

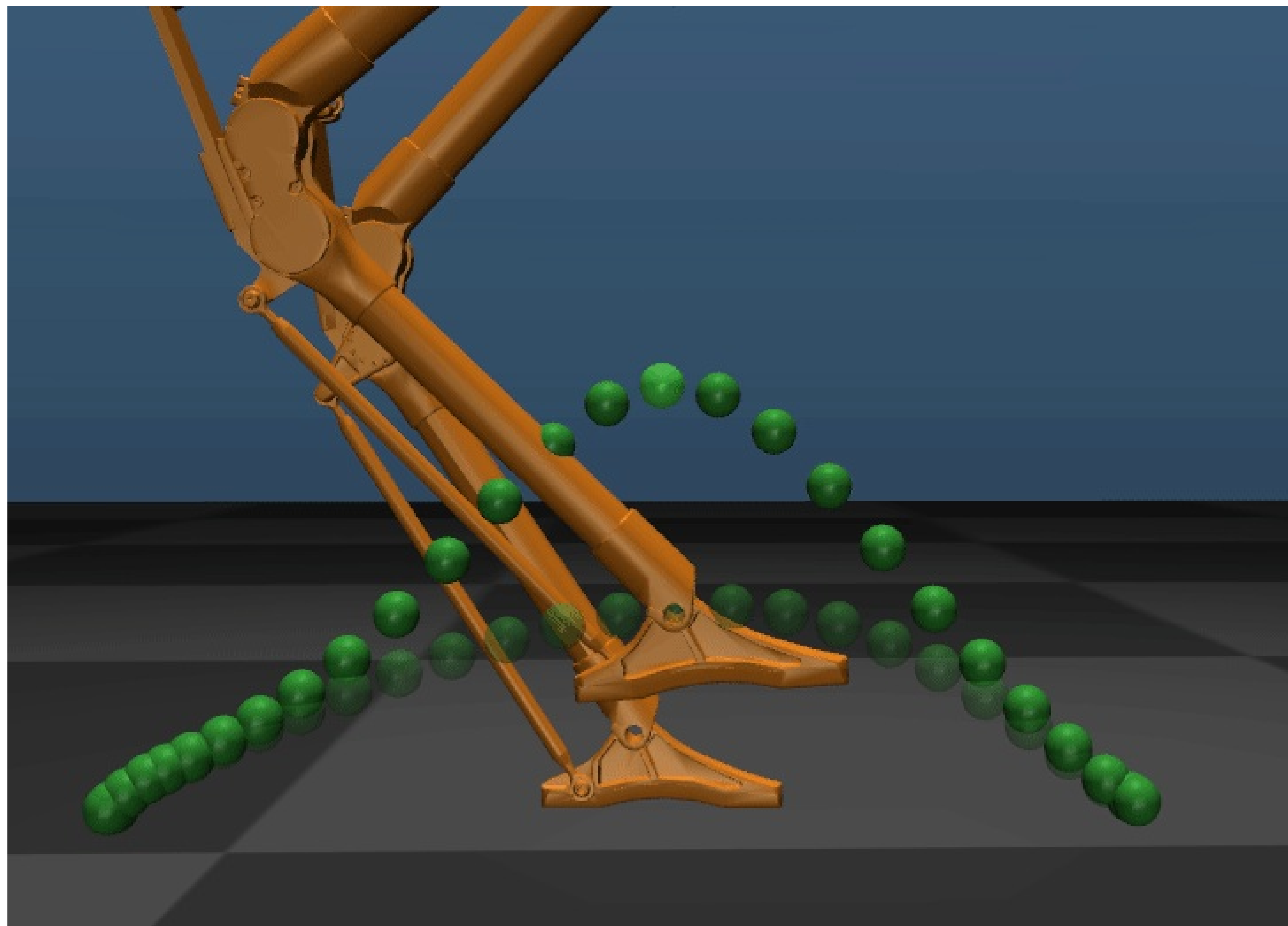
Trajectory Editor for the Bipedal Robot Cassie

