

Team #6
Antonio Hernandez Olivares
Cesar Chich-Saquic
Fedya Henrichs-Tarasenkov
Rafael Cervantes

Practicum Product Description Specifications (PDS)

Short Description Name

Real-Time Effect Music Processor

Executive Summary with Concept of Operations

The product takes in an audio signal via a 3.5 mm audio jack cable from an audio source like a phone or a computer. The incoming signal will be processed by adding effects to it, such as reverb, echo, pitch control, distortion, and delay. Once the signal has been processed, it will be output to another 3.5 mm audio jack port that can be connected to an external speaker.

This product is intended for music connoisseurs who are interested in sound manipulation or people who want to personalize the sound of the music they listen to and make it theirs. This product will be user-friendly by allowing them to select which effects they're adding and the level of effects they're going to add.

Brief “Market” Analysis

The intended customers and users of this product are music connoisseurs who are interested in sound manipulation or people who want to personalize the sound of the music they listen to and make it theirs. Currently, the closest competitors are guitar pedals; however, our product is different as it is intended for use with a smart device rather than a guitar or other instrument. This product should sell for around \$80 to \$100 due to the high processing power required for digital signal processing (DSP).

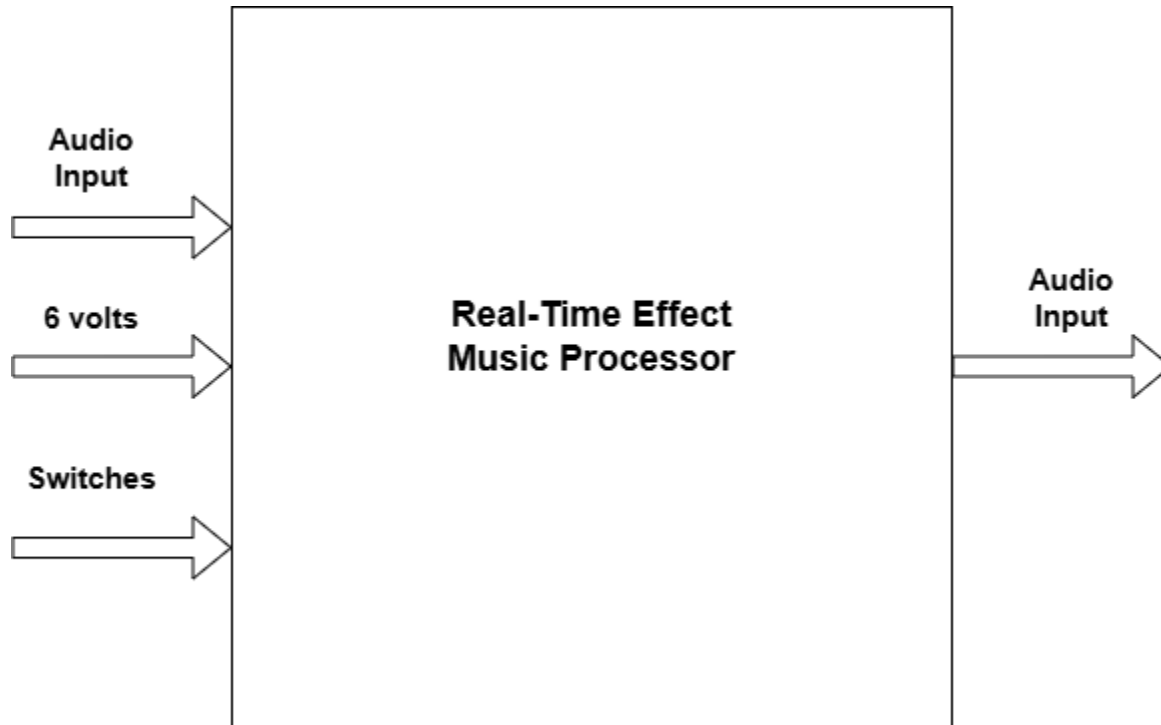
Requirements

- Must be portable.
- Must pass through an audio signal.
- Must have a clean and intuitive user interface.
- Must have at least 1 audio effect.
- Must have a case.

- Should have 3 audio effects.
- May have a screen displaying the audio spectrum.

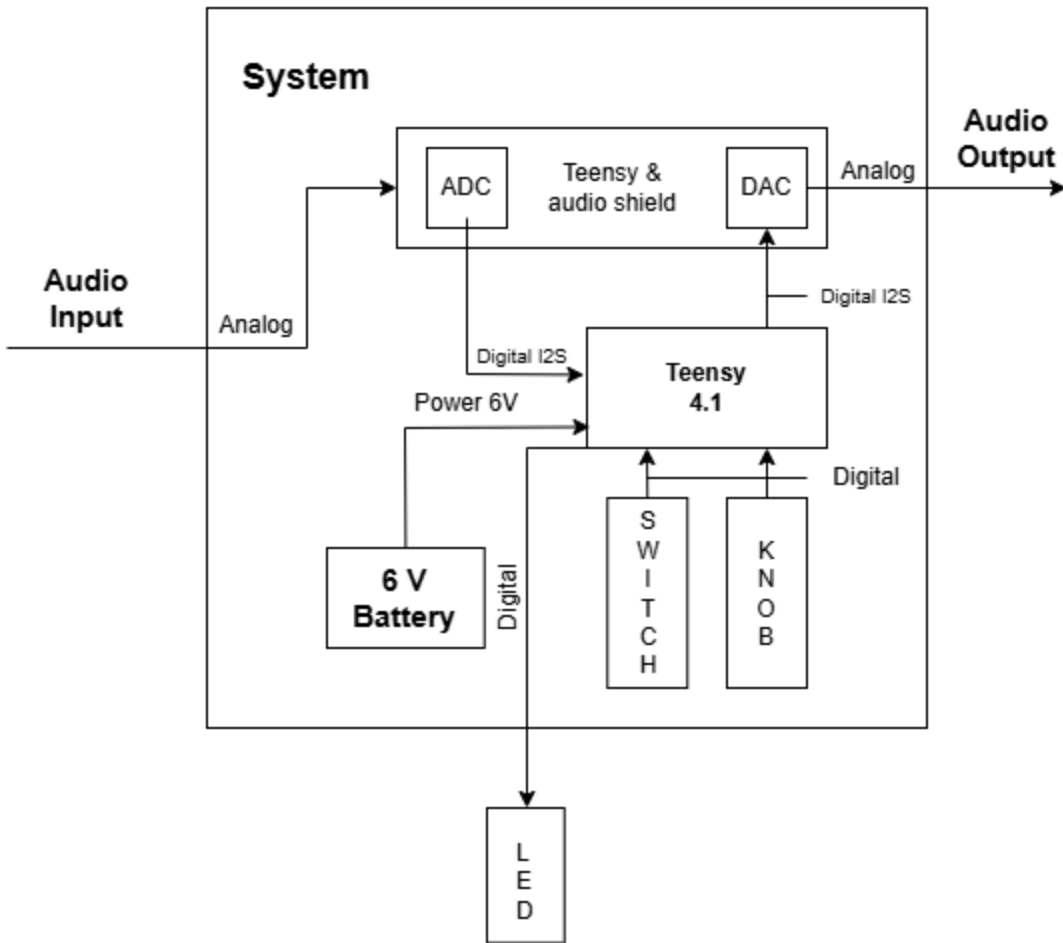
System Architecture

Level 0



We used Draw.io

Level 1



Design Specification

- Sensor: ADC
- Processor: Teensy 4.1
- Actuator: Potentiometers, DAC, push-buttons, LEDs
- Power: Batteries
- Development Environment: Arduino IDE, Teensyduino