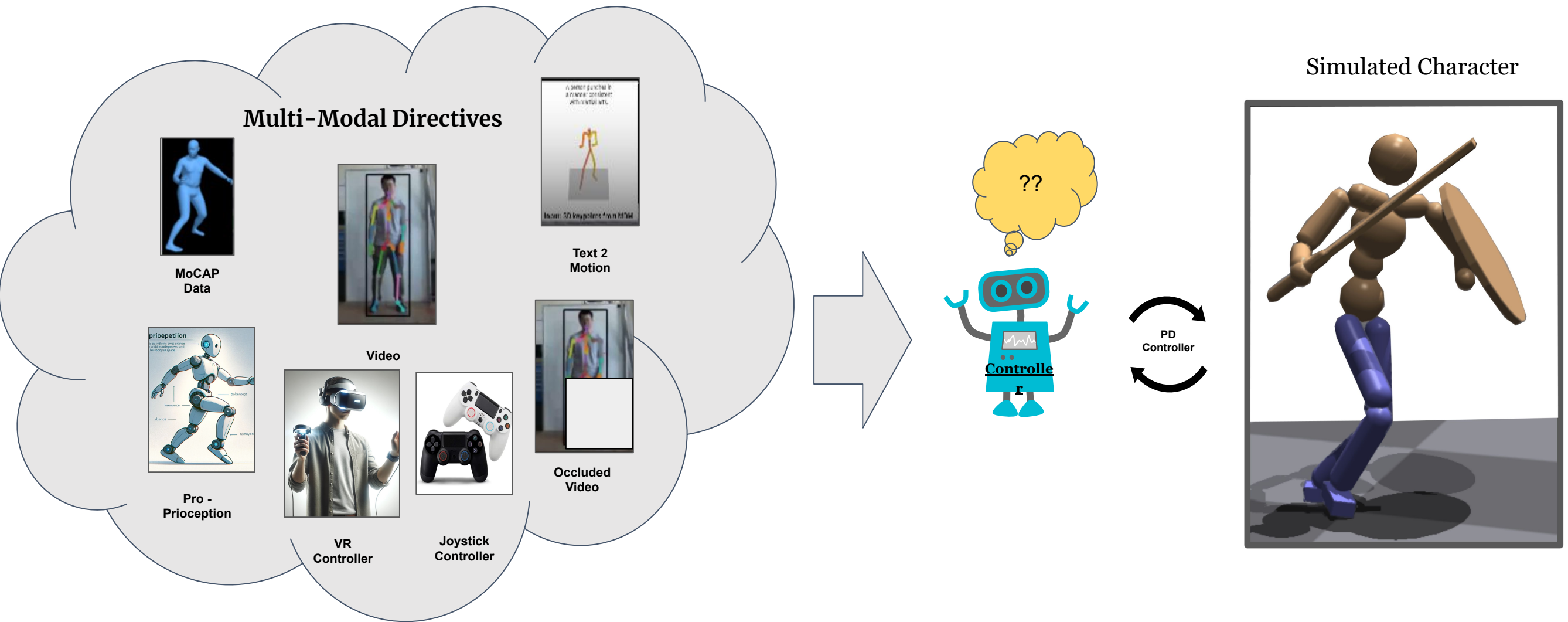


Generating Physically Realistic and Directable Human Motions from Multi-Modal Inputs

Aayam Shrestha*¹ · Pan Liu*² · German Ros³ · Kai Yuan² · Alan Fern¹

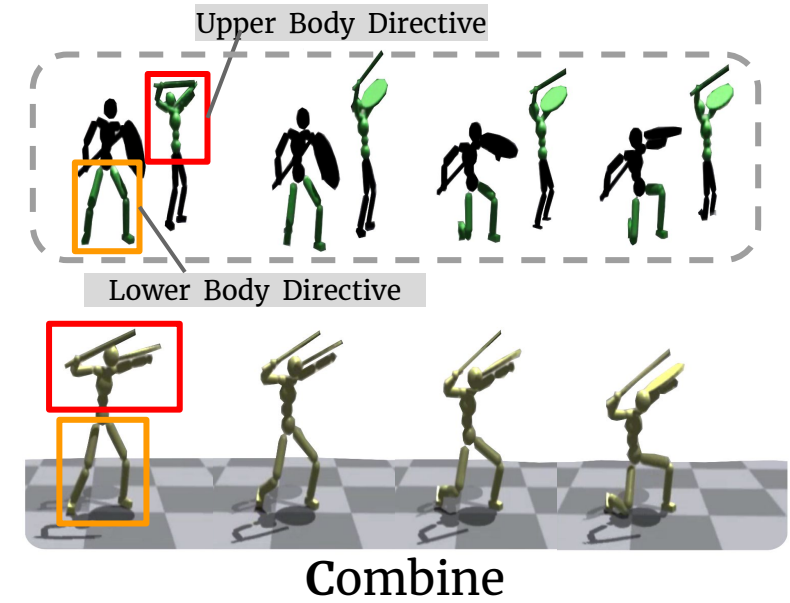
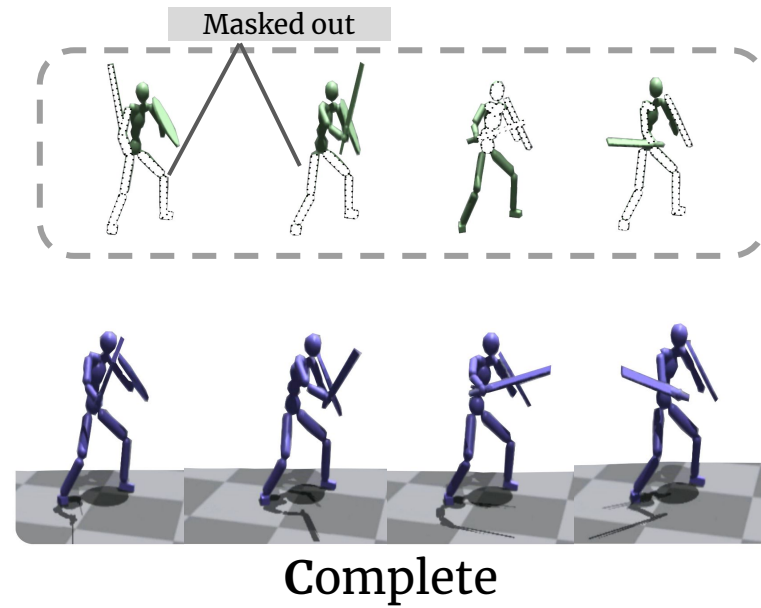
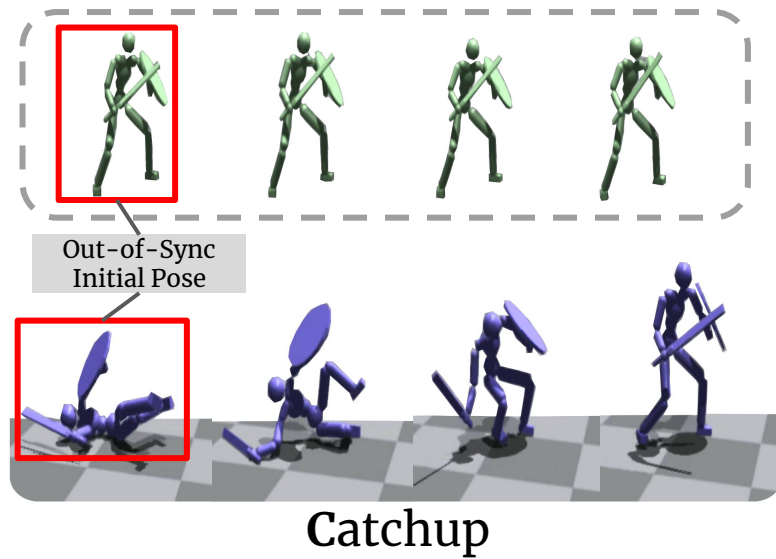


