

Design of Household Cognitive Level Assessment System Based on Grip Force and Finger Force Distribution

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Abstract. In this paper we designed a household cognitive level assessment system based on finger force distribution. The system evaluates the user's current cognitive level according to the degree of matching between the characteristics of user's grip force and finger force distribution data and the characteristics in the database. The system based on finger force distribution will greatly reduce the space and economic cost of household cognitive level assessment

Keywords. Grip force, finger force distribution, cognitive level assessment

1. Introduction

There is sufficient evidence to suggest that cognitive impairment also manifests as a decline in motor ability [1]. Researchers have studied the finger force distribution of healthy young individuals [2,3] as well as the correlation between grip force and mild cognitive impairment (MCI) [4,5].

2. Methods

We expect to design a household cognitive level assessment system based on finger force distribution during multi-finger grasping. The system will assess the user's cognitive level by the the characteristics of user's grip force and finger force distribution data.

3. Results

Figure 1 describes the structure of the system, finger pad module and database. The angle of finger pads is adjustable to ensure that the finger force is obtained from distal phalanges. Users with different hand sizes can assemble a handle that fits their hand size.

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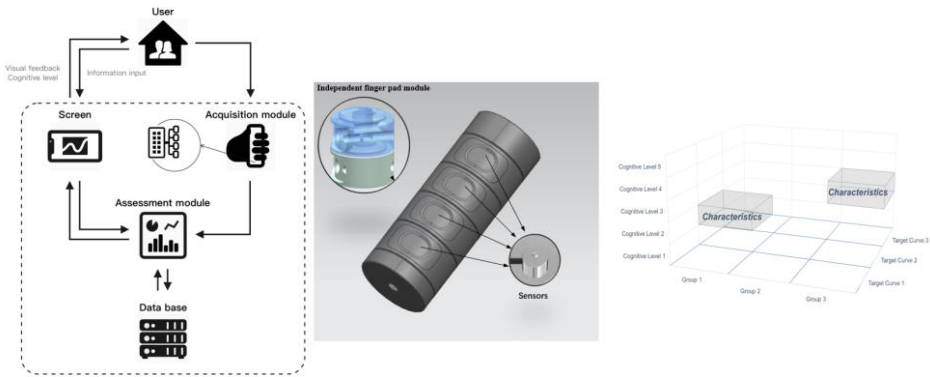


Figure 1. Structure of the system, finger pad module and database.

4. Discussion

We designed a household cognitive level assessment system based on finger force distribution. The system extracts characteristics from the user's finger force data in the MVC test and various multi-finger force following tasks with visual feedback to assess the user's cognitive level.

5. Conclusions

The system provides a low-cost method for home cognitive status assessment. It can reduce the consumption of medical resources and the occupation of space.

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