A Literature Review for Eye Tracking Driven Motor Wheelchair

Introduction

This project is trying to setup a reliable eye tracking driven motor wheel. Since the technology for parts like motor control, communication between PC and micro controller andGUI development are relatively mature, this review focus on the eye tracking algorithms and challenges involved.

As one of the most vital features of face characteristics, eye motion play a salient role in expressing a person's desires and needs, cognitive processes, emotional states, and interpersonal relations. [1]Although enormous researches have been carried out on eye motion and eye tracking in many fields such as biometric security, human-computer interaction, challenges are still blocking the way to implement it easily in practise. Challenges of eye detection and tracking are caused by illumination changing, in-plane rotation, out-plane rotation appearance changing and occlusion.

As shown in [2], eye location may be implemented in 5 ways:

1. Shape detection, an approach that try to match iris, pupil and shape of eyes.
2. Feature detection, which capture characteristics of human eye to locate features including

References

[1] Underwood G. Cognitive processes in eye guidance. Oxford: Oxford University

Press; 2005.