東京大学 THE UNIVERSITY OF TOKYO

The Practice of Machine Design

Smart Bookshelf System

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Problem Statement

Nowadays, although the existing book management systems are powerful to give people general location information of the books they cared about, there is still a last-step problem of finding a certain book. When people arrive at the desired bookshelf based on the searching result, it is still confused to recognize the desired book using the index information. It is not only because the books will be placed disorderly during the borrowing and returning process, but also due to the difficulty of recognizing the book index.

Fig. 1 Hard to find a certain book quickly in a bookshelf

Design Record

To solve this problem, what we need is to search the book location information and show the location automatically.

Fig. 2 Design Record Graph

Design Description

Our design contains a new-type bookshelf and a searching system. In the searching system, students can get the location information by typing in the book name, and the librarians can get the information by scanning the book code. Then, we can press the "shine" button to let the LED show the book location. For the bookshelf, there are several dividers to separate different books. Since the dividers can only be managed by the librarians, we can avoid the location movement and fix the location furtherly. More importantly, the LED under each book can navigate users to the book location.
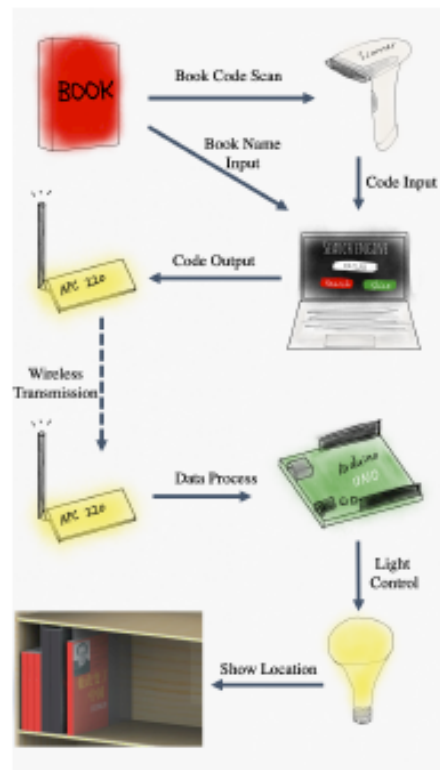

Fig. 3 Design Description

Fig. 4 Slots, Clapboards and LED