

EE / CprE / SE 491 – sdddec19-12

Campanile-Carillon Model Phase II

Jan 2019 – Dec 2019

Client: Dr. Tin-Shi Tam

Faculty Adviser: Dr. Gary Tuttle

Weekly Report 3

Team Members

Ryan Roltgen – Software Engineering – Meeting Scribe

Sam Habel – Computer Engineering – Meeting Facilitator

Yicheng Hao – Electrical Engineering – Power Systems Lead

Gabriel Stackhouse – Software Engineering – Software Lead

Kienan Otto – Computer Engineering – Report Manager

Grant Mullen – Computer Engineering – Integration Manager

Weekly Summary

This week, we began working on our hardware setup. We put our existing code onto the Raspberry Pi to see if it ran smoothly and laid out the next steps to optimize it for the specific system. We also reached out to the ME capstone group assigned to this same project to obtain CAD files related to the project, but we have not received those yet. We were able to switch over our code to work in the correct resolution for our now-ordered monitor. Many software bugs that we inherited from the previous group were fixed as well.

Past Week Accomplishments

- Created branch for resolution testing - Ryan
 - Changing code to work on 1920x534 resolution for the new monitor
- Loaded current software onto Raspberry Pi - Kienan/Sam
 - Tested new resolution
 - Tested falling notes
 - Tested light bar integration
 - Reviewed serial transfer code from past group

- Analyzed previous groups' battery solution viability - Sam/Grant
 - Not enough power to meet time requirements
- Researched new battery and battery indicator solutions.
 - Compared the acid and lithium battery type solution - Grant/Yicheng
- Got MIDI importing fully working - Gabe
 - Fixed many bugs in the program related to this

Pending Issues

- We do not yet have access to the CAD files
 - Waiting on ME capstone group, communication is slow
- Multiple bugs in the software, biggest being intermittent crashes
- Raspberry pi has heating issues
 - We could buy an active cooling system
 - Case with less plastic covering and more ventilation holes
- Raspberry Pi struggles to run all the software at full resolution
 - Run lower and have it upscale on the monitor
 - Overclock RPi
 - Choose a different system

Individual Contributions

Team Member	Contributions	Weekly Hours	Total Hours
Ryan	Started working with changing resolution to match the monitor that we ordered so we can work with the resolution without having the monitor physically	6	19
Sam	Tested existing code and light bar, reviewed code left by previous group. Looked into power source solutions that were suggested by previous group.	5	16
Yicheng	Researched battery type options, battery level indicator, and the charge auto cut off system.	6	16
Gabe	Investigated MIDI importing and got it fully working in the current system. Also fixed a few bugs in the program and handled merging branches on the git repo.	6	19
Kienan	Fixed raspberry pi and loaded appropriate software onto device. Tested existing code for performance.	6	17

Grant	Researched battery, inverter and battery charging options. Found a few different solutions.	6	16
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Plans for the Upcoming Week

- Investigate falling note performance - Kienan, Gabe
- Eliminate Python use from software - Kienan
 - Ensure everything runs in C++ instead of having a small amount of Python handling serial communication with the Arduino and light bar
- Continue researching power supply options - Sam, Yicheng, Grant
- Get CAD files from ME group, determine space limitations for power supply and control box - Sam
- Investigate adding new graphic assets - Gabe