AN INNOVATIVE MIND CONTROLLED SIMULATED DRONE

Aarti Padwal , Prajakta Waje , Rutuja Chaskar , Umesh Pawar, Prof. Parth Sagar, Prof. Munmun Bhagat, Prof. Manisha Desai

Department Of Computer Engineering, RMD Sinhgad School Of Engineering, Warje

Abstract- Imagine a future where we can move anything with essentially our cerebrum. The psyche bestows through electrical sign and this is what empowers us to interface the cerebrum to electronic contraptions. Every advancement of an individual is started by the neurons in the brain. With the right gadgets and continuous movements in both personality imaging developments and scholarly neuroscience, it is possible to scrutinize and record these of methodology. This has provoked the rapidly creating field of cerebrum PC interfaces (BCI). BCIs are systems that can avoid standard channels of correspondence (i.e., muscles and considerations) to give undeviated correspondence and control between the human cerebrum and physical devices by deciphering different instances of mind activity into headings dynamically. The BCI even makes unblessed people use contraptions and applications through their mental activities. People who are encountering loss of movement can talk with the help of these new improvements. Stephen Hawkings is a notable model who utilizes Swift key's language model/perceptive development which let others to fathom about him. In this paper we are building pragmatic machine and the key thought of this, is to allow anyone to float the robot with his/her concentration or reflection level. The machine can be used from little applications in games like robot running up to colossal applications like military battling. It tackles the possibility of Electroencephalogram (EEG). EEG is in a general sense an approach which is used to track and records mind wave plans. The EEG sign are gotten from customer's cerebrum activity using EEG sensor which is determined to the customer's forehead. The coasting of machine is then picked subject to the method signal.

Keywords - Vision for Graphics, EEG, Self-supervised learning.

I. INTRODUCTION

1.1 Background

The paper displays an approach to control rambles utilizing an electroencephalography (EEG) signal. Brain Computer Interface (BCI) frameworks catch the cerebrum movement of a client and enable the client to control an article. Grown at first for Military purposes BCI frameworks have immediately spread to different fields, for example, prescription, excitement, and security. Automatons, then again, are rapidly spreading in their usefulness and utilizations running from kids toys to military observation, photography and so forth. A framework was created which controls a parrot mambo ramble dependent on the client input taken utilizing a Neuro Sky Mind wave versatile headset. The framework dispenses with the requirement for a different handheld controller or a voice-based controller hence can be utilized for different purposes like military reconnaissance, medicinal help or recreational exercises.

1.2 Motivation

- The normal BCI framework includes highlights like sign procurement, information handling, include extraction and so on.
- Present gadgets that have been created and being utilized in the business record electrical driving forces produced from the cerebrum.
- The EEG sensor gathers the electrical sign and not genuine musings to make an interpretation of mind action enthusiastically. This sensor digitizes and enhances crude simple cerebrum sign to convey brief contributions to gadgets running wellbeing and health, instructive and inquire about applications.

1.3 Problem Definition

- To control a drone with BRAIN thinking using EEG for real time implementation.

1.4 Objective

- Make a system for sufficiently efficient generation of movement EEG data.
- Make datasets for at least two test subjects
- Find features of the data that are fit to distinguish EEG movements.
- Find a machine learning structure that, combined with these features, can distinguish movements.
- Design simulated a drone controller based on the real-time predictions from the classifier.
- Optimize the machine learning structure and selected features based on accuracy and energy efficiency.

II . LITERATURE SURVEY

[1] Husnaini Azmy a, Norlaili Mat Safria "EEG Based BCI Using Visual Imagery Task for Robot Control ". Jurnal Teknologi.

Brain-computer interface combining eye saccade two electrode EEG signals and voice cues to improve the manoeuvrability of wheelchair. A two electrode EEG system combining eye movement classification and a voice-menu. Eye movements are used to access a voice menu giving voice cues, which is proposed used in a system to control several things such as wheelchairs, TV, smart lights and smart doors. There are in total four classes: Looking straight, looking to the right, looking to the left and blinking. Feature extraction is done with a method called Independent Component Analysis (ICA), while classification is performed with two machine learning algorithms: Support Vector Machine (SVM) and K-Nearest Neighbours (KNN).

[2] A. Mani Maran1 and S. Saravanan2 "Artificial Neural Networks (ANNs) for EEG Purging using Wavelet Analysis". International Journal of Electronics and Communication Engineering.

