

Milestone 5 Progress Evaluation (Mar. 30)

The Music Assistant

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2. Faculty Sponsor: Dr. Thomas Eskridge, teskridge@fit.edu

3. Client: Professor Elizabeth Dopira, Director of Choral and String Studies at FIT

4. Progress of current Milestone (progress matrix)

Task	Completion %	Daniel Griessler	Dan Levy	Javier Muñoz	Todo
Complete a Cycle of User Testing	30%	10%	10%	10%	Get users to actually use it
Create Poster	0%	0%	0%	0%	Pushed to Milestone 6
Design and Code the Home Page	0%	0%	0%	0%	Put in the backlog. We have other tasks that are more important right now.
Design and Code the Music Selection Page	100%	0%	100%	0%	None.
Design and Code the Exercise Practice Page	100%	50%	50%	0%	None.
Design and Code the Choir Page	100%	0%	100%	0%	None.
Design and Code the Member Accept/Reject Page	0%	0%	0%	0%	Put in the backlog. We have other tasks that are more important right now.
Design and Code the Add/Join Choir Flow	0%	0%	0%	0%	Put in the backlog. We have other tasks that are more important right now.
Finalize Exercise Generation	60%	20%	0%	40%	Need to confirm tool's
Finalize Analysis Verification	100%	20%	0%	80%	The final bugs in the analysis were confirmed to be errors in the test file, analysis (i.e. measurement of note/duration) is accurate barring microphone issues.

5. Discussion (at least a few sentences, ie a paragraph) of each accomplished task (and obstacles) for the current Milestone:

- Complete a Cycle of User Testing
 - A test version was deployed for user in Professor Dopira's choir and the choir at EFSC. The initial idea was to gather a base line of current performance from all users. Only a handful of participants actually participated so we were unable to move forward with testing.
- Create Poster
 - With changes to schedule, this task has been delayed until Milestone 6.
- Design and Code the Home Page
 - Nothing was done with this task. Our original goal was to show a few charts (statistics) about the current user's progress, as well as the latest piece of sheet music played. Due in part to lack of user engagement the past 4 weeks, we decided to put this task in our backlog.
- Design and Code the Music Selection Page
 - Nothing of interest to talk about here. This task was very similar to designing and coding the choir selection page that was completed for milestone 4. A lot of the changes were purely stylistic.
- Design and Code the Exercise Practice Page

- We split this task into four separate tasks
 - The first task: Refactor most of the code relating to the sheet music library (AlphaTab), the drawing tool (P5), and the pitch detection ML library (ML5). This took up a lot of time, but has been completed. There are changes we can make in the future if we have time.
 - The second task: Redesign and code the practice page. This is our original page where users sing and get feedback. We needed to add a dropdown menu for track selection and add a button that allows the user to view their performance(s) for the current piece of sheet music. There were a few bugs that also needed to be fixed. This task has been completed.
 - The third task: Design and code the performances page. This page shows the user their performance for a given piece of sheet music and allows them to generate a static exercise. This task has been completed.
 - The fourth task: Design and code the exercise page. This page is almost identical to the practice page (see second task), except the user will not see a track selection. The user will be able to sing along with the exercise and get feedback. This task has been completed.
- Design and Code the Choir Page
 - Nothing of interest to talk about here (again, more style changes). This task is complete.
- Design and Code the Member Accept/Reject Page
 - Not completed.
- Design and Code the Add/Join Choir Flow
 - Not completed.
- Finalize Exercise Generation
 - We have a first draft of the exercise generation in that it finds the “worst” measure and can generate an exercise for that measure. However, we have some things we need to change: instead of determining the measure to practice, we need to find a phrase since it makes more sense for students to practice the phrase as a whole. We also need to ensure that our measurements of “badness” correlate with the human teacher’s evaluation of the performance.
- Finalize Verification of Analysis
 - For input from a sound file, the program does output what we want within 1 MIDI value. We have some issues with human singing since people take breaths as they sing, but this is being considered part of the exercise generation as the program does accurately measure everything. We need to find the wiggle room that the human ear allows as opposed to the preciseness of the machine.