A Versatile Controller for Generating Physically Realistic Human Motions



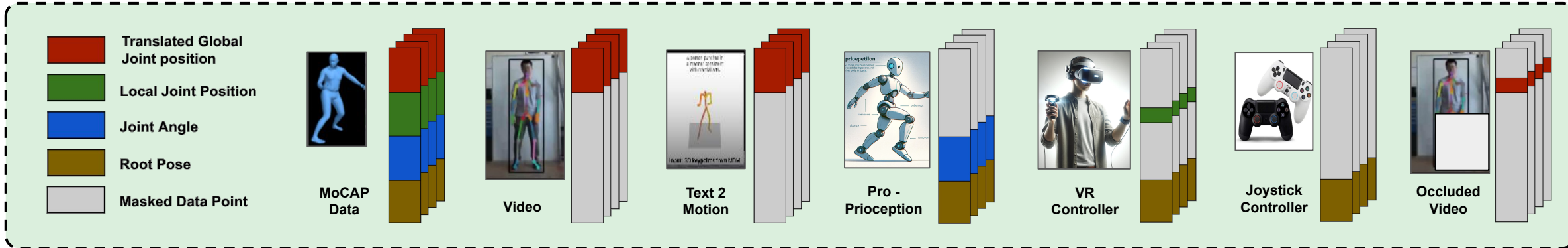
Key Capabilities for a Versatile Controller

Target Directive
↓
MHC
↓
Generated Motion

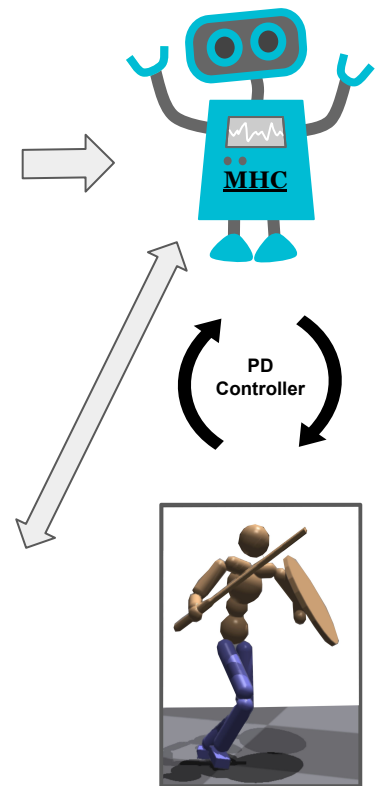
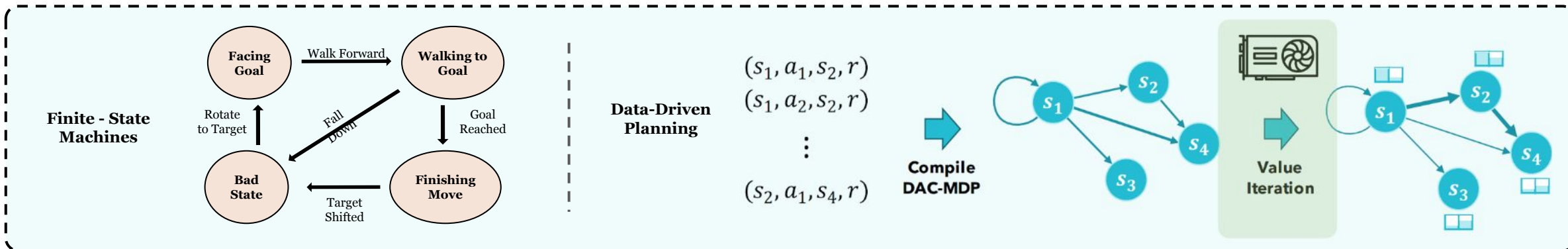


The Masked Humanoid Controller

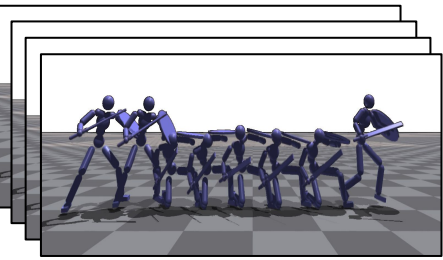
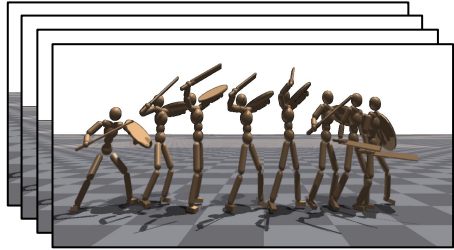
Multi-Modal Directives



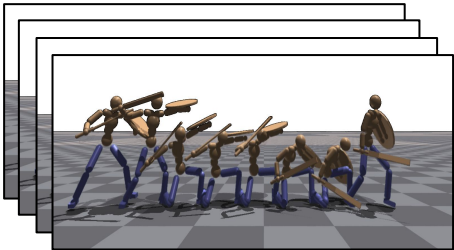
Higher-Level Task Specifications



Learning a Masked Humanoid Controller (MHC)

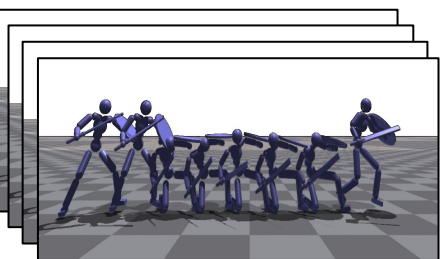
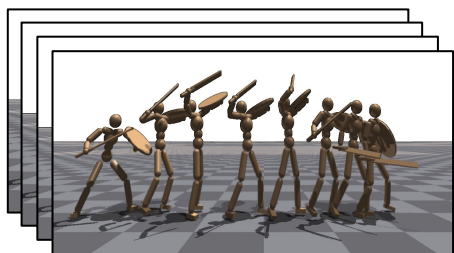