Low-Complexity EEG-Based Eye Movement Classification Using Extended Moving Difference Filter and Pulse Width Demodulation. This paper presents a low-complexity eye-classification scheme using a self-made algorithm instead of machine learning. The directions classified are right-glancing, left-glancing, up-glancing and down-glancing. The electrode placements used are F7 and F8 for right and left glances, while AF3 and AF4 are used for up and down glances. A low complexity Extended Moving Difference filter is used as edge detection, with Pulse Width Modulation (PWM) and demodulation used to differentiate between the movements and blinks.

[3] R.J. Croft, R.J. Barry "Removal of ocular artifact from the EEG". Neurophysiol Clion2000.

Eye movements as information markers in EEG data. This paper presents a way to classify the eye movements up, left, right and down by using 19 channels. Normalization is performed to remove the DC offset present in the electrodes, and Fast Fourier Transform (FFT) is used on the normalized signal to exclude frequencies outside the $0 - 42$ Hz range. A total of 78 features are presented based on four different properties.

[4] Jigar D. Shah, M. S. Panse, "EEG PURGING USING LABVIEW BASED WAVELET ANALYSIS''. NCCI 2010.

An autoregressive Neural Network for Recognition of Eye Commands in an EEG-Controlled Wheelchair. This paper presents a system using an Auto Regression (AR) model with a neural network to distinguish looking straight ahead, blinking, looking to the left and right. Data was recorded through 3 channels (Fp1, F7, F8) and an AR model of second order was used where two coefficients were calculated for each channel resulting in a total of 6 features.

[5] K.-E. A rze´n, M. Ohlin, A. Cervin, P. Alriksson, D. Henriksson. "Holistic Simulation of Mobile Robot and Sensor Network Applications Using TrueTime". Proceedings of the European Control Conference 2007.

III. EXISTING SYSTEM APPROACH

The issue of existing frameworks is that, the assignment of processing the verification for respectability look at of information is conveyed by server who is likewise liable for putting away colossal measure of client's information. In this manner they are expanding the weight of capacity just as undertaking of confirmation producing on the server side. There is a need to propose a framework which doesn't build the heap on server side.

IV. PROPOSED SYSTEM APPROACH

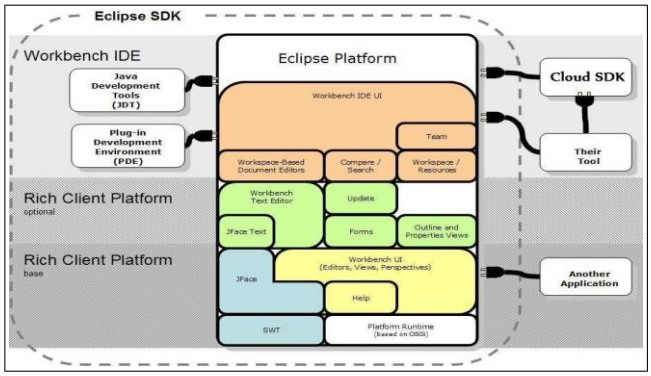

Fig.1 System Architecture Diagram of Proposed System

A description of the program architecture is presented. Subsystem design or Block diagram, Package Diagram, Deployment diagram with description is to be presented.

V. CONCLUTION

Brain activated Drone control framework which can fill in as a stage to explore a connection between complex unmanned robot practices and human mental exercises. This is the original thought of controlling robots by mapping no concurrently elevated level mental directions into a limited state machine. This machine is a key element for the proficient control of the portable robot. This sort of New research lines are exceptionally encouraging so as to determine the

distinctive open issues which are not sufficiently fathomed with momentum methods.

VI. REFERENCES

[1] Husnaini Azmy a, Norlaili Mat Safria, "EEG Based BCI Using Visual Imagery Task for Robot Control ". Jurnal Teknologi.

[2] A. Mani Maran1 and S. Saravanan2, "Artificial Neural Networks (ANNs) for EEG Purging using Wavelet Analysis".International Journal of Electronics and Communication Engineering.

[3] R.J.Croft, R.J.Barry, "Removal of ocular artifact from the EEG". Neurophysiol Clion2000.

[4] Jigar D. Shah, M. S. Panse, "EEG PURGING USING LABVIEW BASED WAVELET ANALYSIS''. NCCI 2010.

[5] Christian J Bell, Pradeep Shenoy, Rawichote Chalodhorn and Rajesh P N Rao., "Control of a humanoid robot by a noninvasive brain–computer interface in humans". JOURNAL OF NEURAL ENGINEERING.