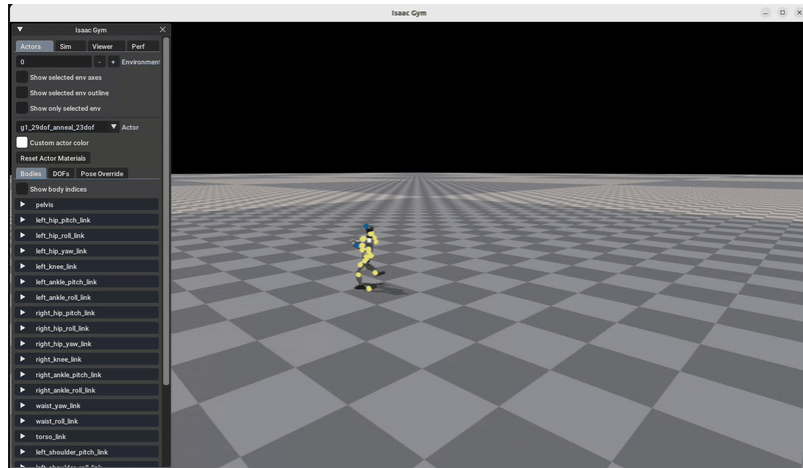


G1 Single-Leg Jump Project

A custom single-leg jumping robot project based on [ASAP](#), developed for imitation learning of single-leg jump motions using IsaacGym. This project showcases how to extend the ASAP codebase for specialised tasks.



Installation and Setup

1. Create Conda Environment

```
conda create -n hv gym python=3.8
conda activate hv gym
```

2. Install IsaacGym

Download [IsaacGym](#) and extract:

```
wget https://developer.nvidia.com/isaac-gym-preview-4
# extract to your desired path
tar -xvzf isaac-gym-preview-4
```

Install the Python API:

```
pip install -e isaacgym/python
```

Test installation:

```
python 1080_balls_of_solitude.py
```

3. Setup Environment Variables

this is for myself using

```
export
LD_LIBRARY_PATH=/home/caesar/anaconda3/envs/hvgym/lib:$LD_LIBRARY_PATH
```

- Set LD_LIBRARY_PATH:

```
export LD_LIBRARY_PATH=
</path/to/conda/envs/your_env/lib>:$LD_LIBRARY_PATH
```

4. Install Project Dependencies

```
pip install -e .
pip install -e isaac_utils
```



How to Train and Evaluate

✓ Continue Training from Checkpoint

```
python humanoidverse/train_agent.py \
+simulator=isaacgym \
+exp=motion_tracking \
+domain_rand=NO_domain_rand \
+rewards=motion_tracking/reward_motion_tracking_dm_2real \
+robot=g1/g1_29dof_anneal_23dof \
+terrain=terrain_locomotion_plane \
+obs=motion_tracking/deepmimic_a2c_nolinvel_LARGEnoise_history \
+checkpoint="logs/G1_jumps/20250426_222426-jumps1_subject5-
motion_tracking-g1_29dof_anneal_23dof/model_25700.pt" \
project_name=G1_jumps \
experiment_name=jumps1_subject5 \
num_envs=2 \
headless=False \

robot.motion.motion_file="humanoidverse/data/motions/g1_29dof/SingerLegJump
s/jumps1_subject5.pkl" \
rewards.reward_penalty_curriculum=True \
rewards.reward_penalty_degree=0.00001 \
env.config.resample_motion_when_training=False \
env.config.termination.terminate_when_motion_far=True \

env.config.termination_curriculum.terminate_when_motion_far_curriculum=True
\
```

