



Project Proposal: Autotune

Project Name: Tuned Trio

Group Members: Cam Coleman (cc4535), Adam Banees (ab4972), and Khaela Harrod (klh2173)

Abstract:

When researching various ideas for our project, we came across the idea of producing software with custom hardware peripherals to create autotune. We all had a lot of ideas in terms of audio playback. Within our project, we will create an audio input and receive an altered version of it. In 1996, autotune was invented by a research engineer named Dr. Andy Hildebrand. Initially, it was used to develop auto-correlation, now it is used for pitch correction within music. Before deep diving into the autotune portion, we will also look into sound filtering and how that can be applied to our project.

Design:

1. A key idea of how we are planning on tackling this project is by using the DE1-SOC board for the calculations and/or the input of the voice. The idea is to create a program and utilize a board in order to make the calculations. Hardware devices to use are a microphone, speakers, and a keyboard/soundboard. As for specifics, we are still looking into it.
2. Based on the progress of our project, we may consider hooking up some sort of keyboard to the board to possibly save recorded altered audio and play it back as altered sound (for example: sing autotune close to C3, then press the keys of the keyboard to play different notes of the tuned voice) from the keyboard. Alternatively, we can program a simple hardware interface (possibly a MIDI controller) to the board, and use it to control the board's output (e.g. volume, pitch, and faders).



Edit with the Docs app

Make tweaks, leave comments, and share with others to edit at the same time.

ns through the board with some sort

NO THANKS

GET THE APP

... ..

- c. Reverb
- d. Delay
- e. And more....

[a]

[a] Here is a simple lab to connect a microphone and speakers. This gives a simple background idea of what the DE1-SoC is capable of for audio:
chrome-extension://efaidnbnmnnibpcajpcglclefindmkaj/https://ftp.intel.com/Public/Pub/fpgaup/pub/Teaching_Materials/current/Laboratory_Exercises/Digital_Logic/Verilog/lab12.pdf