Reference Motions

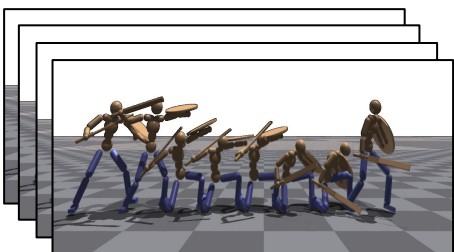


Augmented Motions

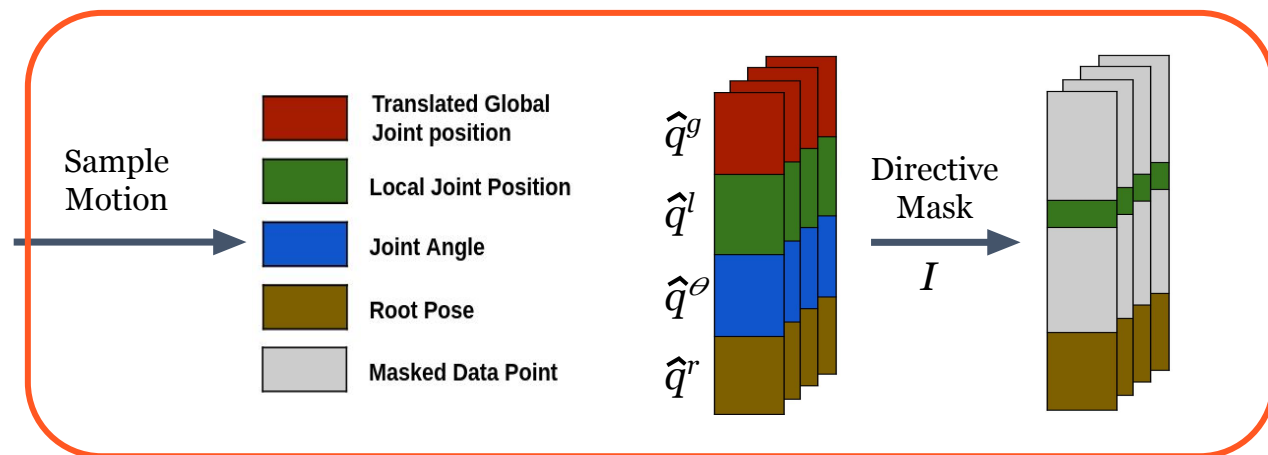
Learning a Masked Humanoid Controller (MHC)



