical summaries for students and instructors that show where improvements can be made

The screenshot shows a web-based application window for 'The Music Assistant'. The left sidebar has links for Home, Practice (which is selected), Progress, Choirs, and Sign Out. The main area displays a musical score for 'Tenor 2' in 2/4 time at 100 BPM. The score consists of several measures of music with lyrics 'Ah' and 'Ah'. Colored bars (blue, green, red) indicate performance quality or feedback points along the notes. A progress bar at the bottom of the score shows a yellow section followed by a red section. The top right of the main area says 'Practice' with play/pause buttons, and there's a 'View Performance' button. The bottom right corner of the window says 'rendered by alphaTab (<https://alphatab.net>)'.

Real-Time Feedback

This screenshot shows the same web-based application window for 'The Music Assistant'. The sidebar and main interface are identical to the previous screenshot, but the musical score itself is shown with different colored segments. The first few measures are highlighted in yellow, followed by a long segment highlighted in red, then another segment highlighted in green. The lyrics 'Ah' and 'Ah' are present in the score. The bottom right corner of the window says 'rendered by alphaTab (<https://alphatab.net>)'.

Progress Summary



NORTHROP GRUMMAN

Engineering & Science
Student Design Showcase
at Florida Institute of Technology



FLORIDA
TECH

Documentation

- Web App Docs
 - <https://dgriessler.github.io/The-Music-Assistant/files/web-app-docs/>
- Server Docs
 - <https://dgriessler.github.io/The-Music-Assistant/files/server-docs/>
- E Book
 - <https://dgriessler.github.io/The-Music-Assistant/files/e-book-page.pdf>
- End-User Manual
 - <https://dgriessler.github.io/The-Music-Assistant/files/end-user-manual.pdf>
- Demo Video
 - <https://dgriessler.github.io/The-Music-Assistant/files/demo-video.mp4>



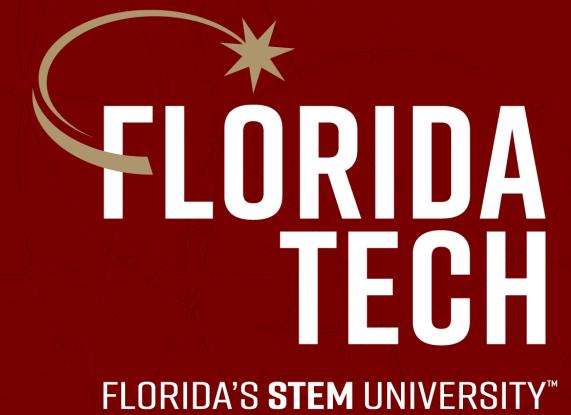
Senior Design 2019/2020

A Special Thank You

- Dr. Thomas Eskridge
 - Associate Professor of Computer Engineering and Sciences at Florida Tech
 - Our faculty sponsor
- Prof. Elizabeth Dopira
 - Director of Choral and String Studies at Florida Tech
 - Our client
- Mr. Daniel Graves
 - Founder/President at Database-USA.com
 - Our capstone coach
- Dr. Robert Lamb
 - Director of Choral Activities at Eastern Florida State College
 - Our “second client”
- Dr. Philip Chan
 - Associate Professor of Computer Engineering and Sciences at Florida Tech
 - Head of CS/SE senior design
- Choir Students
 - Includes ~40 students at Florida Tech and EFSC

A Note to Senior Design Students

- Our team has been very impressed – and a little concerned – about our competition this year
- Best of luck to those who are graduating this semester



Questions?

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