VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELGAUM-590010

A REPORT ON PROJECT WORK

"DEVELOPMENT OF PROSTHETIC LIMB CONTROL BY TRACING MUSCLE SIGNALS"

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ABSTRACT

The amazing up thrust of the applications of electronics to the field of medicine has promised a wide range of solutions to the problems relating to biological and physiological impediments. Accidents results more frequently in the loss of either hands or legs which are the most useful parts of the human body. The project finds its main applications for the patients who have lost their hand below the elbow.

Muscles contract or relax producing electrical currents due to the difference of action potential. This electrical effect can be measured by use of surface electrode. The representation of the action potential is called EMG. The electrodes used are called EMG electrodes. The signal obtained is very week and thus a series of amplifier and filters are used to obtain and process the signal.

The filtered and amplified signal is fed to a microcontroller as an input. A gravity sensor accelerometer senses the relative position of the arm and provides corresponding voltages in the X-axis and the Y-axis which is fed as an second interrupt to the microcontroller. The microcontroller drives two motors guided by a line driver to obtain the wrist action. The feed from the EMG signal is used to drive a third motor to obtain the finger action. Thus a low cost prosthetic arm can be developed facilitating minimal actions of gripping and grasping an object.