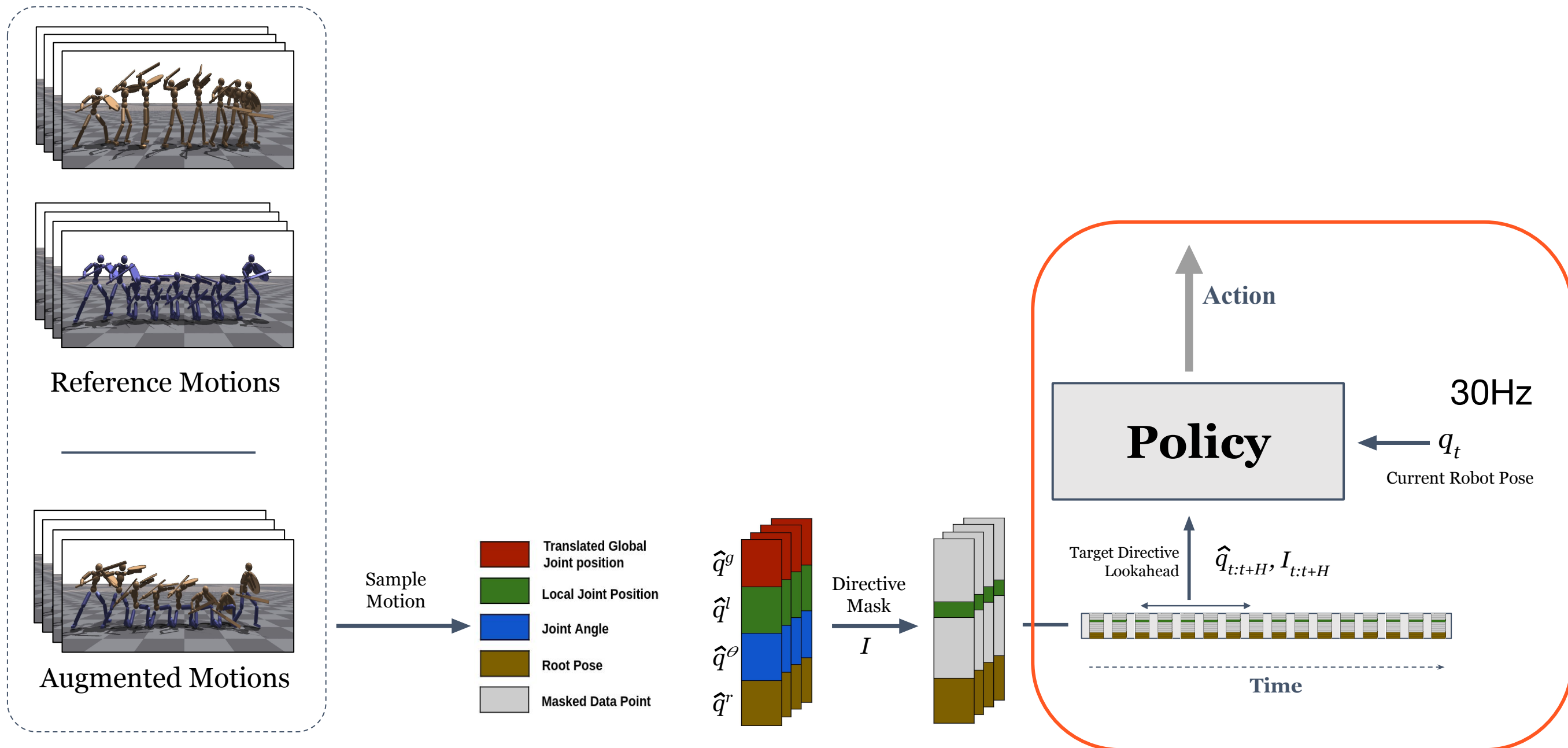
Reference Motions



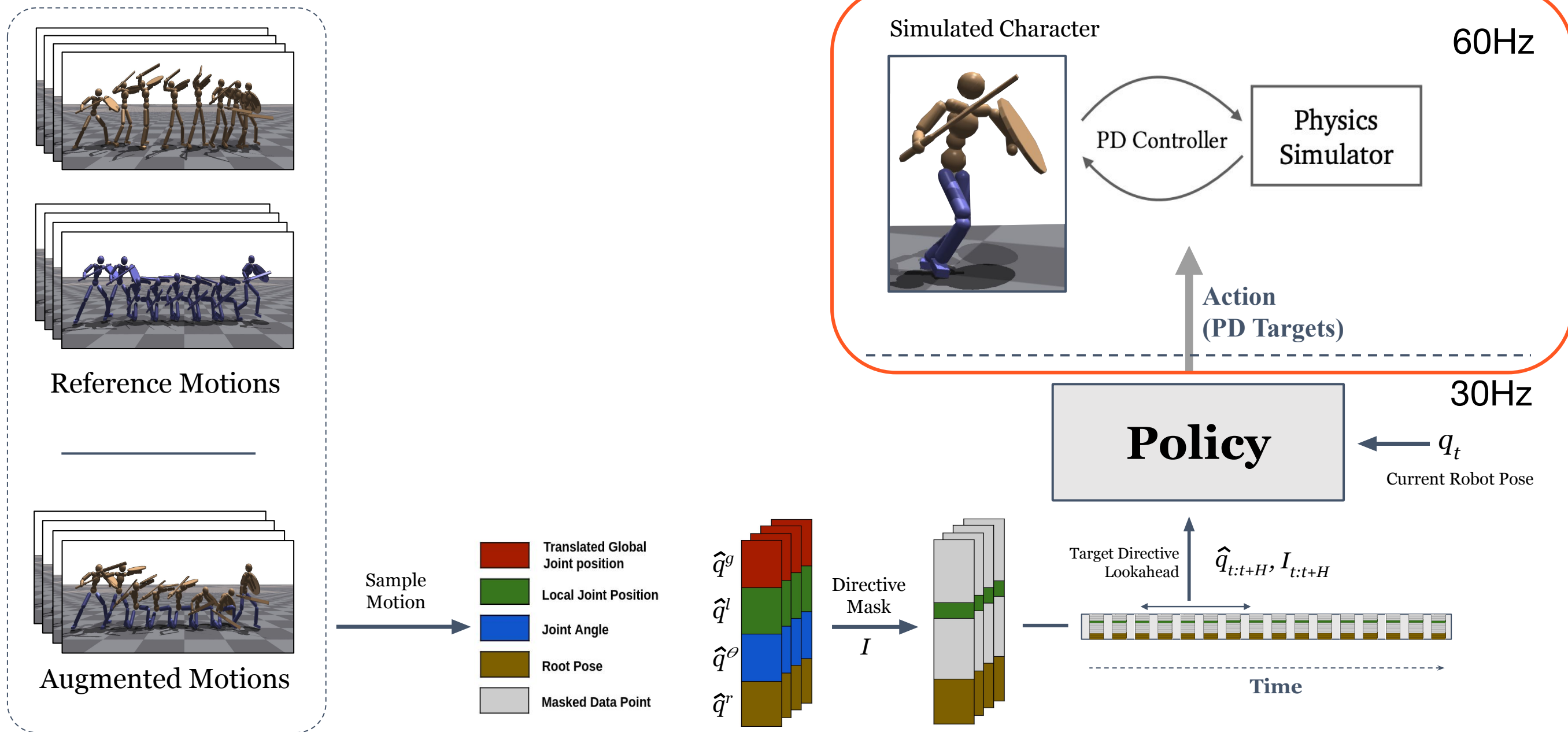
Augmented Motions



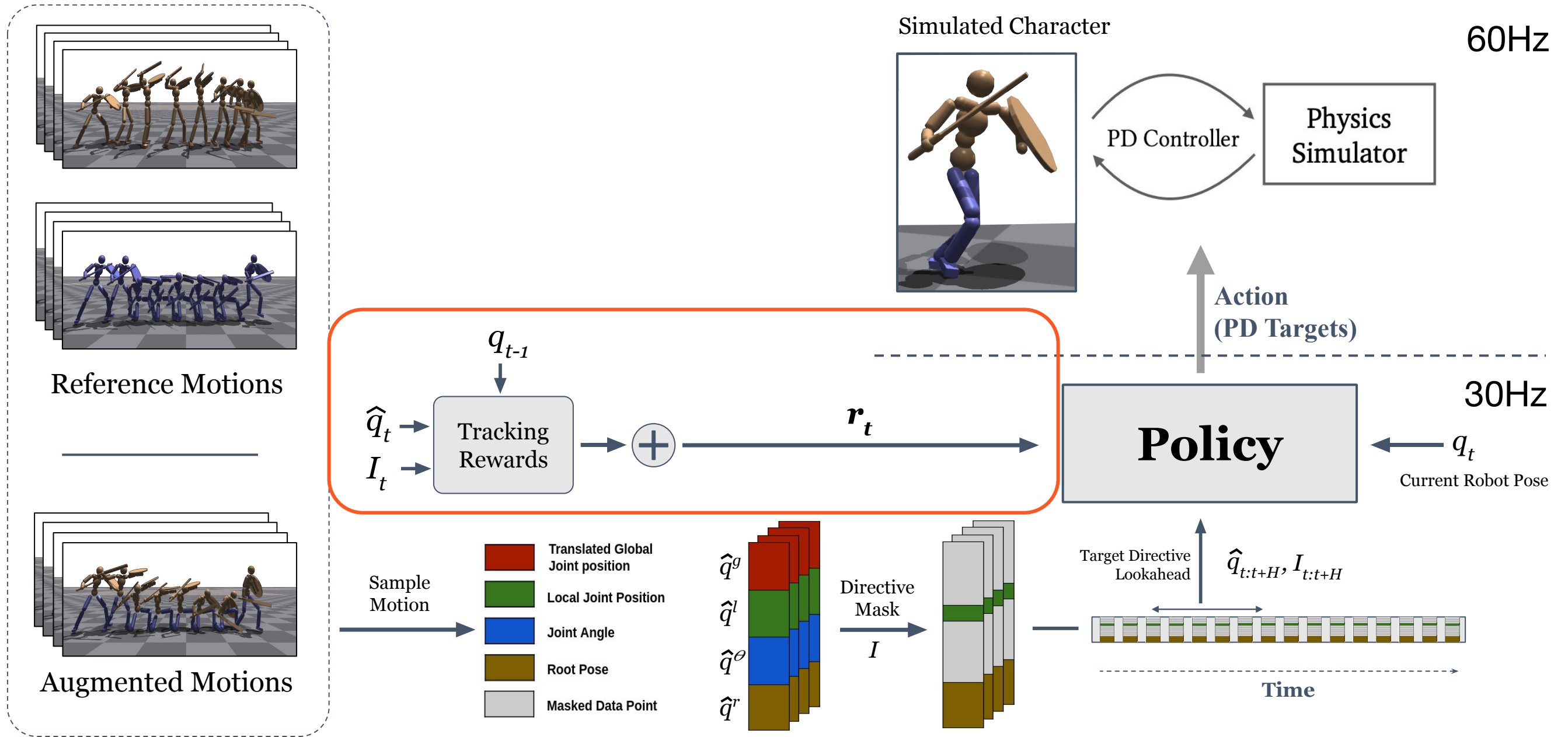
