CHAPTER VI

Conclusion & Recommendations

6.1 Conclusion

In this study, we designed and implemented a voice-controlled prosthetic hand. Our comprehensive study involved both mechanical and electronic controller designs of the hand.

Five fingers made of plastic gas pipe joint together to form the hand, and every finger is controlled throw a wire.

The driving force for finger movements was obtained using Servo motors. Each finger's only main joint is driven by Servo motor; the remaining 2 joints are moved through a special mechanism.

SpeakUp speech recognition module is used to translate the user voice command to binary code.

The Proteus simulator was used to develop the simulation design of the circuit and the hardware was implemented according to the simulated model, a microcontroller form PIC family was used as the main the brain for the system and the resulting were very satisfying.

Therefore, we have also shown that synchronization or real time operation of a speech recognition controller and a DC motor controller is possible.

We have successfully demonstrated that our design can be trained using voice commands and can perform certain actions like grip counting signs and releasing an object.

6.2 Recommendations

As for potential improvements in our design, we would like to address the following issues in our future design. Currently, our design is limited by recognition capability of just 8 commands, namely grip, relax, ok sign etc..

For further future development of this system, the following recommendation could be considered:

- Completing unused capacity in the speech recognition part of our design; and go up to 200 commands. Therefore.
- By using 200 commands our design can be further improved in order to perform more complex tasks.
- Enhancing the mechanical design of the hand.
- Program the controller to drive each of the 3 DC motors to reach different grip force levels, depending on the nature of the task.
- Include clinicians to fit and try our design on real subjects.
- The ultimate goal is to offer a simple and affordable alternative to existing expensive and complicated prosthetic hands surgical operations.