Tremolo Guitar Effect Pedal

AJ Trantham

Presentation Overview

- Background
- Design Overview
- Hardware Design
- Software Design
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- Questions

Background

Guitar Effect Pedals

What is Tremolo?
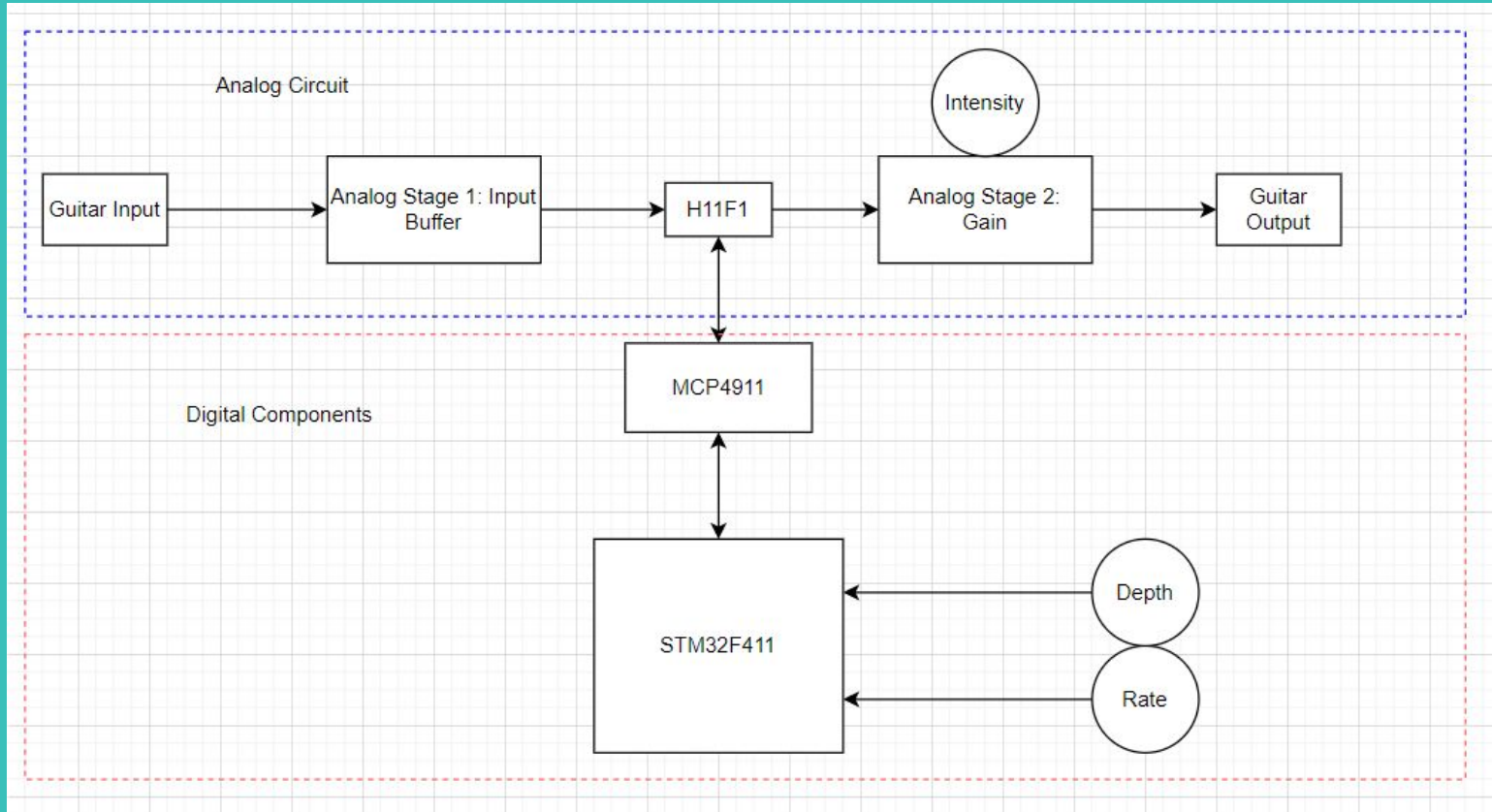
Tremolo is a rhythmic volume modulation