Learning a Masked Humanoid Controller (MHC)



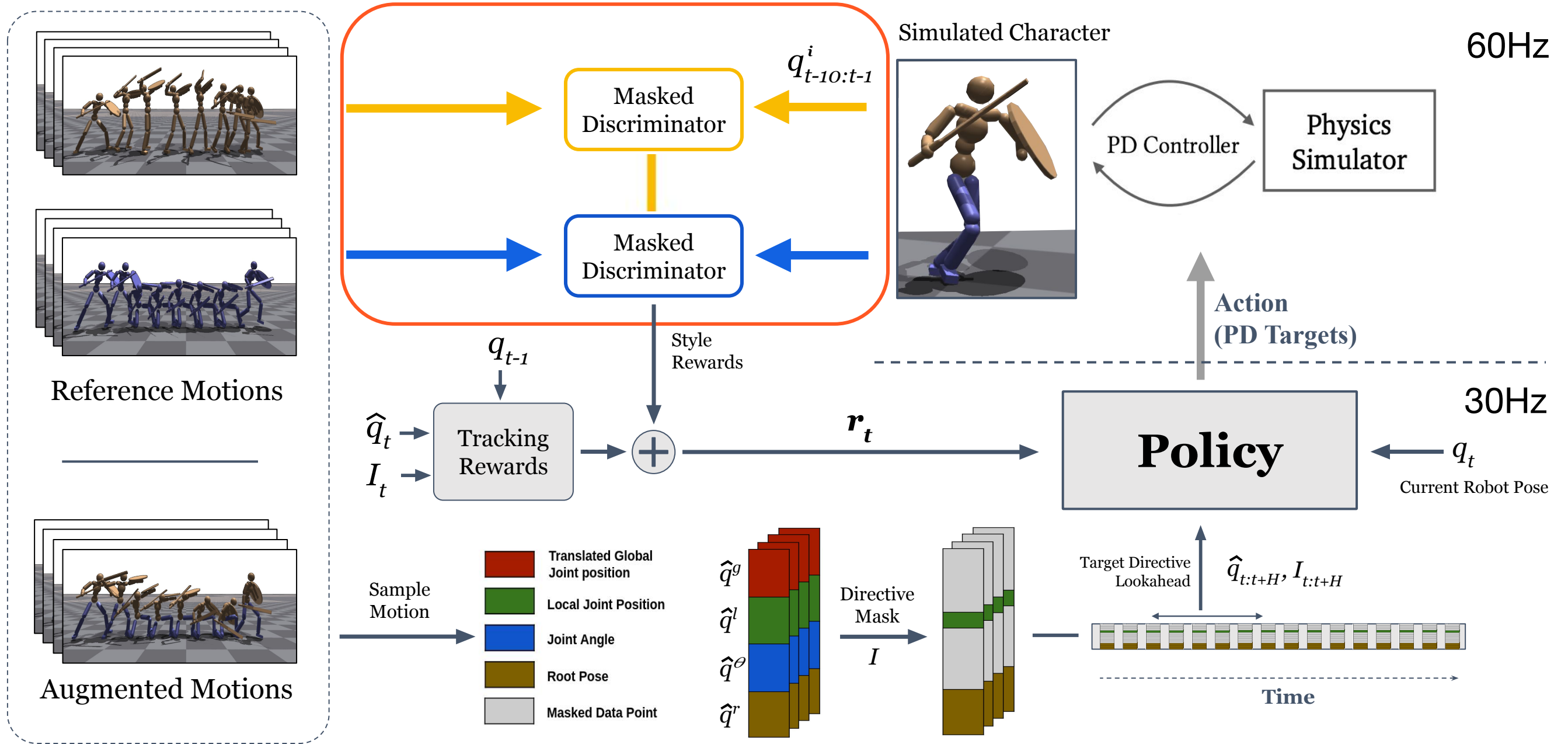
Learning a Masked Humanoid Controller (MHC)



