

PIDController

```

-private Kp: double
-private Ki: double
-private Kd: double
-private T:double
-private sumOfPositionError:double
-Private sumOfVelocityError:double
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-public computeNewVelocity():double
-public computeNewPosition():double
    
```

computeNewPosition

$$v_{cmd} = K_p \cdot e_{position} + K_i \cdot \sum_{t=0}^1 e_{position}(t) + \frac{K_d}{T} \cdot e_{position}$$

$$e_{position} = p_{targetSetPoint} - p_{currentPosition}$$

computeNewVelocity

$$v_{new} = K_p \cdot e_{velocity} + K_i \cdot \sum_{t=0}^1 e_{velocity}(t) + \frac{K_d}{T} \cdot e_{velocity}$$

$$e_{velocity} = v_{cmd} - v_{actual}$$

```

if ( vnew > 2000 )
{ vnew = 2000 }
    
```