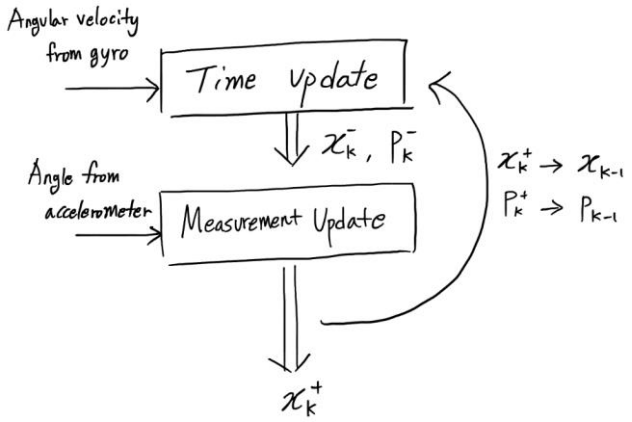
2017 년 5 월 29 일 월요일
오후 2:42

칼만필터 Kalman filter

	상태방정식
	$$\underset{x}{\begin{bmatrix}\phi\\ \beta\end{bmatrix}_{k+1}} = \underset{A}{\begin{bmatrix}1 & -dt\\ 0 & 1\end{bmatrix}_k}\begin{bmatrix}\phi\\ \beta\end{bmatrix}_k + \underset{B}{\begin{bmatrix}dt\\ 0\end{bmatrix}}\omega_x + w_k$$ $$\underset{y}{\phi_{k+1}} = \underset{H}{[1 \quad 0]}\underset{x}{\begin{bmatrix}\phi\\ \beta\end{bmatrix}_{k+1}} + v_k$$ http://ieeexplore.ieee.org/abstract/document/6842338/
	칼만필터 구조
	Time update $$\boldsymbol{x}_k^- = \boldsymbol{A}_{k-1}\boldsymbol{x}_{k-1} + \boldsymbol{B}_{k-1}\boldsymbol{u}_{k-1}$$ $$\boldsymbol{P}_k^- = \boldsymbol{A}_{k-1}\boldsymbol{P}_{k-1}\boldsymbol{A}_{k-1}^T + \boldsymbol{Q}_k$$ Measurement update $$\boldsymbol{S}_k = \boldsymbol{H}_k\boldsymbol{P}_k^-\boldsymbol{H}_k^T + \boldsymbol{R}_k$$ $$\boldsymbol{K}_k = \boldsymbol{P}_k^-\boldsymbol{H}_h^T\boldsymbol{S}_k^{-1}$$ $$\boldsymbol{x}_k^+ = \boldsymbol{x}_k^- + \boldsymbol{K}_k\left(\boldsymbol{y}_k - \boldsymbol{H}_k\boldsymbol{x}_k^-\right)$$ $$\boldsymbol{P}_k^+ = (\boldsymbol{I} - \boldsymbol{K}_k\boldsymbol{H}_k)\boldsymbol{P}_k^-$$
	참고 자료



	http://biosport.ucdavis.edu/lab-meetings/KalmanFilterPresentation
	실험영상 1 축
	https://www.youtube.com/watch?v=6JQQatpDG3s