Virginia Cangelosi - Amplifying Circuit

I am a University student studying Electrical and Electronic Engineering. During my second year, I had to work on several projects. One of these projects was to build an amplifying circuit based on one that I had been studying in the lectures. Using the equations, we had been taught, I chose the values of each resistor and capacitor to create the most efficient combination.

I used a software called LTSpice (Figure 1) to test the circuit as it gives an estimate of what the current and voltage will be in different points of the circuit.
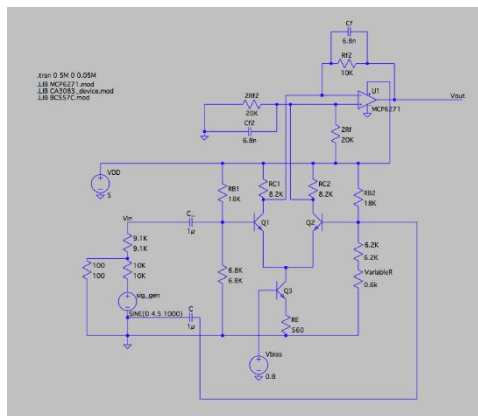

Figure 1

I then built the circuit on a breadboard (Figure 2) and tested it again using an oscilloscope (Figure 3) to ensure all the components were working and that they had been connected correctly.
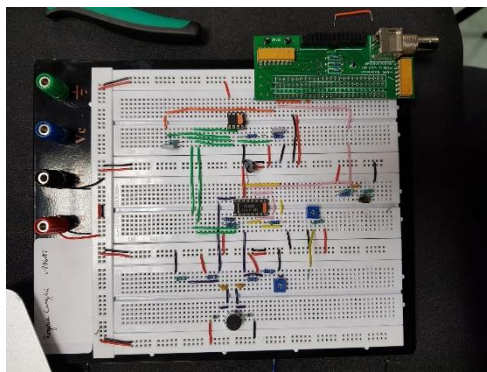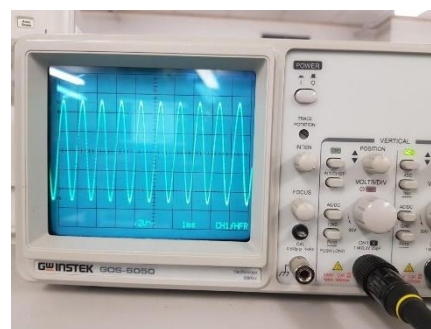

Figure 2

Figure 3

I then used a software called Target3000 (Figure 4) to virtually build the circuit in a way that allowed all the wires not to cross. This part is very tedious as there are many wires coming from each component so to achieve this, I had to pass lots of wires under components to ensure they didn't cross.
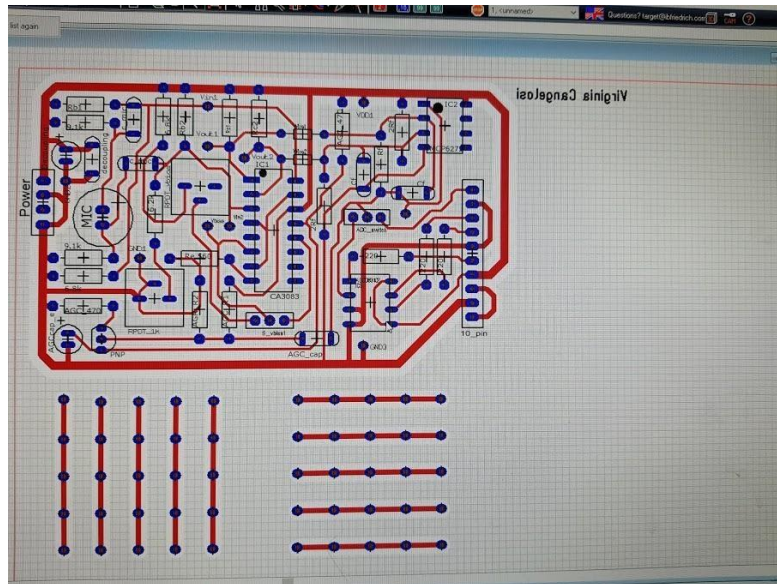

Figure 4

The lab technicians use the Target3000 file to print the circuit (Figure 5 and 6) with holes for each of the component's legs. I then soldered in all of the components testing each section of the circuit to ensure it was working.
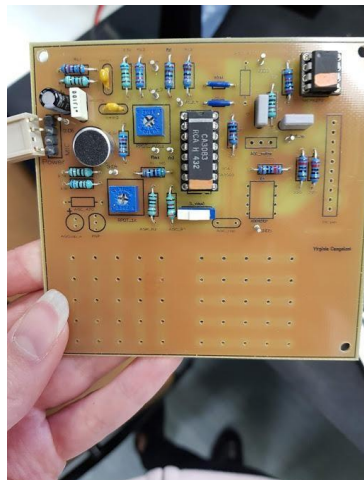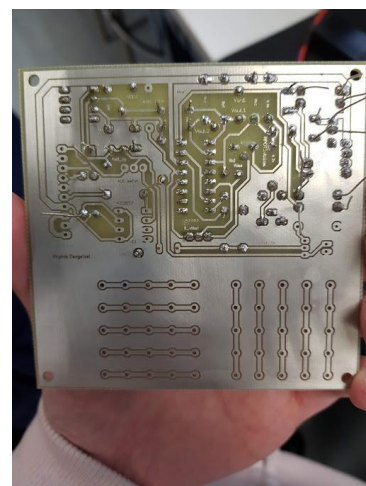

Figure 5

Figure 6

A difficulty I encountered was a missed connection between 2 components in the Target3000 file. I was able to solve this by adding an extra resistor to make this connection without crossing over any wires. Unfortunately, due to Covid19, I was unable to get the circuit fully working or get a picture of the final product.