\section{Achievement}

\begin{itemize}

\item The model is successfully implemented with basic requirements of a conveniently house with physical buttons.

\item The control system is separately with the 220V AC line, which makes the system is a lots safer.

\item System can be extended with integrated communication ports.

\item The number of supported devices can be extended easily.

\item Devices in different rooms can be controlled with different buttons.

\item Successfully built a simple Web Server to control and monitor devices.

\item The Web Server is built with Responsive website design, which can be displayed correctly on different smart devices.

\item Integrated database to log data in order to monitor the house and maintain devices and may be used for further development.

\item Successfully implemented few scenarios to use.

\item Successfully implemented Outdoor Camera on embedded computer and prototype of Indoor Camera.

\item Implemented the system with MQTT protocol at few steps.

\end{itemize}

With this project, the author was able to improve and get to know more knowledge that he could never learn during the University time. Moreover, he also understands that he needs to keep studying to accumulate valuable experience which can be handy when entering the work space. However, the project still remain plenty of limitations as listed in following section.

\section{Limitation}

\begin{itemize}

\item Limitation of used hardware.

\item Although the project is implemented with MQTT protocol for communication between the Internet block and the system, the delay is still a worth to consider.

\item The main communication methodology is not suitable for a small house.

\item Facial Recognition system is not as accurate as needed.

\end{itemize}

\section{Future Work}

\begin{itemize}

\item Replace RS-485 by (a) wireless communication methodology.

\item Optimize algorithm to reduce the delay between Slaves or System and Internet Block.

\item Integrate AI to make the house become truly smart.

\item Use collected data to build Markov Chain or Bayesian Models to predict if any device is forgot to turn On or Off at specified point of time, which helps the owner to use energy in more efficient way.

\item Improve the algorithm of Facial Recognition system for better performance.

\item Improve the aesthetics, stability and sustainable of the system included both hardware and software.

\end{itemize}