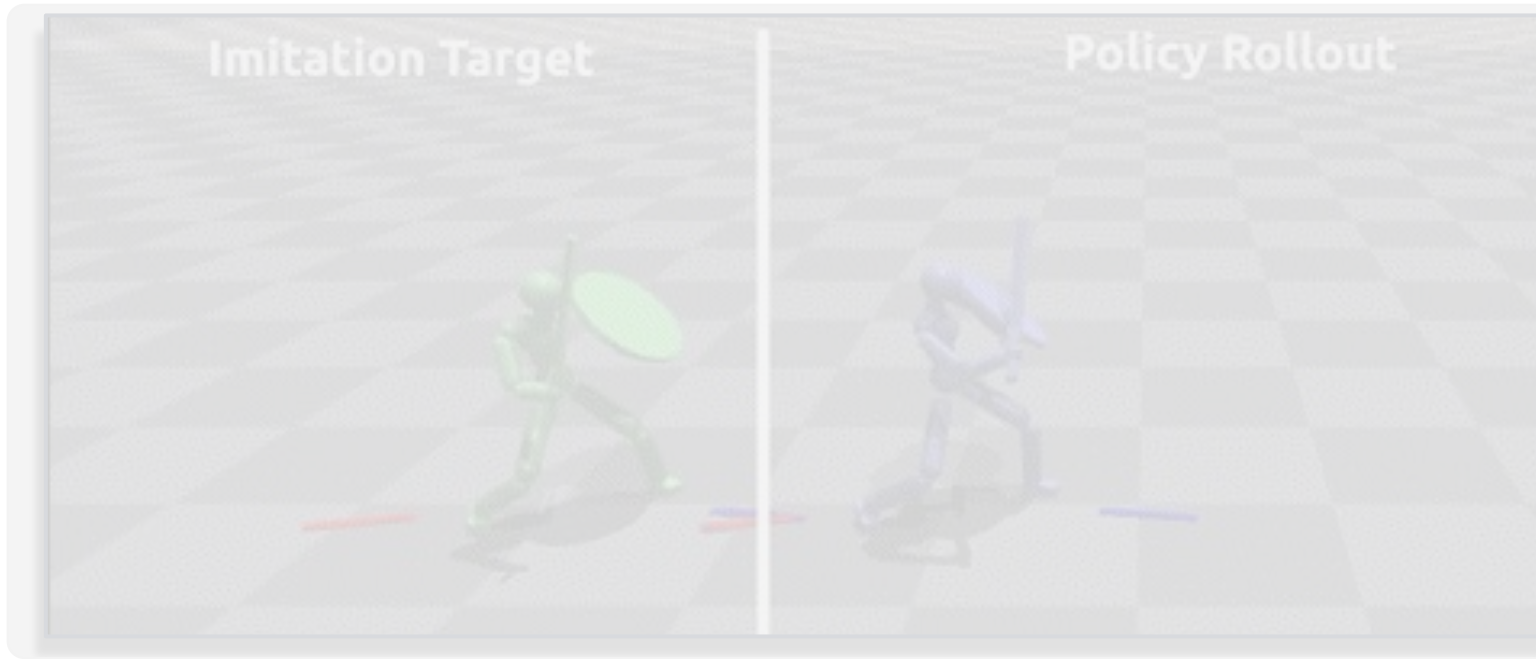
Learning a Masked Humanoid Controller (MHC)



Learning a Masked Humanoid Controller (MHC)



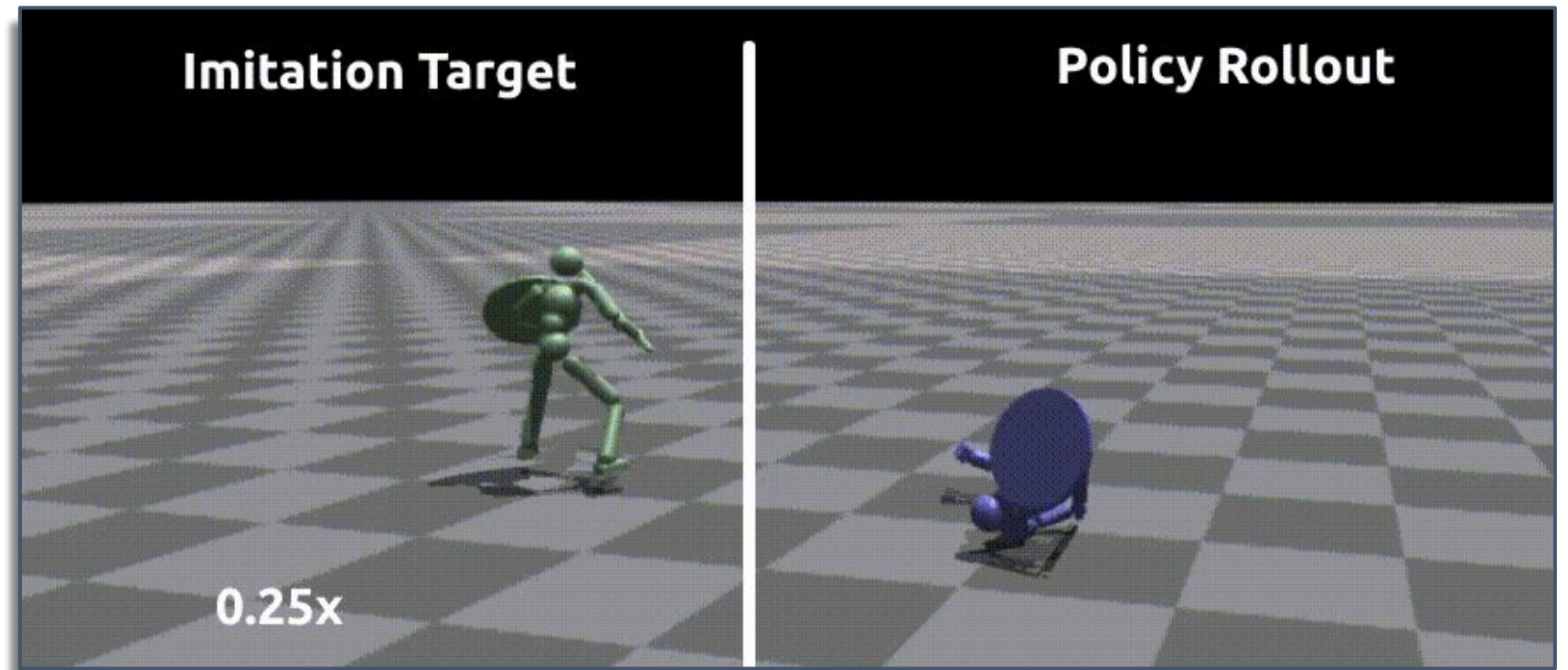
The Masked Humanoid Controller (MHC) - Results 1a



