

# An Eye Tracking Computer User Interface

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## Abstract

We developed an inexpensive hardware software system for eyetracking. It is based on electro - oculography (EOG) rather than expensive reflectance based methods. We built a prototype to demonstrate the viability of EOG for human - computer communication. The system is applicable for many virtual reality systems, video games, and for the hadicapped.

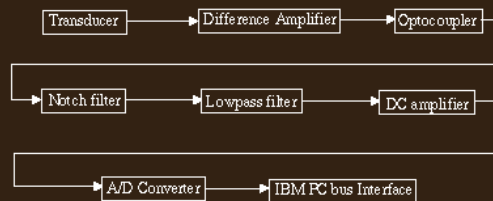
## Hardware Components

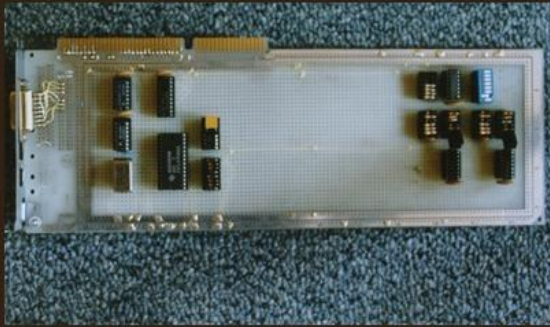
4 EOG sensing channels

Signal filters to eliminate noise

Signal amplifiers

A/D converters



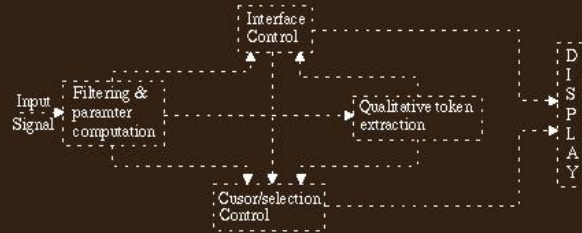


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### Software Modules

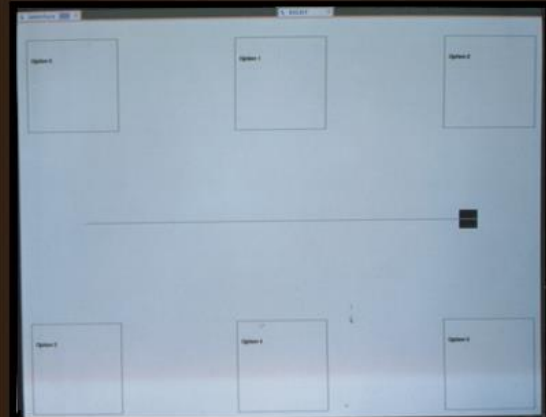
- Classification and filtering of EOG signal
- Extraction of symbolic tokens
- Graphical user interface



Synchronizing Screen  
(User tracks cursor motion)



Interaction Screen  
(User selects operation)



## EOG Placement



## Experimental Results

- A 3x2 boxed menu driven by eye selections
- Performance measures of correct selections recorded after repeated use by two experienced users

Menu Selections	73%
Menu Selections (4 corners only)	90%
Horizontal Detection	75%
Horizontal Detection (4 corners only)	99%
Vertical Detection	92%
Vertical Detection (4 corners only)	92%