

## ABSTRACT

Modernization of wheelchair is able to provide user to solve any limitation and problem conduct on their ability. The powered wheelchair makes the user move like normal people. One of control method of automation on its movement is determined by its rotation and velocity in the movement. Respond control of rotation and velocity has to keep on stable zone consistently base on user command. The controller has to be flexible. So, it is flexible to eliminate unconditional track the plant of the wheelchair.

The Final Project designs a system that able to support the plant of powered wheelchair. The design uses DC motor as the moving rotor of the wheelchair. The controller of the DC motor uses method of Proportional, Integral, and Derivative or known as PID. Then, the input signal uses speech of the user as its command. The block input execute with speech recognition model EasyVR. The module is integrated with the Arduino UNO for next execution process of the command.

The design of the encoder and the regulator also is in good performances and runs fine on the system. In general, speech commands have executed properly. Right and left wheels spin the same approach when given  $K_p = 1.140$ ,  $K_i = 0.585$  and  $K_d = 0.555$  for the right DC motor and  $K_p = 1.227$ ,  $K_i = 0.577$  and  $K_d = 0.653$  for DC motor left

Keyword: Proportional, Integral, and Derivative (PID), Motor DC, EasyVR, Arduino UNO