|  |  |  |
| --- | --- | --- |
| **Base parameter source** | **Base parameter components** | **Comments** |
| Linear acceleration (*a*) | *a*x, *a*y, *a*z, *a*x/*a*z, |***a***| | Accelerometer measures acceleration of gravity as well, thus fixed attitude of the sensor on the dog’s back is necessary for replicable measurements. *a*x/*a*z is the tangent of the cranio-caudal direction relative to ground. |
| Angular velocity (*ω*) | *ω*x, *ω*y, *ω*z, |***ω***| | Fixed attitude is necessary for gyroscope as well, which measures angular velocity in body-fixed coordinate system. |
| Angular acceleration(*b*) | d*ω*x/d*t*, d*ω*y/d*t*, d*ω*z/d*t*, d|***ω***|/d*t* | Calculated as the numerical derivative of ω. |
| Dot products | ***a·b***, ***a·ω***, ***ω·b*** | Included without any special intention, but increases recognition rate slightly. |
| **Input node vector components** | **Definition (for any base parameter component *x*)** | **Comments** |
| 1st, 2nd and 3rd moments | *μ* = E[*x*] = ∑*x*/*n* *σ* = (E[(*x*–*μ*)2])1/2  *γ* = E[((*x*–*μ*)/*σ*)3] | i.e., average (mean), standard deviation, skewness |
| Extrema values | min(*x*), max(*x*), ext\_count(*x*) | Ext\_count is the total number of local minima and maxima. |
| Fast Fourier Transformation components | dc, low, mid and high part of FFT(*x*) | Low, mid and high parts are calculated on the lower half of the spectrum. The upper half is mostly empty or includes pure noise. Note that these components are similar to the generally used partial dynamic body acceleration, but FFT provides a more general context for accessing high frequency components. |