## ABSTRACT

Electrooculogram (EOG) is an electrical potential between the cornea to the retina of the eye due to a change in position of the eyeball. Electric potential is derived from transport activities of chemical elements in the cell such that the potential difference occurs between the inside of the cell to the outside. With multiple electrodes, the electric potential can be detected so that the amount can be utilized for a variety of needs, one of which is the input signal to a system. The system will be designed in this final project is a system 'Intelligent Wheel Chair' which will operate under the instruction of eye movements or gestures.

This system will integrate the amplifier circuit, filter circuit, microcontroller, programming, and hardware (DC motor driver). Results of EOG signal has a range of eye position changes between 50-3500 $\mu V$ it must be strengthened first before you can read by the microcontroller. Reinforcement signal then results in a filter with a Low Pass Filter (LPF) for EOG signal has a frequency range between 0-10 Hz. With facilities Analog to Digital Converter (ADC) on the microcontroller, the signal is converted into digital then correlated with the output of a program based on embedded microcontrollers. Controller Proportional Integral Derivative (PID) which is implanted into the microcontroller intended for the system to achieve optimum stability according to the criteria desired.

**Keywords** : Electrooculogram (EOG), Low Pass Filter (LPF), Microcontroller, Analog to Digital Converter (ADC), Proportional Integral Derivative (PID).

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Perancangan dan Implementasi Kursi Roda Cerdas Berbasis Mikrokontroler dengan Sinyal Masukan *Electrooculogram* (EOG) dan Pengendali *Proportional Integral Derivative* (PID)