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The Music Assistant

Milestone 3 • November 25, 2019

Overview

- Integration of AlphaTab, ML5, and P5 into the main website
- Re-write of microphone stream code
- Real-time feedback UI
- P5 drawing optimizations
- Improvements to AlphaTab rendering
- Exercise generation basics
- Post analysis program basics

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Milestone 3 Tasks

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Integration into Main Website

- Scoped as 2 hours; took 25 hours
- New requirements
  - Modularize code
  - Re-write microphone stream and pitch detection code
  - Improve P5 drawing code

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Re-Write Microphone Stream Code

- Privacy policy requirements in Chrome and Safari
- Remove of P5 audio library
- Use built-in Web Audio API
- Performance improvements for pitch detection

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Real-Time Feedback UI

- Trailing line selected to show the pitch and duration of performance as described
- For dynamics, dynamic level expected will be drawn along with the music and change colors indicating if the dynamic level is matched or not

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P5 Drawing Improvements

- Added trailing line to see current performance overtime.
  - Green within 1 half step
  - Yellow within 2 half steps
  - Red otherwise
- Delayed but easily implemented for next milestone
  - selecting which part to sing along with
  - reacting to scaling changes in the music
  - saving performances for analysis

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Improvements to AlphaTab Rendering

- Fixed blue bar cursor stutter issues and found root cause
- Delayed but easily added next milestone
  - Muting/soloing/hiding specific tracks
  - Controlling volume on tracks
  - Adding/Removing metronome

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Exercise Generation Basics

- We're dividing exercise generation into two main parts
  - Rhythm exercises
  - Progression exercises
- Beat exercises
  - Hold some note for the given durations (i.e. a quarter note, but the pitch doesn't matter)
- Progression Exercises
  - Continually add notes as the student masters the current notes (i.e. do first three notes, then first six)

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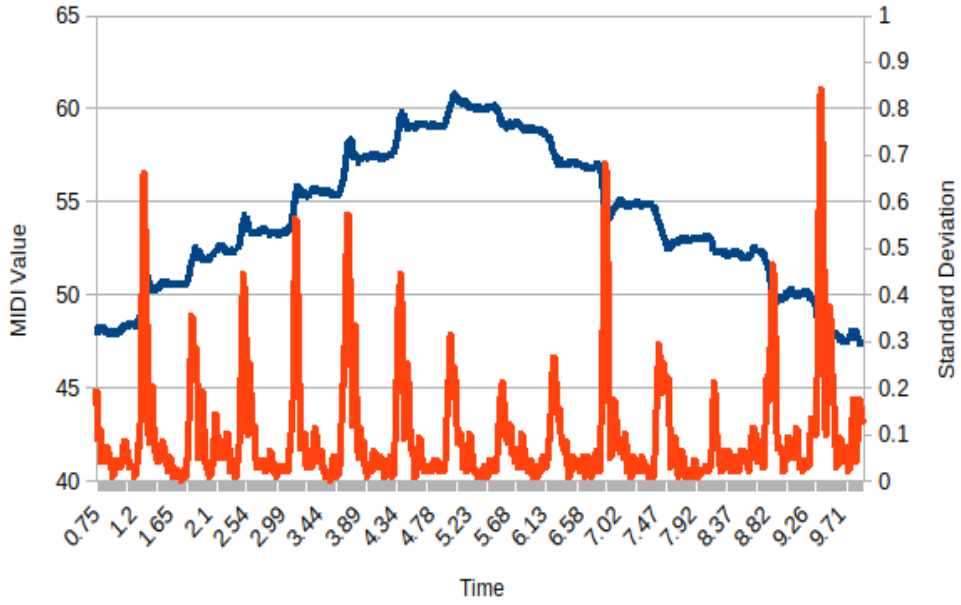
Post Analysis Program Basics

- Note Detection
  - Use variance to detect transitions to new notes
  - Currently a hard cut off
  - Want to dynamically do it
- Currently working on the format to compare sheet music and performance.



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Demos

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Main Website

- Integration of
  - AlphaTab
  - ML5
  - P5 drawing
- Improved real-time feedback

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Next Milestone

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Tasks

- Design format for comparing sheet music to student performance
- Test ML5 and Aubio against a generated audio file
- Refine Aubio analysis to dynamically determine the variance of note transitions
- Generate exercises for a given piece of sheet music
- Design Authentication Flows (Sign-up and Sign-in)
- Set up Authentication
- Code Practice Selection Page
- Set up SQL or Document Database
- Set up Realtime Database
- Improve AlphaTab performance and introduce all customization options
- Setup Node server to respond to requests to the databases

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Questions?

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