Embedded Systems Project Proposal

Project Name: Guitar Effector

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Our project will simulate a guitar effects pedal. We will use the onboard stereo audio port, AKM AK4565 Low Power 20-bit Audio Codec to receive analog sound from an electric guitar, use the onboard signal processing utilities to digitize the sound, implement a digitial effect and output analog sound to a speaker in real-time. Some of the most common guitar effects include the following:

-Distortion
-Delay
-Echo
-Flange
-Reverb
-Wah Effect (Wah-Wah Pedal)
-Phasers
-Tremolo
-Vibrato

We will attempt to implement as many of the above effects as time allows in VHDL using the stereo input/output & SRAM. The SRAM will be used to store the sound bits for the digital effects involving delay (Delay, Echo, Flange, etc). For the April 14th 75% demonstration we aim to be able to read sound from a guitar and play it back through a speaker in real-time. If we are progressing ahead of schedule we aim to implement the distortion effect during this demonstration.