

A Low Cost Cyber Glove in Education and Research

Wei Guo
Manoj Santhikethanam

Graduate Student
Department of Computer Science,
Southern University,
Baton Rouge, LA 70813

Patrick F. Mensah
Amitava Jana
Chunling Huang

Faculty Advisors
Department of Mechanical Engineering
Southern University,
Baton Rouge, LA 70813

Abstract

In this work we are developing a low cost cyber glove for research and education. Nowadays Virtual Reality is used as a teaching tool for courses in Manufacturing, Industrial Engineering and Controls Systems etc. It is used for research in many universities in areas such as MEMS (Micro Electro-Mechanical Systems), physiotherapy, virtual surgery etc. Cyber glove is the most essential requirement for Virtual Reality experiments. Gloves offer far superior data input potential than other input device like mouse or joystick, since they provide multiple DOFs (Degrees of freedom are a measure of the number of positions at which the device can be read as inputting a different data value) for each finger and the hand as a whole.

In this cyber glove, the most critical components are sensors, electronic interfaces and software. This paper presents all the essential details for developing a low cost cyber glove. Different methods to feel the feedback of different objects and grasping are explained in detail. Interface and simulation software are also discussed. The some applications for testing the cyber glove have been described.