

PID Control Summary

Corrado Santoro

ARSLAB - Autonomous and Robotic Systems Laboratory

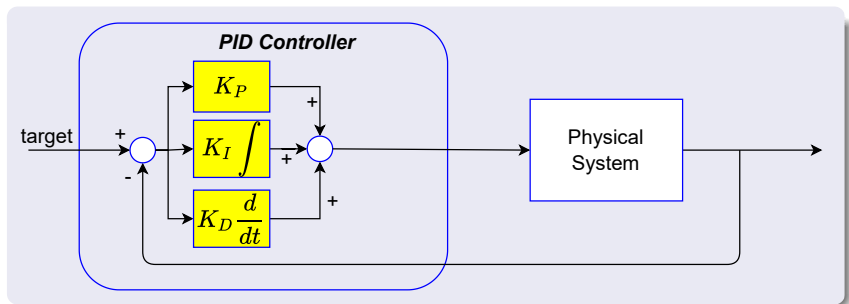
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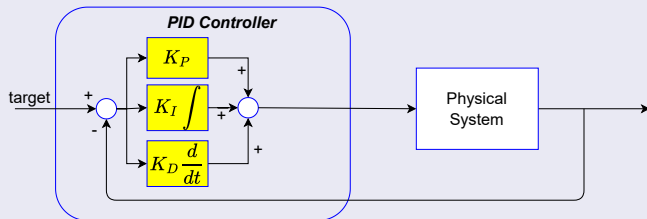


Robotic Systems

The Proportional-Integral-Derivative Controller



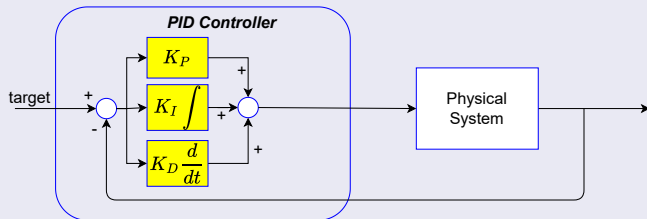
The Proportional-Integral-Derivative Controller



The Proportional Action

- Generates an action directly **proportional** to **error**
- Generates an **instantaneous** action that **does not remain in the time**

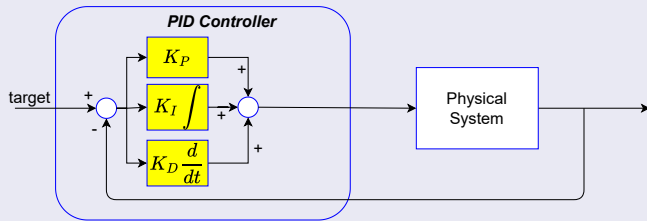
The Proportional-Integral-Derivative Controller



The Integral Action

- **Accumulates** the error and generates an action directly **proportional** to this **accumulation**
- Generates a **delayed** action that has an effect only when the accumulated value is **enough**
- Generates an action that **remains in the time**

The Proportional-Integral-Derivative Controller



The Derivative Action

- **Identifies** the **trend** of the error and generates an action directly **proportional** to the derivative
- When the error **decreases** the control action is **reduced**
- When the error **increases** the control action is **incremented**

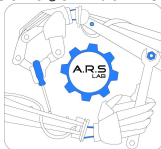
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