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NOMENCLATURE

a_b.	The bias on acceleration (in the body frame)
$\mathbf{H}k$:	Matrix connect the states to the to the measurement
K:	Kalman gain,
K_{Pvicon} :	The Kalman gains related to the x,y,z position measured by the Vicon-MX system.
K_{vic}:	The Kalman gains related to quaternion attitude measured by the Vicon-MX system.
k and $k-1$:	The indices indicate the current sample and the previous sample respectively
P:	Position in earth frame,
$\mathbf{P}k\|k{-}1$:	Error covaiance from k-1 to k
P_k	The estimation covariance,
q:	The orientation represented by the quaternion
$\mathbf{Q}k$:	Noise covariance matrix
X:	The state matrix,
$\hat{x}_k$:	The priori estimates of the state vector
$\hat{\boldsymbol{x}}_{\boldsymbol{k}}^{+}$:	The estimated state vector at the k sample
$\dot{x}_{k\|k-1}$	Residuals between the real and estimation states
V:	Translatory velocity (body frame),
Z:	The sensors outputs matrix
$\boldsymbol{Z_k}$:	Measurement matrix at *k* sample
$Z_{(f)k}$:	Fault in the measurements

Greek symbols

φ:	Rotation angle around OX axis
θ	Rotation angle around OY axis
Ψ	Rotation angle around OZ axis
[φ θ Ψ]	The Euler angles.
ω:	Angular velocity (body frame).
ω_b:	The bias on angular velocity (in the body frame)
$wk \sim \mathcal{N}(0, Qk)$	Gaussian noise with zero mean value and Qk covariance
$\Phi(X)$:	Evolution matrix of the state X
$\Phi^{[1]}(X)$:	Linearization of $\Phi(X)$.
$\overline{\mathcal{N}_{p_j}}$:	The mean value of the absolute column sum 2-norm function of the Kalman matrix.
$\Delta\overline{\mathcal{N}_{p_j}}$:	The residual function of the variation in $\overline{\mathcal{N}_{p_j}}$.

Subscripts

+ and -:	Indicate a priori or a posterior estimate respectively
($^{[1]}$)	Denotes the 1st order linear Taylor approximation of a nonlinear function.