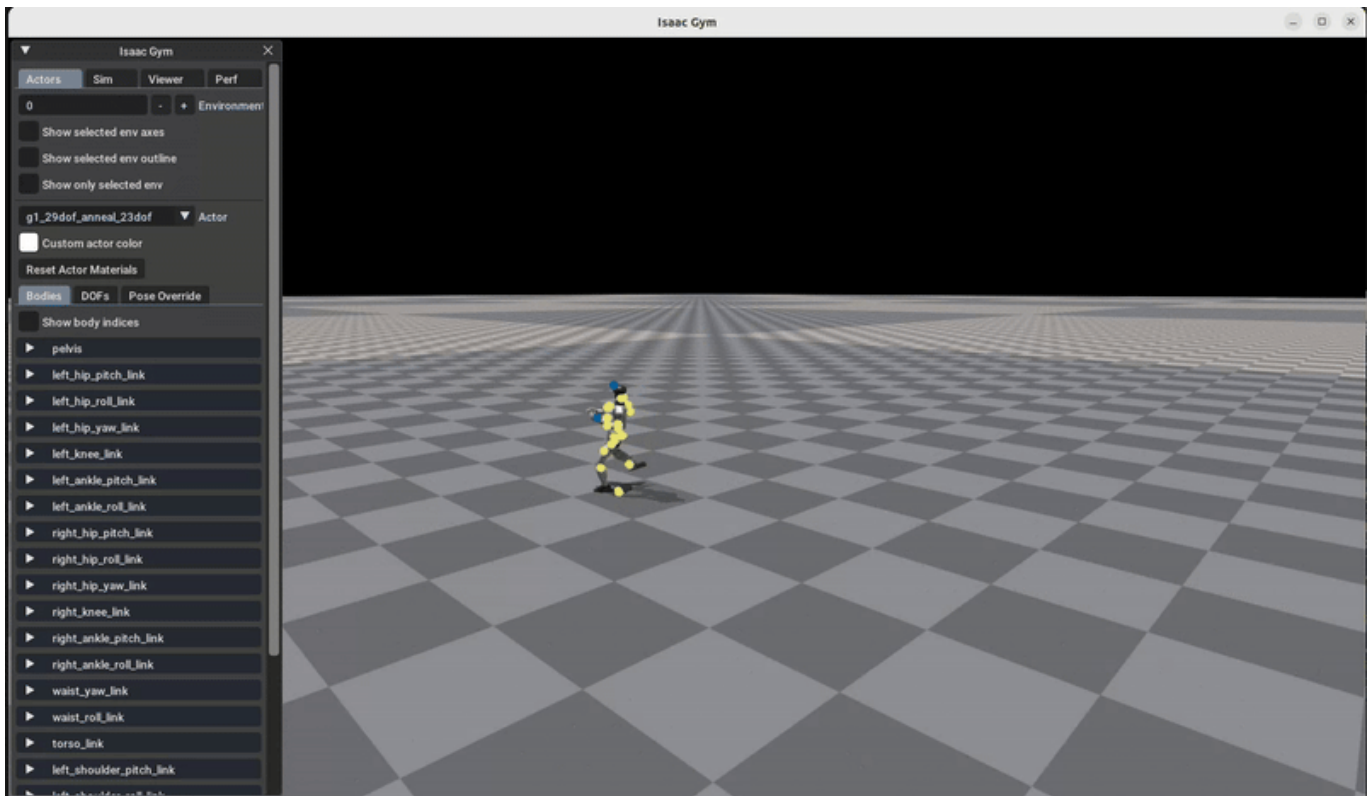
```
env.config.termination_curriculum.terminate_when_motion_far_threshold_min=0
.3 \

env.config.termination_curriculum.terminate_when_motion_far_curriculum_degree=0.000025 \
robot.asset.self_collisions=0
```

✓ Evaluate a Trained Model

```
python humanoidverse/eval_agent.py \
+checkpoint=logs/G1_jumps/20250426_222426-jumps1_subject5-motion_tracking-
g1_29dof_anneal_23dof/model_25700.pt
```

🎥 Example Result



📖 Citation

If you use this project, please cite the original ASAP paper:

```
@article{he2025asap,
  title={ASAP: Aligning Simulation and Real-World Physics for Learning Agile Humanoid Whole-Body Skills},
  author={He, Tairan and Gao, Jiawei and Xiao, Wenli and Zhang, Yuanhang and Wang, Zi and Wang, Jiashun and Luo, Zhengyi and He, Guanqi and Sobanbabu, Nikhil and Pan, Chaoyi and Yi, Zeji and Qu, Guannan and Kitani, Kris and Hodgins, Jessica and Fan, Linxi "Jim" and Zhu, Yuke and Liu,
```

```
Changliu and Shi, Guanya},  
  journal={arXiv preprint arXiv:2502.01143},  
  year={2025}  
}
```

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