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Implementation of Geusture Keyboard Using Machine Learning

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ABSTRACT: This project propose a handy keyboard that is used to type in character by recognizing hand gesture keyboard are currently the most universally accepted computer input device .Theymany be wired, wireless ,or virtual , but the chance are that you are within a few centimetre of a keyboard right now. In this project , we describe aptlynamed the gesture keyboard which as the name suggest converts gesture into keystrokes. We built a prototype from an ardino and an accelerometer which conceptually resembles writing in Palm’s old Graffiti, though this version is performed in mid-air with a handheld instead of a little square at the bottom of an LCD screen.We can also operate wireless with a Bluetooth module and battery . Gesture keyboard sending signals to the computer , together with a python library using scikit-learn’s SVM (support vector machine) algorithm the system captures motion and transform them into character that appear on screen.

I.INDRODUCTION

When talking in person , you can express meaning using facial expression , and your hands . usually this acts to add emphasis to a statement or perhaps to point out a certain object , but wht if you could actually type letters based on how you hands move ?

“Gesture keyboard” does just this , using an Arduino pro micro , an MPU-6050 accelerometer, and an HC-06 Bluetooth module for sending signals to his laptop. Apython library using scikit-learn’s SVM (support vectormachine) algorithm then translates the motion

II.LITERATURE SURVEY

Hasan [17] applied multivariate Gaussian distribution to recognize hand gestures using non-geometric feature. The input hand image is segmented using two different method [18];skin color based segmentation by applying HSV color model and clustering based thresholding techniques [18]. Some operation are performed to capture the shape of the hand to extract hand feature; the modified direction Analysis Algorithm are adopted to find a relationship between statistical parameters (variance and covariance) [17] frOm the data , and used to compute object (hand) slope and trend [17] by finding the direction of the hand gesture [17]. Kulkarni [31] recognize static posture of American sign language using neural networks algorithm. The input image are converted into HSV color model , resized into 80x64 and some image preprocessing operation are applied to segment the hand [31]from a uniform backward[31],features are extracted using histogram technique and Hough algorithm.

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III. SYSTEM DESIGN

Objective: To develop a low-cost intelligent gestures keyboard that is used to type the content using our gestures and motion.

A. SYSTEM ARCHITECTURE

The system consists of the following modules: Arduino pro mini, MPU-6050 as an accelerometer, HC-05 as Bluetooth, push buttons, and an LED.

Arduino Pro Mini

Arduino Pro Mini is an ATmega168 based microcontroller board. The board comes with a built-in Arduino bootloader. It has fourteen digital input/output pins (which 6 can be used as PWM outputs), eight analog inputs, an on-board resonator, a reset button, and holds or mounting pin headers.

MPU 6050 accelerometer

The MPU 6050 is a 6 DOF (degree of freedom) or 6-axis IMU sensor, which means that it gives six values as output: 3 values from the accelerometer and three from the gyroscope. It is a sensor based on MEMS.

HC-05 Bluetooth

HC-05 module is an easy-to-use Bluetooth SPP (serial port protocol) module, designed for transparent wireless serial connection. Setup serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (enhanced Data rate) modulation with complete 2.4 GHz radio transceiver and baseband.

• Pushbutton

A push-button or simply button is a simple switch mechanism for controlling some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastics or metal.

• LED

A light-emitting diode is a semiconductor light source that emits light when current flows through it. Electrons in a semiconductor recombine with electron holes, releasing energy in the form

of photons, readings into characters that appear on the screen. Keyboards are currently the most universally accepted computer input devices. They may be wired, wireless, or virtual, but the chances are that you're within a few centimeters of a keyboard right now. We built a prototype from an Arduino and an accelerometer which conceptually resembles writing in palm's old graffiti, though this version is performed in mid-air with a handheld instead of a little square at the bottom of an LCD screen. He can also operate wirelessly with a Bluetooth module and battery. The task of the Arduino is to take data from the accelerometer and feed it to the computer whenever a 12mm switch is pressed. Each letter is individually learned by his Python code and scikit-learn's support vector machine. There's nothing holding a user back from giving single-letter commands to your favorite program. For example, it would be possible to give a thumbs-up in meatspace when you want to upvote or covering your ears could mute the audio.

We created a new input device aptly named the gesture keyboard which, as the name suggests, converts gestures into keystrokes thanks to a little Arduino programming.

Created using an Arduino Pro Mini, an MPU-6050 accelerometer, and an HC-05 Bluetooth module for sending signals to his laptop, together with a Python library using scikit-learn's SVM (support vector machine) algorithm, the system captures motion and transforms them into characters that appear on screen.

When someone presses the first button, the module starts to send accelerometer data to the PC. When the button is released, the transmission stops. The entire module gets powered by using a power bank.

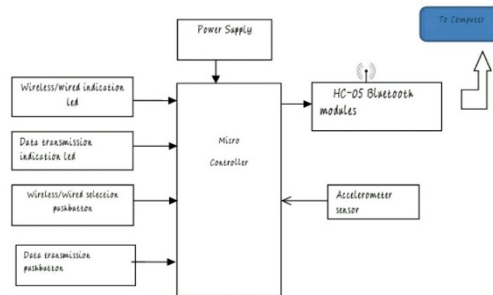
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B. DESIGN METHODOLOGY

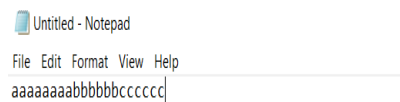


C. SYSTEM WORKING

Gesture keyboard is a library used to convert accelerometer data to sequence of character and sentences .In order to get the accelerometer data ,I build a module using an Arduino ,a MPU6050 as accelerometer and a HC-05 to enable Bluetooth communication .The entire module gets powered by using a power bank .When someone press the first button it is released ,the transmission stops.

IV. RESULTS

- The message is displayed on the system window.
It is displayed on notepad as follow



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