

Stato

1. Utmx
2. Utmy
3. Vlon
4. Alon
5. Vlat
6. Alat
7. Heading
8. YawRate
9. Wheel Angle

Acquisizioni

1. UTMx
2. UTM_y
3. Vlon
4. Alon
5. Vlat
6. Heading
7. YawRate
8. SteeringAngle

Modello di Aggiornamento

$$x_{k+1} = x_k + T(-Vlon_k * \sin(yaw_k) - Vlat_k * \cos(yaw_k))$$

$$y_{k+1} = y_k + T(Vlon_k * \cos(yaw_k) - Vlat_k * \sin(yaw_k))$$

$$Vlon_{k+1} = Vlon_k + T * Alon_k$$

$$Alon_{k+1} = Alon_k$$

$$Vlat_{k+1} = Vlat_k + T * Alat_k$$

$$Alat_{k+1} = Alat_k + T\left(-\frac{Cf + Cr}{m * Vlon_k} Vlat_k - \left(Vlon_k + \frac{CfIf - CrIr}{m * Vlon_k}\right) YR_k + \frac{Cf}{m} \varphi_k\right)$$

$$yaw_{k+1} = yaw_k + T * YR_k$$

$$YR_{k+1} = YR_k + T\left(-\frac{CfIf - CrIr}{Iz * Vlon_k} Vlat_k - \frac{CfIf^2 - CrIr^2}{Iz * Vlon_k} YR_k + \frac{CfIf}{Iz} \varphi_k\right)$$

$$\varphi_{k+1} = \varphi_k$$