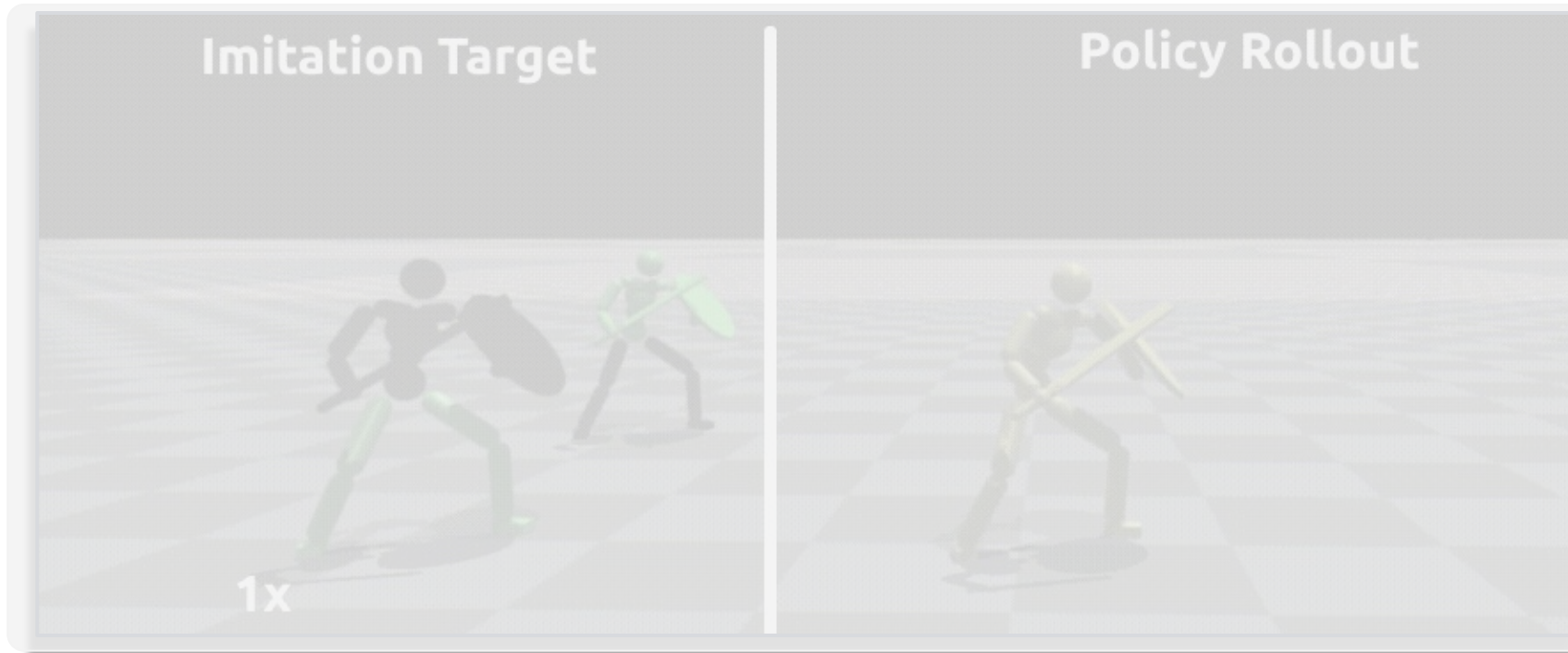
Reallusion Dataset

CATCHUP

Shifting Targets Catchup



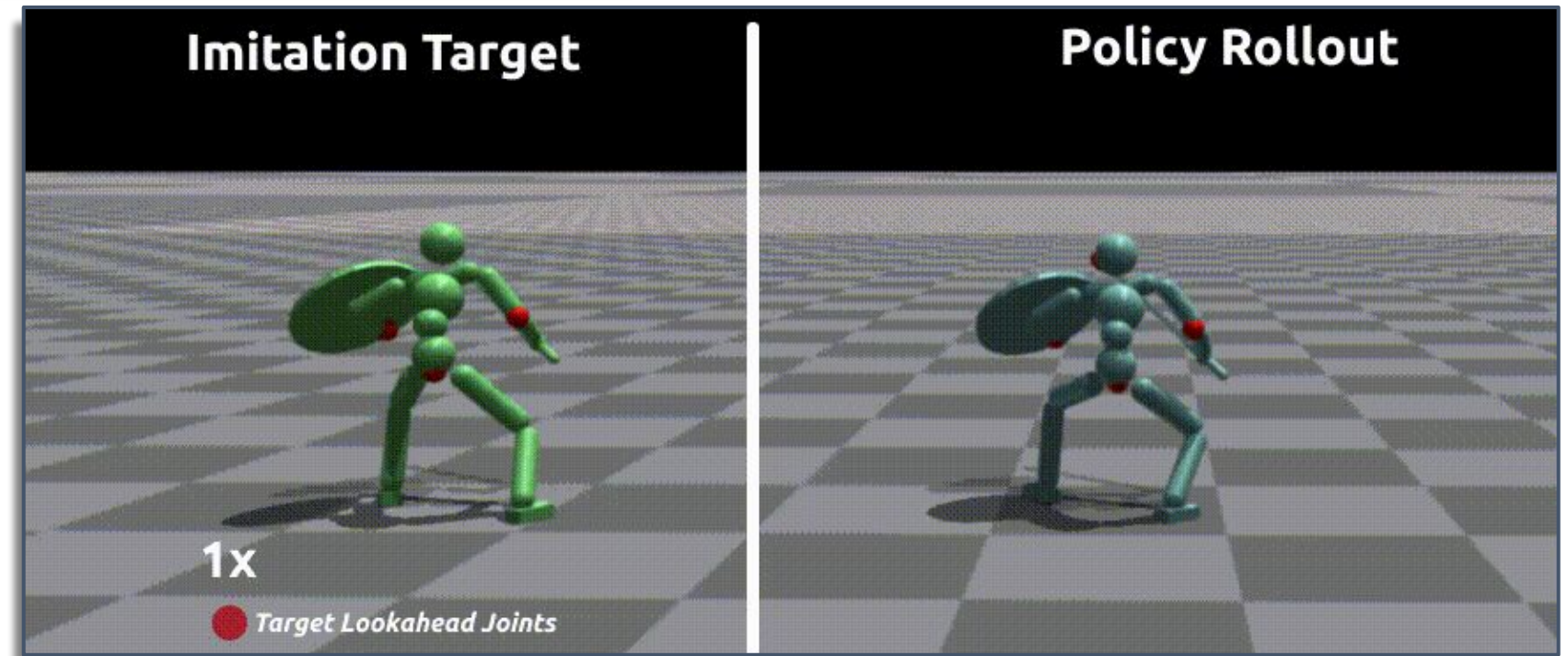
The Masked Humanoid Controller (MHC) - Results 1b



