

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الآيَةُ -

رَبِّ أَوْرِغْنِي أَنْ أَشْكُرَ ( )  
بِعَمَلَكَ الَّتِي أَنْعَمْتَ عَلَيَّ  
وَعَلَى وَالِدَيَّ وَأَنْ أَعْمَلَ  
صَالِحًا تَرْضَاهُ وَأَذْخِلِنِي  
بِرْحَمِتِكَ فِي عِبَادِكَ  
). الصَّالِحِينَ

صدق الله العظيم

(الآية 19 سورة النمل)

## **To My Family**

# **Acknowledgment**

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# **Abstract**

Signals from the sender to the receiver or within the devices are subject to noise due to electromagnetic waves between the signals or because of climate change and other reasons. This noise affects the original signal, leading to a change in the shape and characteristics, therefore to get rid of this noise would be by using the filters. The filter is the most important system used in different devices and applications, since the primary purpose of the filters is to get rid of the unwanted signal noise

This research focuses on digital filters. There are generally two types: FIR & IIR, but the basic idea are based on FIR. This research contains some of the concepts of the language MATLAB.

The main objective of this research is to design a moving average filter for filtering the voice, using the software program which is written by the programming language MATLAB.

## تجريد

الإشارات في أثناء طريقها من المرسل إلى المستقبل أو داخل الأجهزة فإنها تتعرض لضجيج بفعل الأمواج الكهرومغناطيسية أو تداخل الإشارات فيما بينها أو بسبب تغير المناخ وغيرها من الأسباب ، هذا الضجيج يؤثر على الإشاره الأصلية مما يؤدي إلى تغيير في شكلها وخواصها ، وبالتالي لابد من التخلص من هذا الضجيج ويتم ذلك بواسطة المراشحات .

تعتبر المراشحات من أهم الأنظمة المستخدمة في الأجهزة والتطبيقات المختلفة ، إذ أن الغرض الأساسي للمراشحات هو التخلص من الإشاره الغير مرغوب فيها (إشارة الضجيج) .

يركز هذا البحث على المراشحات الرقمية بصورة عامة بنوعيه **FIR** & **IIR** لكن الفكرة الأساسية له مبنية على النوع **FIR** ، ايضا سوف يتحدث هذا البحث عن بعض مفاهيم لغة **MATLAB** .

الهدف الأساسي لهذا البحث هو تصميم **moving average software program** بغرض ترشيح الصوت باستخدام **filter** مكتوب بلغة البرمجة **MATLAB**.

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## **Abbreviations**

**DSP** : Digital Signal Processing

**FIR** : Finite Impulse Response

**IIR** : Infinite Impulse Response

**Op-Amps** : Operation Amplifier

**ADC** : Analog to Digital Converter

**DAC** : Digital to Analog Converter

**RF** : Radio Frequency

**LTI** : Linear Time Invariant

**ASIC** : Application Specific Integrated Circuit

**MATLAB** : MATrix LABoratory

**2 D** : Two Dimension

**3 D** : Three Dimension

**LINPACK** : Linear System Package

**EISPACK** : Eigen System Package

**PC** : Personal Computer