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Hand Gesture Interface for PC Control and SMS Notification Using MEMS Sensors

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Abstract : In an epoch of expanding human-machine interaction, the development of innovative interfaces that bridge the gap between physical gestures and digital control has gained significant momentum. This study introduces a distinct solution that leverages a combination of MEMS (Micro-Electro-Mechanical Systems) sensors, an Arduino Mega microcontroller, and a PC to create a hand gesture interface for PC control and SMS notification. The core of the system is an ADXL335 MEMS accelerometer sensor integrated with an Arduino Mega, which communicates with a PC via a USB cable. The ADXL335 provides real-time acceleration data, which is processed by the Arduino to detect specific hand gestures. These gestures, such as left, right, up, down, or custom patterns, are interpreted by the Arduino, and corresponding actions are triggered. In the context of SMS notifications, when a gesture indicative of a new SMS is recognized, the Arduino relays this information to the PC through the serial connection. The PC application, designed to monitor the Arduino's serial port, displays these SMS notifications in the serial monitor. This study offers an engaging and interactive means of interfacing with a PC by translating hand gestures into meaningful actions, opening up opportunities for intuitive computer control. Furthermore, the integration of SMS notifications adds a practical dimension to the system, notifying users of incoming messages as they interact with their computers. The use of MEMS sensors, Arduino, and serial communication serves as a promising foundation for expanding the capabilities of gesture-based control systems.

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