FEI-ROBO: PROMETHEUS'S PARAMETERS

As requested, a description of how the parameters in the proto were derived from the datasheets.

Motor Dynamixel XH540-W270 14.8V
- Backlash = 0.25[º] * (π/180) ≈ 0.0058 [rad] . Backlash = 0.01 [rad] [1]
- Resolution = 4096 [pulse/rev] = 12 bits encoder * $(2\pi)/(2^{12})$ ≈ 0.0015 [rad]
- MaxTorque = 12.9 [N.m] [1]
- MaxVelocity = 3.87 [rad/s] [1]
- DampingConstant = 2.92 [Ns/m] [1]
- StaticFriction = 1.49 [N.m] [1]

[1] value from https://cdn.robocup.org/hl/wp/2021/05/v-hsc_model_specification_v1.03c.pdf' appendix

Accelerometer & Gyroscope (UM7)

Both sensors were acquired from the UM7, an Attitude and Heading Reference System utilized in the real robot. The sensors utilizes 8-bit integer to store data, meaning a range of 0 to 254 of returned values.

Accelerometer (8th page)
- Dynamic Range = +/- 8 [g] * 9.80665 = +/- 78.453 [m/s²]
- Lookup Table = [-78.453   0   0
                        78.453   254   0]

Gyroscope (7th page)
- Dynamic Range = +/- 2000 [º/s] * (π/180)   = +/- 34.907 [rad/s]
- Lookup Table = [-34.907   0   0
                        34.907 254   0]

Logitech HD Webcam C920

The camera can be set up to 1920 x 1080 pixels, although by limitations imposed the recording value is set to 800 x 600 pixels.