

## **ABSTRACT**

At the communication signal has an important things as an information transmission medium. But the signal never separated from interference or noise in the process of sending information. Noise can lead to information received does not match what is sent. So that the signal can fit all needs and desires then require a filter to sort signal from noise. Filter is a draft to pass or filter the input signal so that the incoming signal in accordance with the desired frequency. Then there are two types of filters, namely, filters Digital and Analog Filter.

In this final project has been implemented FIR filter program on Arduino Uno device. Matlab software is used to design filters and get coefficient values. Input signal is data. The results of the FIR filter process will be displayed on the serial monitor and serial plotter arduino.

The result of design and implementation in this final project, can know the ratio of input signal after experiencing FIR filter process on arduino with FIR filter process on matlab. Based on the research that has been done, got percentage of success of 100% arduino in processing FIR filter with order of 50 and 45% s.d. 60% for use of order 100 and 200 using rectangular window method, bartlett, blackman. And Increased 1% for flash memory and  $\pm 10\%$  usage for SRAM memory arduino in processing FIR filter program with input signal of 100 and order of 50,100 and 200.

**Keywords: Digital Filter, FIR Filter, Arduino, Matlab**