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Abstract
There are many kinds of limb disabled in clinics, including stroke, spinal cord injury and muscular dystrophy…etc. The limb disabled always can’t move conveniently because of the injury of nerve or muscle. They can’t have an easy life without the help of the related scientific assistive devices. However, most of the scientific assistive devices are foreign products. These products are always not only expensive but also unsuitable for Taiwanese body size. Besides, these products still have the maintenance and service problems. It is necessary to develop our scientific assistive devices for the disabled by ourselves. Regarding scientific assistive devices research, we must think about the physical support and psychology need of the disabled during the design period. According to the real needs of the disabled, we can solve the problem of the disabled.

In this paper, we design a page turner for muscular dystrophy patient. We adopted LEGO MINDSTORMS NXT modules as our mechanical components in this thesis because of the variability of LEGO modules. We also designed the low-cost customized scientific assistive devices for the disabled with the help of creative LEGO mechanical structure, microcontroller and sensors, and then we designed the other boards to displace the NXT main board to decrease cost significantly. We found the time cost of implementation was reduced and we can make modification for the mechanical structure and adjust the parameters at any time we want.

In addition to the special variability of LEGO modules, we also adopted electronic circuit technology to implement biomedical devices for measuring the biomedical signal (i.e. ECG, EMG, body temperature) to evaluate whether the subject has been overloaded with using the scientific assistive devices or not. Finally, we must do our best to let the user use assistive devices easily, to solve the inconvenience on life.
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