Pseudo – code

Interruption PID Function ()

/* Measurement of the output */

$y_n \leftarrow \mathrm{ADC}$ (Analog to Digital Converter)

/* error */

$\varepsilon_n \leftarrow w_n - y_n$

/* PID Controller parameters */

$p_n \leftarrow K_p \varepsilon_n$

$i_n \leftarrow i_{n-1} + K_i \varepsilon_n$

$d_n \leftarrow K_d(\varepsilon_n - \varepsilon_{n-1})$

/* Command signal */

$v_n \leftarrow p_n + i_n + d_n$

/* System (DC motor) */

If ($v_n \leq U_{inf}$) **Then**

    $u_n \leftarrow U_{inf}$ /* real command signal saturated to its low state

Else

    If ($v_n \geq U_{sup}$) **Then**

        $u_n \leftarrow U_{sup}$ /* real command signal saturated to its high state

    Else

        $u_n \leftarrow v_n$ /* real command signal equal to PID command signal

    End if

End if

/* Output of the command */

$\mathrm{ADC} \leftarrow u_n$

/* Integral parameter */

$i_n \leftarrow i_n + u_n - v_n$

/* Update of thee variables

$\varepsilon_{n-1} \leftarrow \varepsilon_n$

$i_{n-1} \leftarrow i_n$

End