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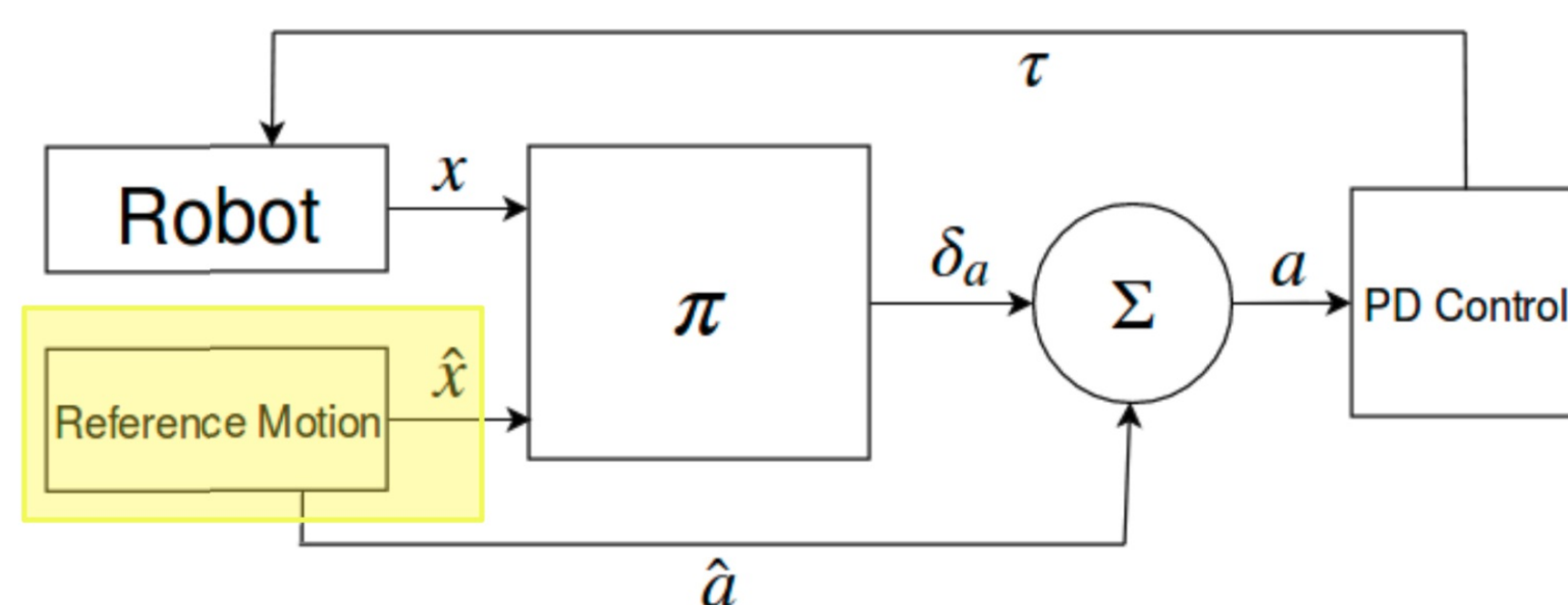


Results

The tool helps users manipulate a trajectory, which is represented as a timeline of robot poses. The user chooses to initialize this timeline with either a full trajectory or a single pose. When initialized with a trajectory, editor's tools help **tweak gait parameters** such as step height or foot speed. If instead the user starts with a single pose, the tool can help create behaviors such as **walking, crouching, and hopping**. Finally, the user exports the finished trajectory for use in reinforcement learning process.

