A Real-Time Accelerometer based Writing & Gesture Recognition Technology

The adoption of small mobile devices is becoming more widespread today. One of the major problems with these devices is obtaining inputs. Traditional methods of obtaining inputs such as keyboard have limitations in terms of speed, accuracy (touch screen keyboard), size of keys (too small to press), etc. Besides the keyboard, a pen stylus can be also used to obtain inputs. However, the stylus has its own sets of issues. They range from the inaccuracy of handwriting recognition through image processing (lack of time information), and the stylus is easily lost. Making small intricate hand movements using either the keyboard or stylus may aggravate certain conditions such as Carpal tunnel and arthritis. Today, there are still no popular devices that track human gesture movement for daily communication purposes. The goal of our project is to make use of a well developed hardware device, the accelerometer, to recognize hand gesture and alphanumeric characters. Currently, accelerometers are present in a multitude of electronic devices such as the Wii controller which is going to be the input device of our system.

Main Features:
- Recognize English alphabets, Arabic numerals and simple gestures
- Newly discovered Max-Min bound Algorithm that improves recognition rates up to 20%
- Requires only 5 training set for each gesture
- Real-Time character recognition system
- Training set works on different users
- Train & Write on our flexible and newly designed Java based GUI
- Edit written characters on our easy to use Mini Text Editor