Tremolo is a prevalent effect

Tremolo has been around since the 50's and spans many genres.
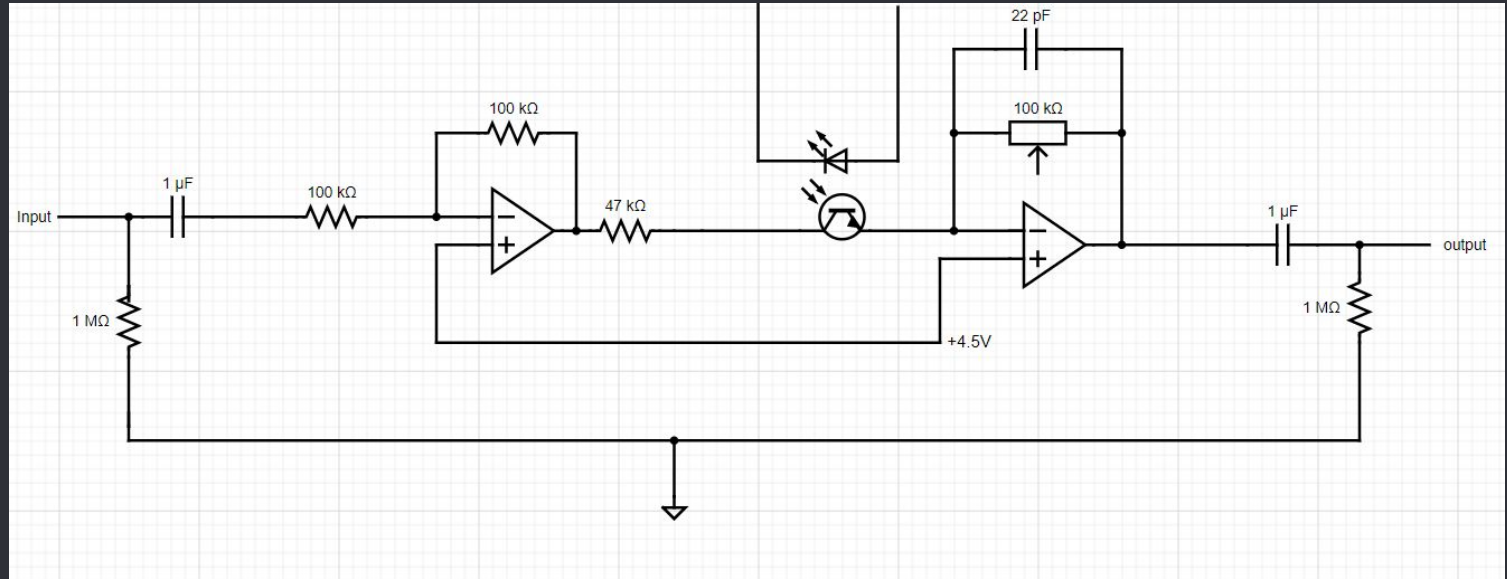
Found in tracks from:

