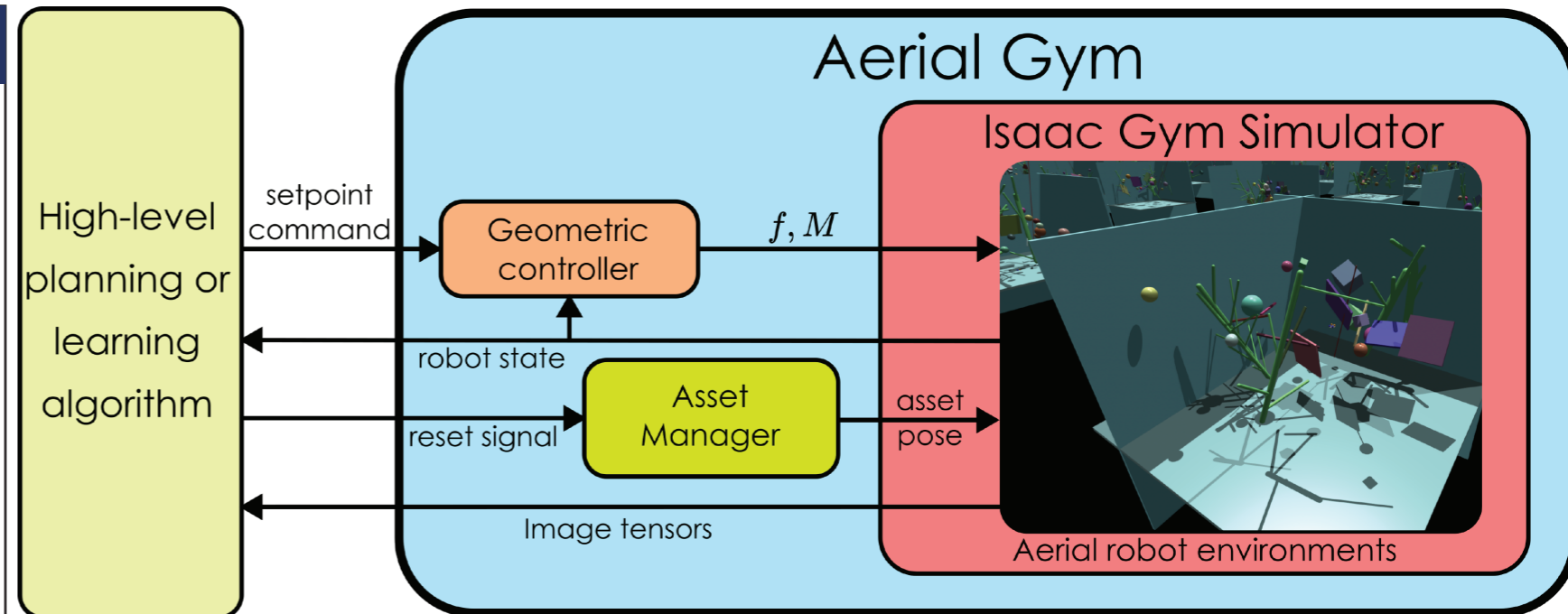# Aerial Gym - Isaac Gym Simulator for Aerial Robots

