AntEnv Friction Report

Summary of the MuJoCo ant environment with perturbed friction values.

See here for the *source* of (most of) the metrics.

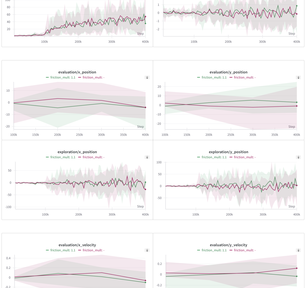
Comparison of Metrics

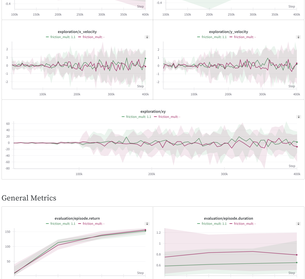
Agents were trained for 400 000 steps and evaluated for 50 episodes every 100 000 steps. Exploration was logged every 5 000 steps. The first 10 000 steps were seed steps.

Metrics for exploration are (sometimes) included in this report, as they provide a more granular look at the data.

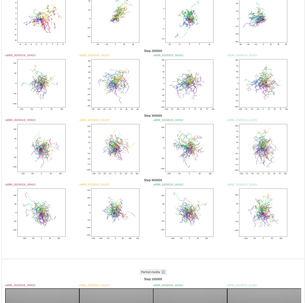
Ten runs (l. e. agents) with the default and a 10% increased friction value respectively are grouped. The graphs (typically) show the mean and min/max of the corresponding values.

Position & Velocity



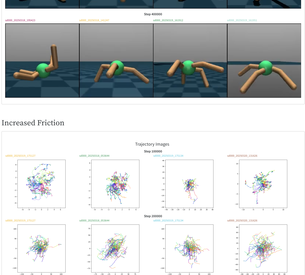


General Metrics



Less distinct metrics (between agents with different friction values).

The `reward_survive` in particular is identical and `total.timesteps` lines up almost perfectly.



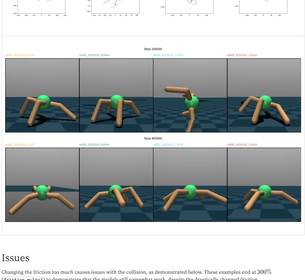
Media

Images and videos regarding the four *best* agents (ranked by `evaluation/episode_return`) for default and increased friction values respectively. More specifically:

- images of xy trajectories (from `xy` and `direction` from the evaluated `infos`) during each evaluation
- videos for the first and last evaluation (steps 100 000 and 400 000 respectively)

Here the media is created: videos, images.

Default Friction



Increased Friction

Issues

Changing the friction too much causes issues with the collision, as demonstrated below. These examples end at 300% (`friction_multi`) to demonstrate that the models still somewhat work, despite the drastically changed friction.

Nonetheless, the friction can be increased far beyond that to break the model entirely.