SOUTHEASTERN
LOUISIANA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND INDUSTRIAL TECHNOLOGY

CMPS 375
Computer Architecture
Project Application Form

Team Name	Music Junkies		
Leader Name	Chris Wunstel		
Member Name	Rory Avant	Tony Hoss	Chris Vasquez
Project Title	Arduino MIDI Feedback Controller		
Motivation (Problem, Why)	Our group is composed of music lovers who utilize music creation software and relevant controllers. What is missing from current hardware MIDI/mixing controllers are knobs which physically respond to MIDI software by rotating to a corresponding value, such as when controlled from software.		
Project Description (What)	We will design an Arduino based MIDI/mixing controller containing limited-position knob(s). The primary objective of the knob is to obtain a completely accurate two-way correspondence between the physical position of the knob and the MIDI parameter which it controls; i.e. the knob will change the software parameter and changing the software parameter (for instance, with a mouse) will cause the knob to move to a precisely relative position within its range. For example, if a knob is mapped to a volume parameter and adjusted to given value (say -3db in the software, which corresponds to 10 o' clock on the knob), and then the project is closed and the hardware knob is moved (for example, to 1 o' clock), when the project is reopened and communication is established, the knob will return to its previous value of precisely 10 o' clock.		
Methodology (Approach, How)	Our approach is that of the musician or mixing engineer, as our primary goal is a comfortable, tactile method of controlling music software; It will offer the familiarity of a classic mixing board. In order to control the knob with total accuracy, we will use one stepper motor per knob. We will add knobs as our budget allows. Should we finish our initial goals with time permitting, we will create additional MIDI controls of varying types (slider, optical/proximity sensor, touch strip, digital LED display), as once the foundational groundwork is laid, expansion will be relatively simple.		
References (Citations, Links)	**Firmata** https://www.arduino.cc/en/Reference/Firmata **Pure Data:** https://en.wikipedia.org/wiki/Pure_Data#Language_features http://www.soundonsound.com/techniques/pure-data-introduction **Other:** http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-5-servo-motors-3636 **How To:** https://spencerdixon.wordpress.com/2010/12/15/how-to-build-a-midi-controller-with-the-arduino-firmata-and-pure-data/		
Software Requirements	Firmata, Pure Data		
Hardware Requirements	Arduino, stepper motor(s), knobs, pin headers, cables, digital LED display.		
Approval (Check one)	☒ Accepted	☐ Rejected	

Faculty Sponsor Signature (if applicable): Kinyua Yeg *Date:* 1/26/2017