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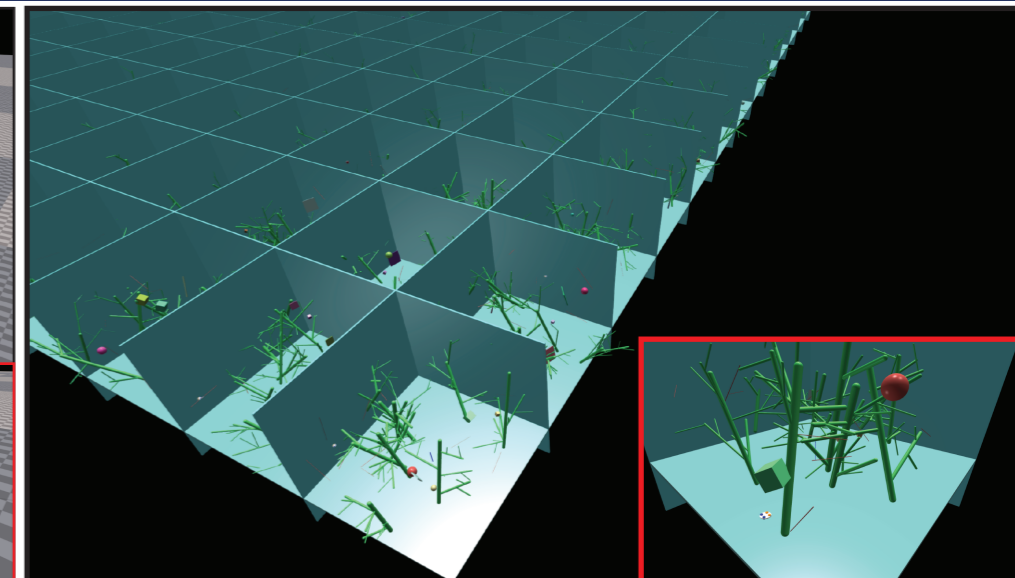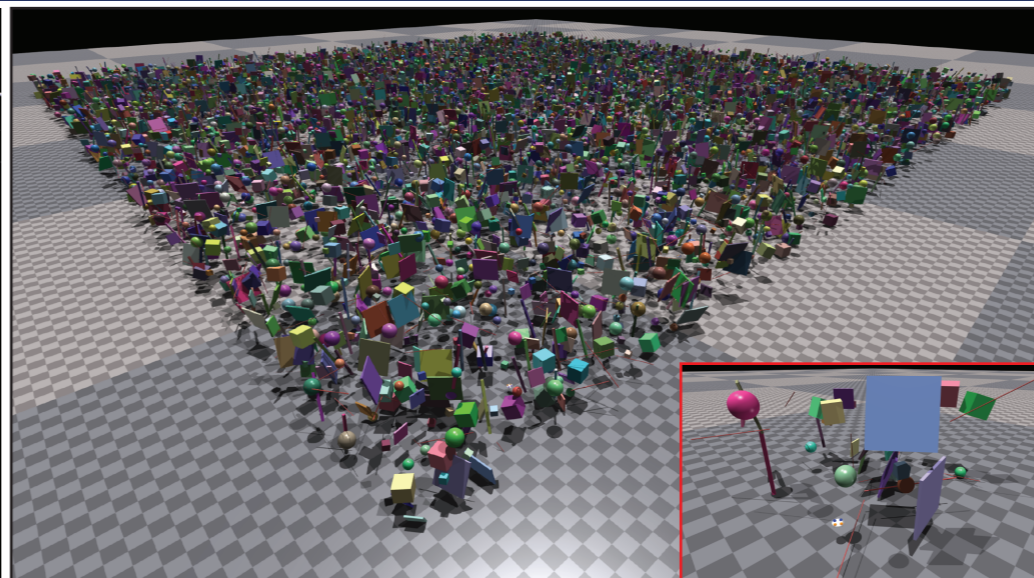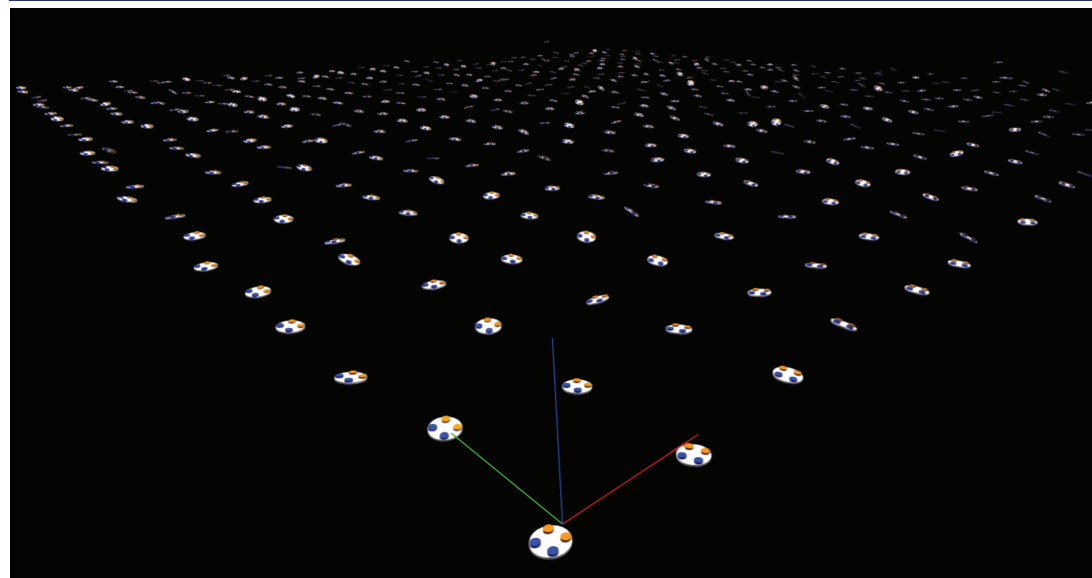
Features

- Parallelized aerial robot environments
  - Simulate up to 2^{17} robots parallely (with 2x RTX 3090 GPUs)
  - Aggregate real-time factor up to 3.8×10^4
- Nonlinear geometric controllers
  - Rigid body model with input thrust and moment
  - Attitude, velocity and position controllers
- Obstacle management functionality
  - Configurable & rapid obstacle randomization
- Direct access to robot states and image tensors
  - RGB, depth, optical flow and segmentation images
- Can be used with various RL libraries (e.g., rl_games, CleanRL etc.)

Aerial Gym

High-level planning or learning algorithm — setpoint command → Geometric controller — f, M → Isaac Gym Simulator

robot state ← Asset Manager — asset pose →

reset signal → Asset Manager

Image tensors

Aerial robot environments

- Standard Gym APIs for easy integration with RL frameworks
- Supports instance segmentation masks for each object
- Setpoint command interface matches real-world robot interfaces
- User-customizable configuration files for obstacle randomization

GitHub Link

Simulation Environments

AUTONOMOUS ROBOTS LAB