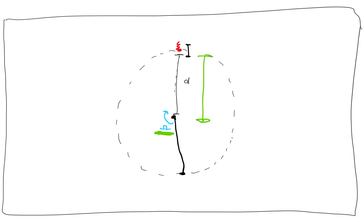
Notes

Thursday 20 February 2025 2:15 pm

NOTES:

- Ego-motion compensation
  - ↳ Feed forward filter to remove ego-motion events (from rotation)
- 2 weeks anti-flicker paper
- How it will be implemented
  - ↳ FIFO Buffers
  - ↳ Considerations for hardware implementation



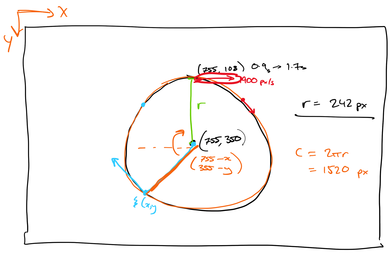
$e_k = (\xi_k, \sigma_k, t_k)$

↳ $\xi_k = (x, y)$

σ_k = polarity

t_k = timestamp (μs)

$\xi^+ = \xi + (\omega \Omega \times \xi_k)$ dt



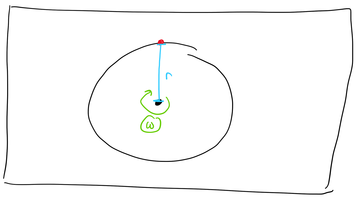
$\omega = \frac{v}{r}$

$v = \frac{C}{\Delta t}$

$= \frac{1520}{0.8} \simeq 1900$ px/s

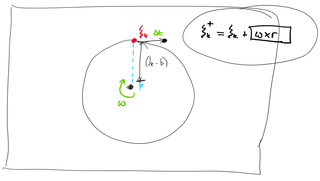
$\Rightarrow$

$\omega r = V$



$\omega = X \frac{rad_s}{s}$

→ $\frac{2\pi \ rad_s}{2\pi}$

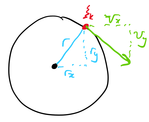


$x_{k+1} = x_k + \Delta t v_k$

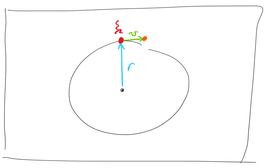
(v_x, v_y, v_z)

$\xi_k^+ = \xi_k + \Delta t (\omega \times r)$

$\begin{pmatrix} x \\ y \end{pmatrix} \quad \begin{pmatrix} x \\ y \end{pmatrix} \quad 1 \quad \begin{pmatrix} 0 \\ 0 \\ 2.5\pi \end{pmatrix} \begin{pmatrix} r_x \\ r_y \\ 0 \end{pmatrix}$



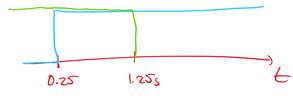
$\rightarrow (v_x, v_y, 0)$

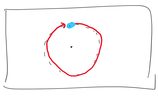


$v = r \cdot \omega$

$\xi_k^+ = \xi_k + \Delta t (\omega r)$

↳ rad/s



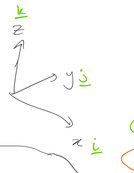


$t = 0_s \rightarrow t = 0.2_s$

$t = x_s \rightarrow t = x + 0.2_s$

$x = 1$

Add all events at each pixel

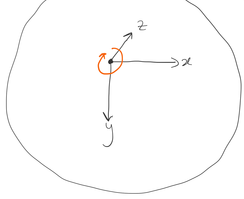


$\omega =$ rads/s

↳ $\frac{2\pi}{0.8s} =$

$\omega = 2.5\pi$ rad/s

$\omega \Rightarrow 2.5\pi \ k$



Original Events

Predicted Events