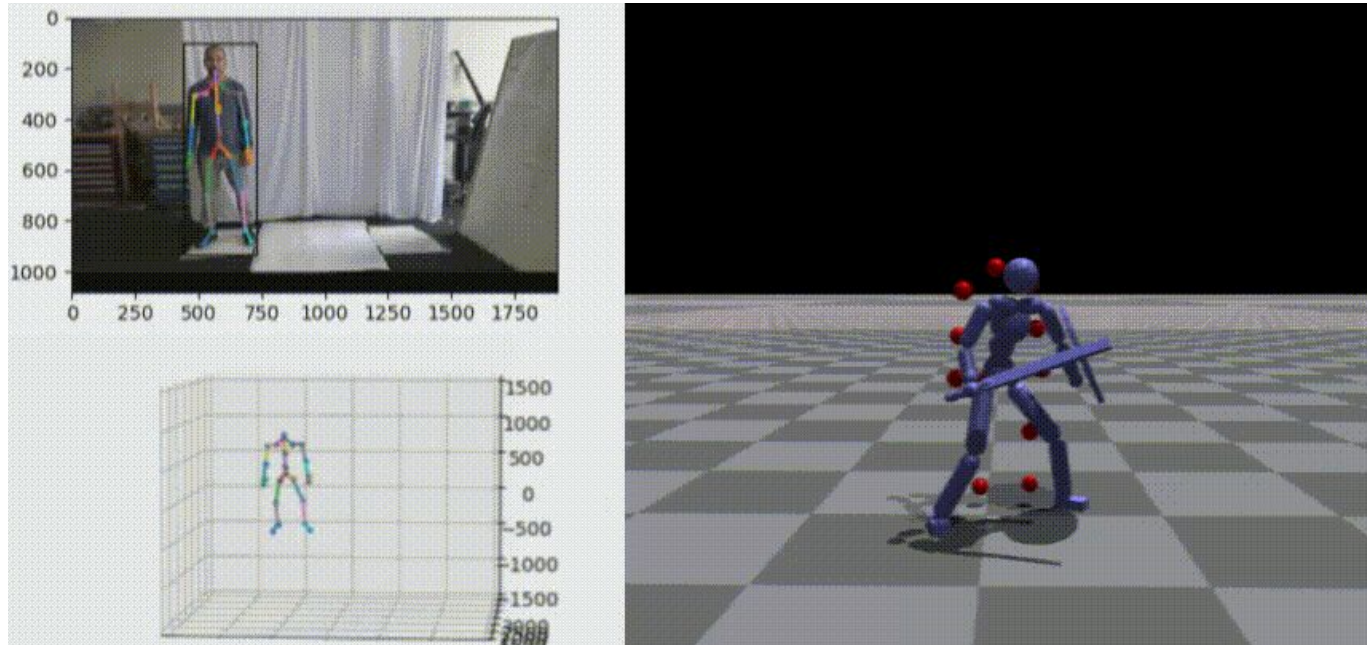
Reallusion Dataset

Complete

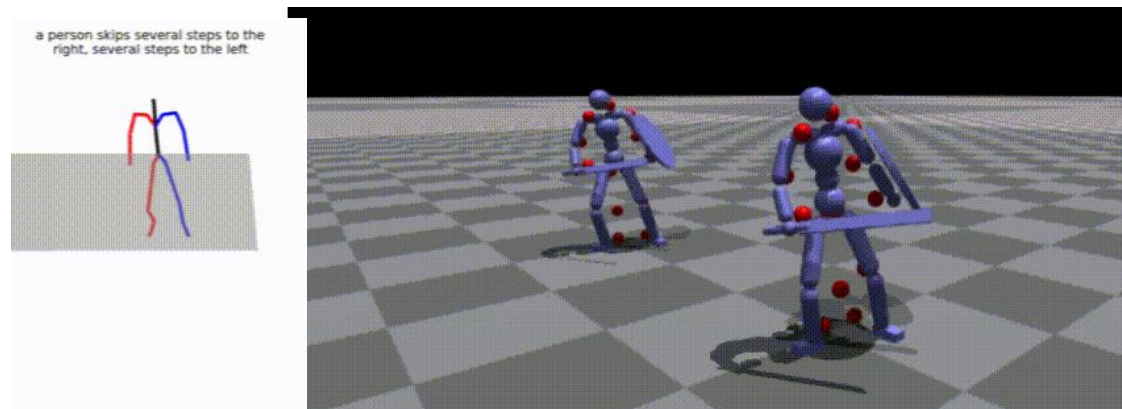
Random Joints Masked



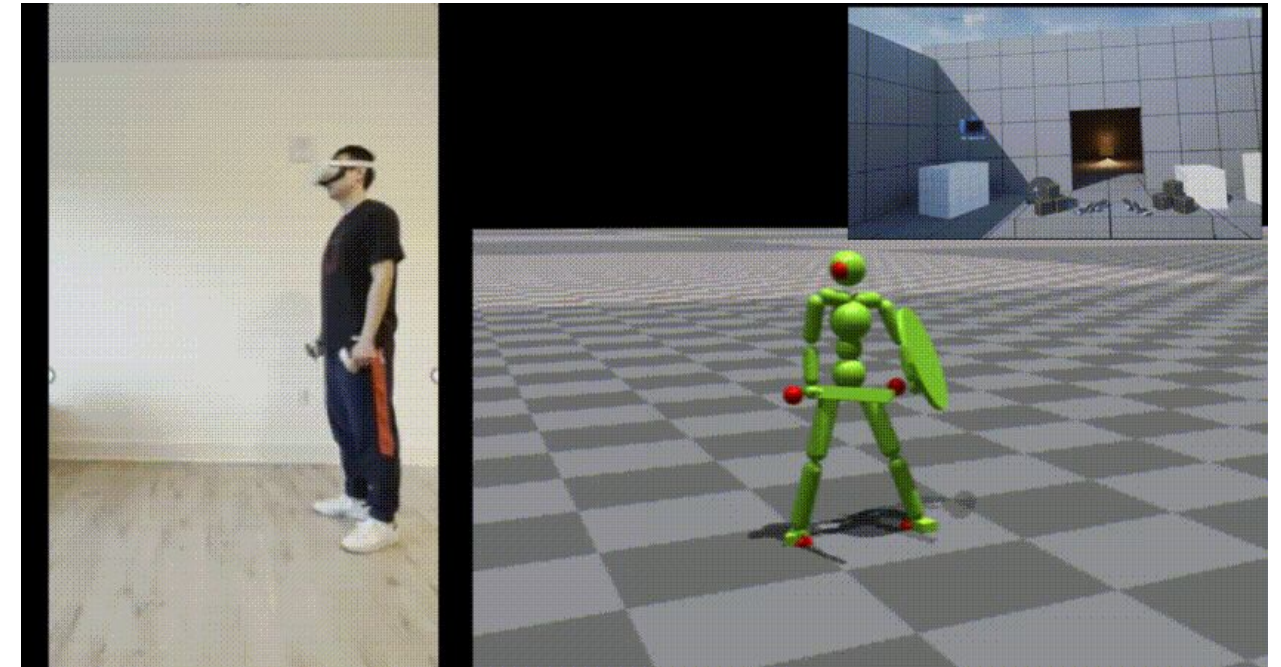
MultiModal Inference



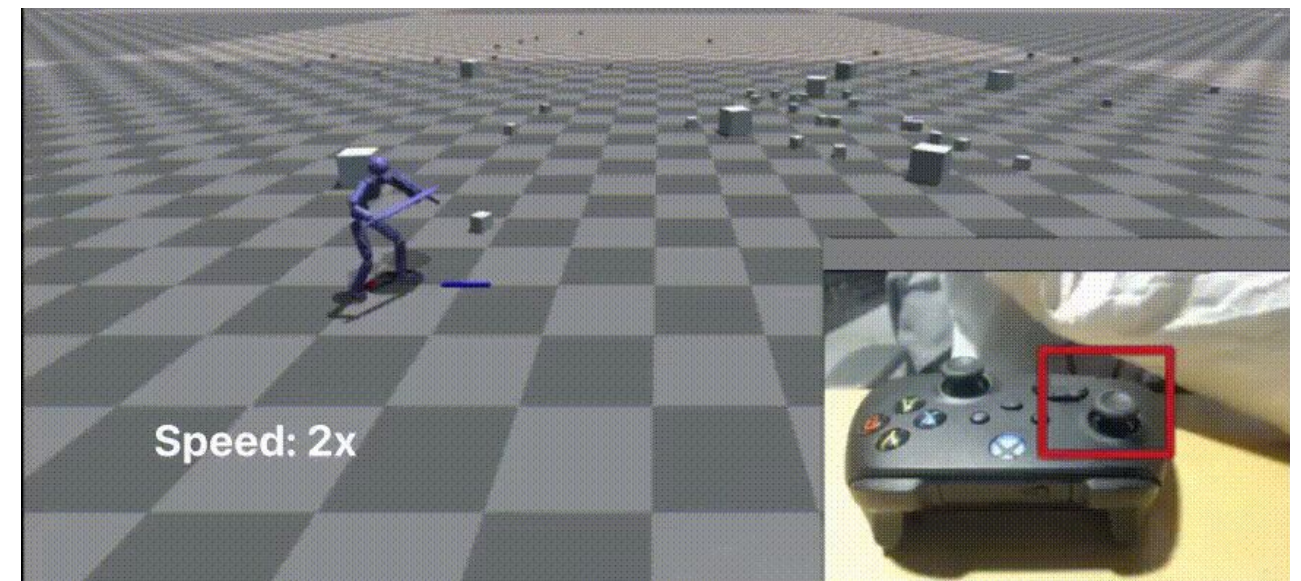
Video - Keypoint



Text - Keypoint

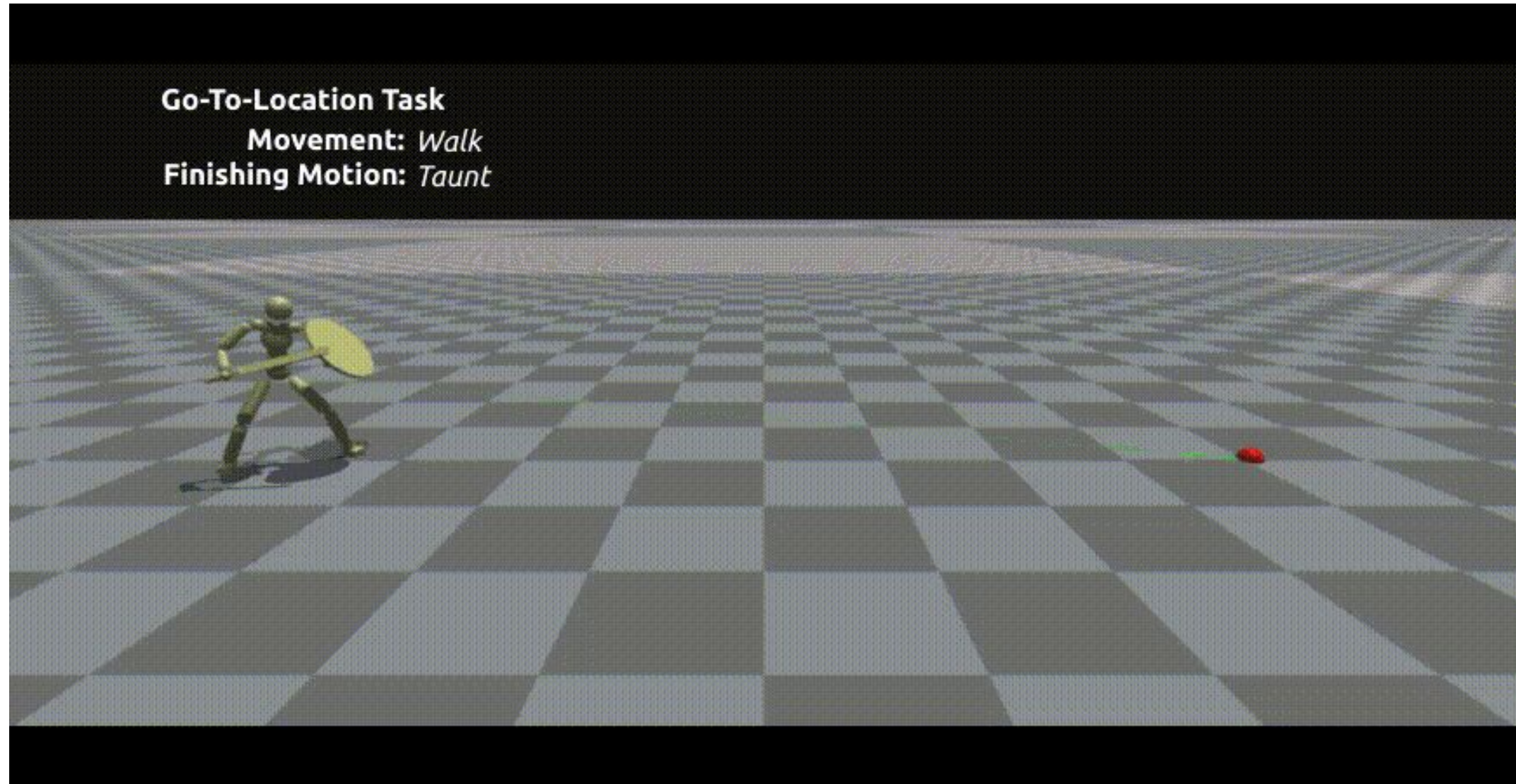


VR Controller



Joystick Controller

Finite State Machines Using MHC

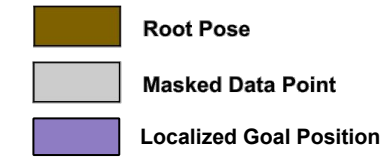


Finite State Machines - Go To Location

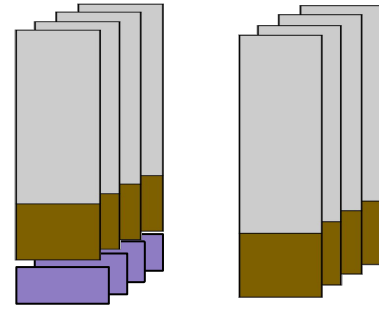
Using MHC as adapters for DAC-MDPs (Continuous Action)



Dataset [10K]



Representation



S

A

Using MHC as adapters for DAC-MDPs (Continuous Action)