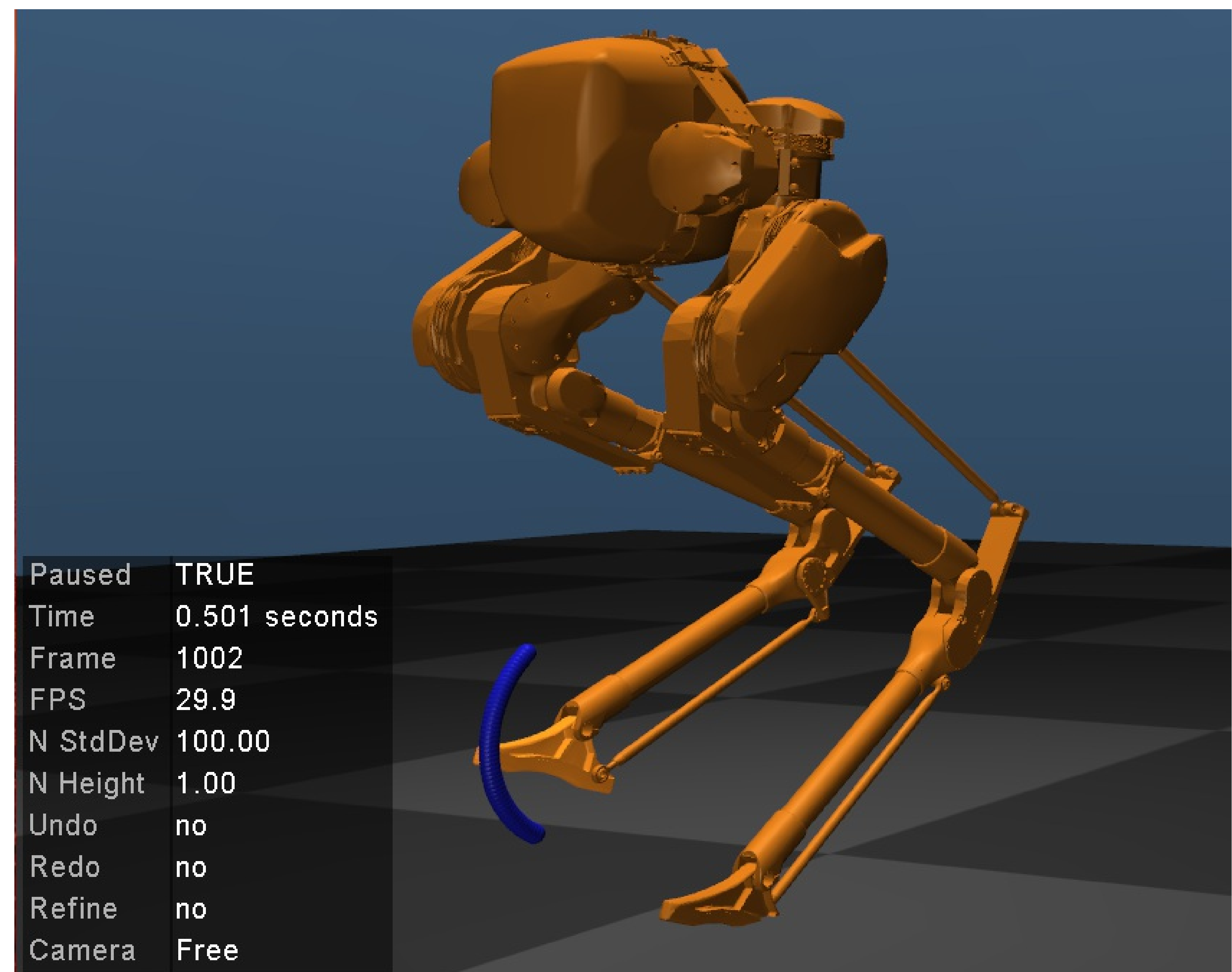
Motivation

The Cassie Trajectory Editor aids in **designing reference trajectories** for the Cassie robot. The trajectories serve as targets in the reinforcement learning process. Both physical and simulated Cassie can **learn new walking gaits** through this process.



Learning workflow from *Feedback Control For Cassie With Deep Reinforcement Learning* [<https://arxiv.org/abs/1803.05580>]

The editor streamlines the design process for creating learned Cassie controllers. The learning process trains a controller to mimic a reference behavior. However, it only rewards a controller if it can keep the robot upright. In this way, researchers can teach Cassie to mimic any behavior without falling over. This process, however, **requires a reference trajectory** featuring the desired behavior. Cassie trajectory editor solves this problem, by allowing researchers to **design and export** these reference trajectories. As a result, it serves a critical role in the reinforcement learning workflow.



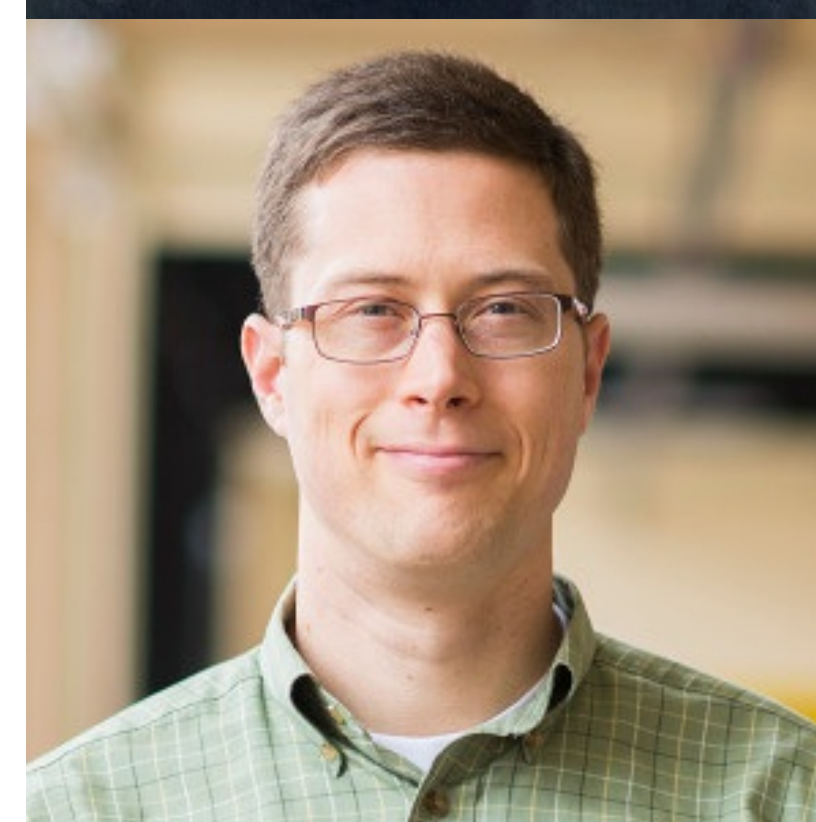
People



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