6. Discussion (at least a few sentences, ie a paragraph) of contribution of each team member to the current Milestone:

- Daniel Griessler: I helped launch our first round of testing to Professor Dopira’s choir and later I deployed our software to EFSC’s choir (Dr. Lamb directing). I helped Dan migrate logic written for the practice and performance page into his updated front-end display. I fixed bugs in our server running on AWS including several bugs found during user testing. I set up a visualization tool which renders students performances into AlphaTex which we can view as sheet music against the expected sheet music. I worked with Javier to clean up performances to make our grader accurate while fair.
- Dan Levy: I spent most of my time creating new pages for the website. This included designing and coding the choir page (shows choir members), the music selection page, the practice music page, the performances page, and the exercise page. Some of this work involved working with Daniel Griessler on refactoring some of his code, as well as fixing bugs.
- Javier Muñoz: I struggled with aiding this milestone. I worked primarily on the exercise generation and verification parts of the program, but due to personal reasons, I haven’t been able to do as much as I should.

7. Plan for the next Milestone (task matrix)

Task	Daniel Griessler	Dan Levy	Javier Muñoz
Create Poster and E-Book Page	33%	33%	33%
Release 2nd round of testing	33%	33%	33%
Fine-Tune performance grader	30%	0%	70%
Add sheet music notation guide	100%	0%	0%
Integrated Communication Tool	50%	50%	0%
Clean up Website Code and Fix Remaining Bugs	10%	90%	0%
Come up With Ideas for Statistics	33%	33%	33%
Detect Similarities in Sheet Music	10%	0%	90%

8. Discussion (at least a few sentences, ie a paragraph) of each planned task for the next Milestone or "Lessons Learned" if this is for Milestone 6

- Create Poster and E-Book Page
 - Create our poster and E-Book Page as if for Senior Design Showcase.
- Release 2nd round of testing
 - Provide some users with real-time feedback and exercise generation and some users without real-time feedback nor exercise

generation and measure progress on learned piece.

- Fine-Tune performance grader
 - Feed our grader performances that we know are fully correct or have specific errors and fix any bugs or deviations from the expected output.
- Add sheet music notation guide
 - Client asked for a sheet music notation guide for students who might struggle with reading sheet music or understanding notation. This will include a static reference sheet that can overlay the sheet music. Time permitting, this will also include an interactive exploration clicking on parts of the sheet music to navigate the reference sheet.
- Integrated Communication Tool
 - Provide a method for students to communicate with each other and their teacher with ability to reference sheet music and send messages.
- Clean up Website Code and Fix Remaining Bugs
 - The overall goal here is to clean things up before the project comes to an end. As we worked on the website, we learned new techniques and better ways of doing things. We have tried to propagate changes as we found fit, but there are likely more changes to be made. We would also like to fix some remaining bugs and add in more error reporting.
- Detect Similarities in Sheet Music
 - Find similarities in sheet music and between student performances to highlight specific intervals and rhythm patterns with which student are struggling.

9. Date(s) of meeting(s) with Client during the current milestone:

3/23/2020 - Update on progress for Milestone 5 and explained updated schedule based on Coronavirus affecting the university schedule

10. Client feedback on the current milestone

- Client will try and make using our tool a required part of the course to increase participation
- Client was able to demo error when using her desktop without a microphone. We were able to fix this bug.
- Approved of our next steps and understands the new change of schedule.

11. Date(s) of meeting(s) with Faculty Sponsor during the current milestone:

3/27/2020 - Updated on progress for Milestone 5 and discussed new plan and schedule based on Coronavirus affecting the university schedule

12. Faculty Sponsor feedback on each task for the current Milestone

- Complete a Cycle of User Testing
- Create Poster
- Design and Code the Home Page
- Design and Code the Music Selection Page
- Design and Code the Exercise Practice Page
- Design and Code the Choir Page
- Design and Code the Member Accept/Reject Page
- Design and Code the Add/Join Choir Flow
- Finalize Exercise Generation
- Finalize Verification of Analysis

Faculty Sponsor Signature: _____ Date: _____