- Pink Floyd
- Radiohead
- Otis Redding
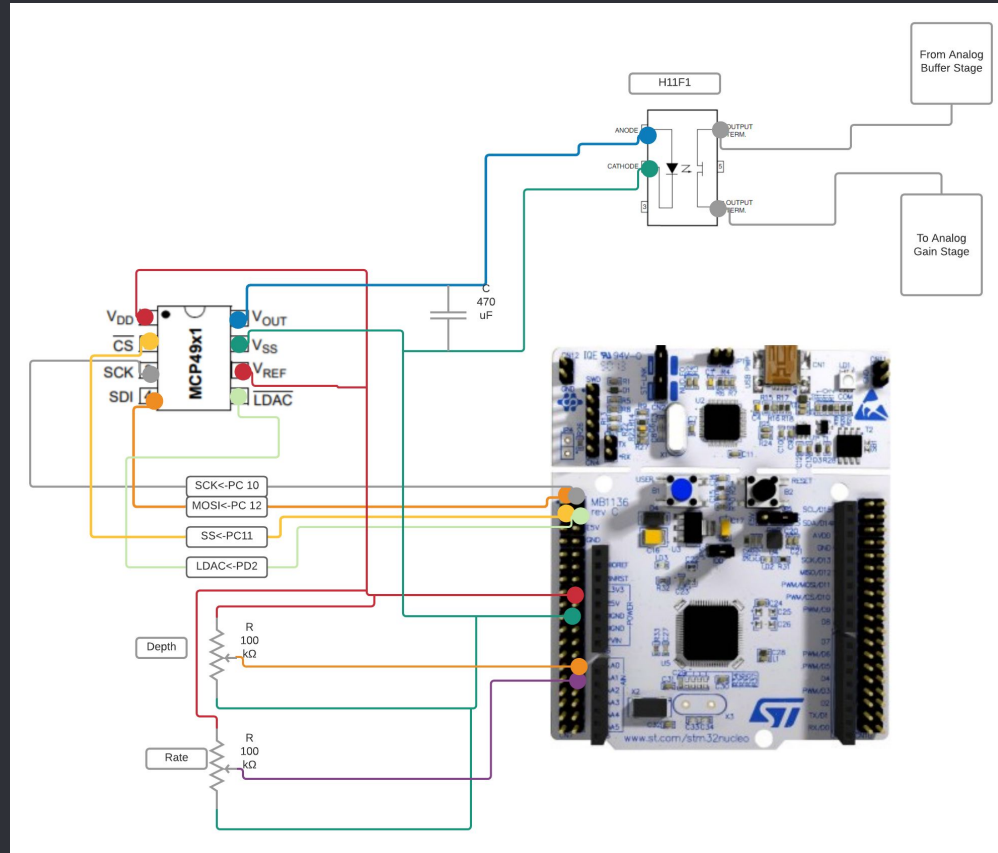- Brandi Carlile
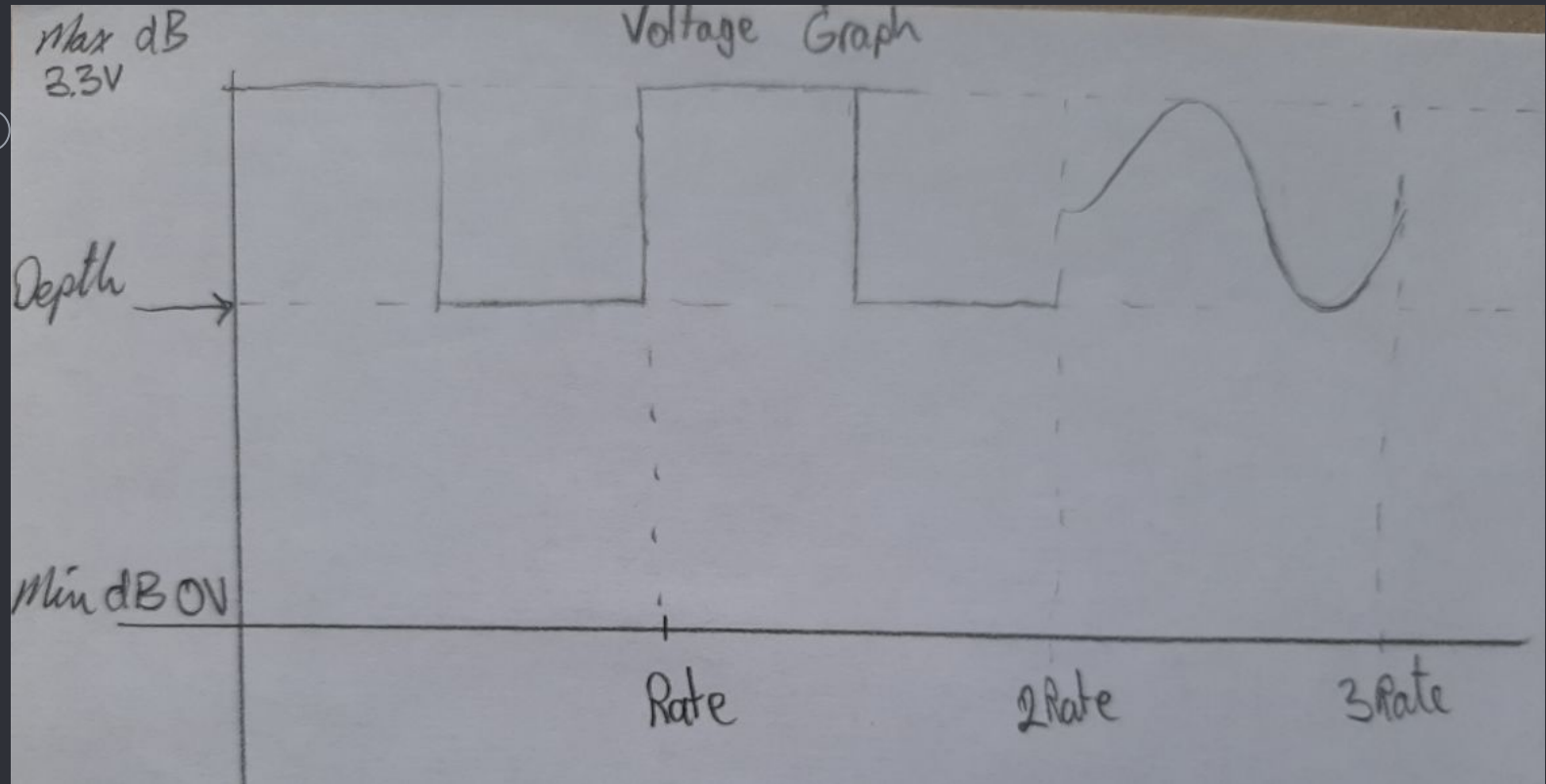- The Rolling Stones
- And many more

Design Overview

Hardware Design: Analog

Hardware Design: Digital

Software Design

Software Design

```
114     float wave_val = current_wave[wave_index][sample_index++];
115
116     // apply depth control to base wave value
117     int digital_attenuation_range = MINDEPTH - depth;
118     short scaled_wave_point = (digital_attenuation_range * wave_val) + depth;
119
120     DAC write(scaled wave point);
```

Other Software Functionalities:

- Reading Depth and Rate with ADC + TIM2
- Wave Switching: sine, square, triangle, sawtooth

Demo

Challenges and Limitations

- Ticking from Optocoupler
- Implementing Depth
- No on/bypass
- No Tap Tempo

Thanks!

ANY QUESTIONS?

Code and Design available at:

https://github.com/AJ-Trantham/embedded_c_ECE43
3/tree/main/tremolo