Brain Controlled Car for Disabled

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Abstract- Here we considers the development of a brain driven car,which would be of great help to the physically disabled people.The car integrates signals from a variety of sensors like video, weather monitor,anti –collision etc. it also has an automatic navigation system in case of emergency. The car works on the a synchronous mechanism of artificial intelligence.

I. Introduction

The security system of the car is activated. Images as well as thermo graphic results of the driver are previously fed into the database of the computer. Here the thermo graphic image verification is done with the database. The ramp has flip actuators in its lower end. Once the driver enters the ramp, the flip actuates the ramp to be lifted horizontally. As soon as the driver is seated the EEG (electroencephalogram) helmet, attached to the top of the seat, is lowered and suitably placed on the driver's head. Each program can be controlled either directly by a mouse or by shortcut.

II. Biocontrol System

The bio-control system integrates signals from various other systems and compares them with originals in the database. It comprises of the following systems:

- Brain-computer interface
- Automatic security system
- Automatic navigation system

III. Brain – Computer Interface

Brain-computer interfaces will increase acceptance by offering customized, intelligent help and training, especially for the non-expert user. The teams doing research in this field have developed a single-position, brain-controlled switch that responds to specific patterns detected in spatiotemporal electroencephalograms (EEG) measured fromthe human scalp.

Asynchronous Switch Design (LF-ASD) The data can then be piped into MIDI compatible music programs. Furthermore, MIDI can be adjusted to control other external processes, such as robotics. Analysis of data is mostly done within Mat lab environment. FEATURES OF EEG BAND

Data can be fully exported in raw data, FFT & average formats Ultra low noise balanced DC coupling amplifier.

Support for additional serial ports via plug-in boar; allows extensive serial input & output control.

Real-time 3-D & 2-D FFT with peak indicator, Raw Data, and Horizontal Bar displays with Quick Draw mode. Full 24 bit color support; data can be analyzed with any standard or user.

Customized color palettes; color cycling available in 8 bit mode with Quick Draw mode.

Real-time 3-D FFT (left, right, coherence and relative coherence), raw wave, sphere frequency and six brain wave switch in one OpenGL display.

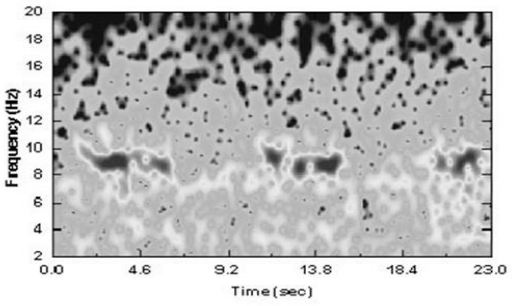

Fig. 1:

IV. Test Results Comparing Driver Accura

1. Able-bodied subjects using imaginary movements could attain equal or better control accuracies than able-bodied subjects using real movements.
2. Subjects demonstrated activation accuracies in the range *of* 70-82% with false activations below *2%.*
3. Accuracies using actual finger movements were observed in the range 36-83%

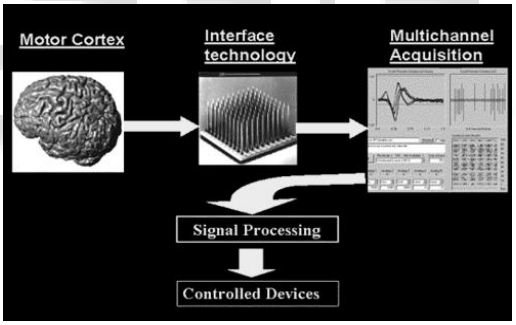

Fig . 2: Brain-to- Machine Mechanism

The principle behind the whole mechanism is that the impulse of the human brain can be tracked and

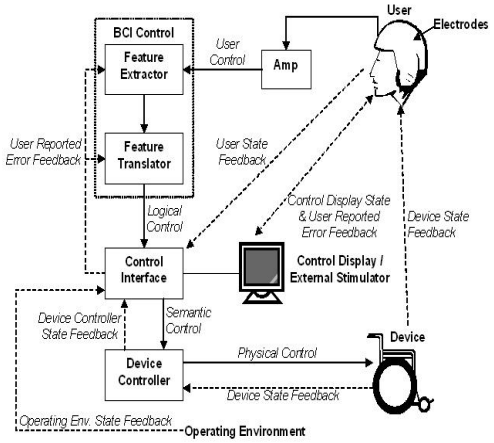

Fig .3 : Electromechanical Control Unit

even decoded. These motor neurons carry the signal to the physical components such as hands or legs. By

observing the sensory neurons we can monitor the eye movement of the driver. As the eye moves, the cursor on the screen also moves and is also brightened when the driver concentrates on one particular point in his environment. The sensors, which are placed at the front and rear ends of the car, send a live feedback of the environment to the computer.

V. AUTOMATIC SECURITY SYSTEM

The EEG of the driver is monitored continually. When it drops less than 4 Hz then the driver is in an unstable state. A message is given to the driver for confirmation to continue the drive. A confirmed reply activates the program automatic drive. The computer prompts the driver for the destination before the drive.

VI. AUTOMATIC NAVIGATION SYSTEM

As the computer is based on artificial intelligence it automatically monitors every route the car travels and stores it in its map database for future use. The map database is analyzed and the shortest route to the destination is chosen. With traffic monitoring system provided by *xm satellite radio* the computer drives the car automatically. *Video and anti-collision sensors* mainly assist this drive by providing continuous live feed of the environment up to *180 m*, which is sufficient for the purpose.

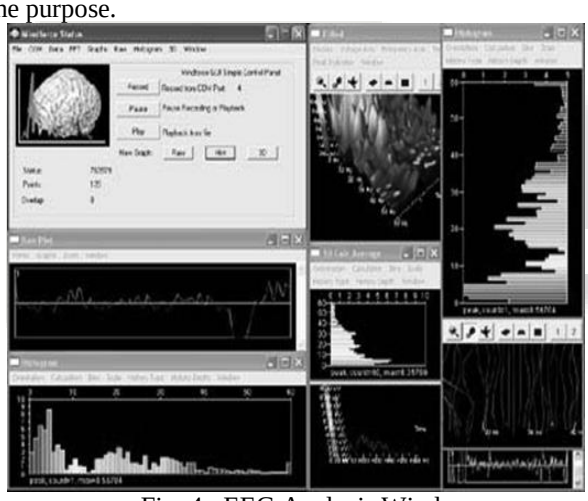

Fig .4 : EEG Analysis Window

VII. CONCLUSION

When the above requirements are satisfied and if this car becomes cost effective then we shall witness a revolutionary change in the society where the demarcation between the abler and the disabled vanishes. Thus the integration of bioelectronics with automotive systems is essential to develop efficient and

REFERENCE

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