

Abstract:

This project is made to develop an affordable and user friendly Intelligent Pill Dispensing Robot for Memory Impaired and Elderly Patients and also to understand the technology behind it. The robot will be equipped with a CPU capable of controlling the timing and dispensing mechanisms. The system will be programmed for dispensing pills at different time durations. An alarm system will also be present if the patient misses a dose. This technology is available in developed countries, but are not popular in India as these systems are very expensive. The prototype pill dispensing robot will accommodate up to 8 different dispensing slots. The timing of each slot will be programmable via built-in key board. The timing will be displayed in the 7 segment LED. The system will have an audio visual alarm to inform the patient about the dosage. A different alarm annunciation is provided in case the patient misses the course. The entire system is battery operated to enable successful operation even during the event of power failure. The system will also have large buttons and big displays in order to be user friendly to aged people.

Introduction:

Aim:

The aim is to develop a pill dispensing robot which is user friendly and more economical. This prototype will have an 89c52 or equivalent variant of 8051 micro controller family as its CPU. This is used to control the various features of this device such as 7 segment LED display, Alarm LED, Buzzer, Keyboard, Stepper motor and other systems.

Objective:

This project finds its genre projected towards the medical field. It has untapped potential in the treatment and recovery process of memory impaired and physically inhibited patients. It provides an efficient drug delivery system that provides scheduled dosage of the prescribed medicine. It allows the patient to be independent and not depend on assistance from other sources. This is mutually beneficial to both the patient and the medical facility that would be rendering its services.

Justification:

Automated pill dispensing robot using embedded systems may be used for the following reasons :

- It allows the patient to be independent, that is not depend on any help from a third person for their medication.
- It provides proper and timed dosage
- It provides an easy interface that allows any individual without any formal training to use the equipment.
- The patient does not require constant supervision from any medical staff or faculty.

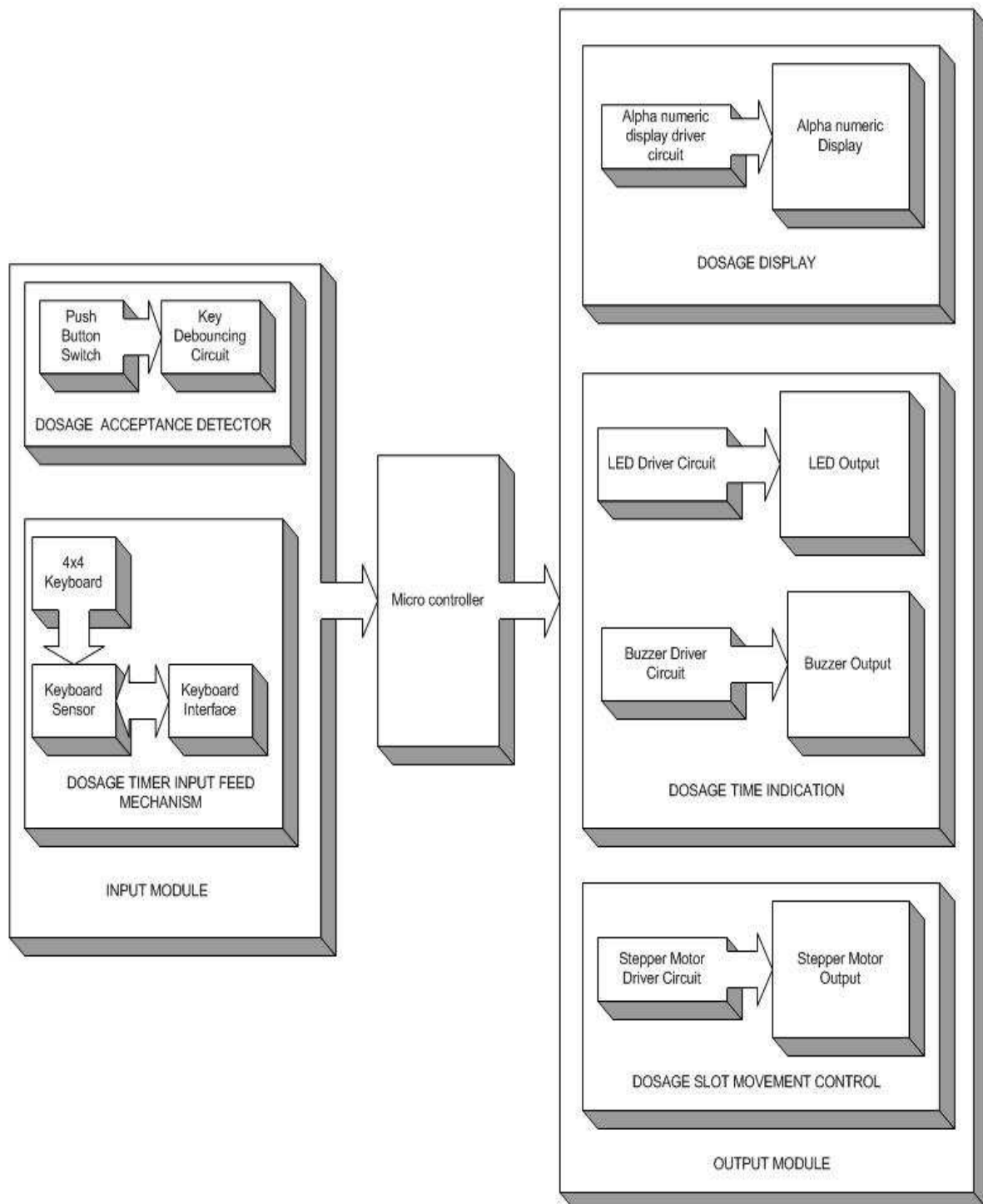
Existing Systems characteristics:

- The present systems are expensive.
- They require constant maintenance.
- They are not easily available to the common man.
- Complicated design makes the current system prone to errors due to the multifaceted input procedures.

Proposed System characteristics:

- Cheaper than existing systems
- Easy and minimal maintenance.
- Made to be easily accessible to common man.
- Simpler design along with easy UI(user interface) avoids the occurrence of errors, provided appropriate input is fed to it.

Intelligent Pill Dispensing Robot for Memory Impaired and Elderly Patients - Block Diagram



Hardware used:

- 4x4 Keyboard.
- Keyboard Interface Peripheral
- Keyboard debouncing circuit.
- Microcontroller
- LED Display
- LED Driver circuit
- Stepper motor
- Stepper motor driver circuit
- Microcontroller

Software used:

- KEIL uvision3 IDE
- Microsoft Visio

References:

- Embedded C by Michael. J. Pont.
- 8051 Microcontroller by Mazidi.