**Gym Env for Go2**

**Install the dependencies:**

pip install gymnasium==0.29.1

**Observation Space:**

Only the observation parameters that are available in the real robot will be used. The observation parameters are given below

|  |  |  |
| --- | --- | --- |
| 1. | Base Linear Velocities: | 3 |
| 2. | Base Rotational Velocities: | 3 |
| 3. | Orientation Angles: **roll, pitch** | 2 |
| 4. | Joint Positions: | 12 |
| 5. | Joint Velocities: ​ | 12 |
| 6. | Previous Actions: at−1at−1 |  |
| 7. | Reference Velocities: forward/backward velocity (m/s), lateral (sideways) velocity (m/s), yaw rate (rad/s) | 3 |
| 8. | Reference Robot Altitude: | 1 |
|  | Total |  |

**Action Space:**

The Joint limits need to be verified. I get this table from ChatGPT. In the meantime, I am going with these.

https://genesis-world.readthedocs.io/en/latest/user\_guide/getting\_started/control\_your\_robot.html#joint-control

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Index** | **Leg** | **Joint** | **Name** | **Unitree Motor** | **Typical Range (rad)** | **Range (deg)** |
| 0 | Front Right (FR) | Hip | FR\_hip | FR\_0 | -0.5 to +0.5 | ±30° |
| 1 | Front Right | Thigh | FR\_thigh | FR\_1 | -1.0 to +2.0 | ~-60° to +120° |
| 2 | Front Right | Calf | FR\_calf | FR\_2 | -2.0 to 0.0 | -120° to 0° |
| 3 | Front Left (FL) | Hip | FL\_hip | FL\_0 | -0.5 to +0.5 | ±30° |
| 4 | Front Left | Thigh | FL\_thigh | FL\_1 | -1.0 to +2.0 | ~-60° to +120° |
| 5 | Front Left | Calf | FL\_calf | FL\_2 | -2.0 to 0.0 | -120° to 0° |
| 6 | Rear Right (RR) | Hip | RR\_hip | RR\_0 | -0.5 to +0.5 | ±30° |
| 7 | Rear Right | Thigh | RR\_thigh | RR\_1 | -1.0 to +2.0 | ~-60° to +120° |
| 8 | Rear Right | Calf | RR\_calf | RR\_2 | -2.0 to 0.0 | -120° to 0° |
| 9 | Rear Left (RL) | Hip | RL\_hip | RL\_0 | -0.5 to +0.5 | ±30° |
| 10 | Rear Left | Thigh | RL\_thigh | RL\_1 | -1.0 to +2.0 | ~-60° to +120° |
| 11 | Rear Left | Calf | RL\_calf | RL\_2 | -2.0 to 0.0 | -120° to 0° |