# **Program to Operate Waveform Generator** D'Angelo Manzo, Moraine Valley Community Collage | Fermilab | FERMILAB-POSTER 2024 STUDENT

#### Abstract

During my internship, I developed a user-friendly program to control a waveform generator using SCPI commands.

#### **Key Features:**

•Interactive User Prompts: The program guides users through various options, enhancing ease of use.

•Direct File Downloads: Users can download files directly from

A picture of the different waveform types that can be manually inputted instead of using a file.



their computer to the waveform generator.

•Beam Signal Emulation: The program allows for outputting signals that are recorded from an oscilloscope by converting csv to binary then sending the commands out to the waveform generator.



**Methods** 

Pyvisa

**Used to connect function** 

generator to computer

- -Used a class that holds all the functions necessary to work with different manual components of waveform generator.
- -Applied SCPI commands, which are supported by the machine, to control components on the machines.

Libraries

- -Converted .csv files received to binary to be able to send file directly to machine.
- -Stores data to reduce repetitiveness.

Here you can also see the different variables you can change on the machine such as amplitude, frequency, offset, and phase accompanying the waveform that's chosen

**Executed Functions** to Signal Generator

### Results

-Code is completely finished and cleaned up. -With the utilization of SCPI commands, code can run with a multitude of machines

-Created a github so that anyone can download and use the code(Link with QR code at the bottom)

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## Struct Used to handle binary data when converting csv

used to handle csv files **Struct- Used to handle binary data** when converting csv files

used to handle system files **Redis- Used to send out information from** another computer to perform operation remotely

Here are a list of questions asked of the user

files

#### Conclusion

The end result of this project went better then originally planned. I was able to include some additional functionality including prompted questions as well as send functions from another machine.

Link for github: https://github.com/Manzo111





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