CoppeliaSim

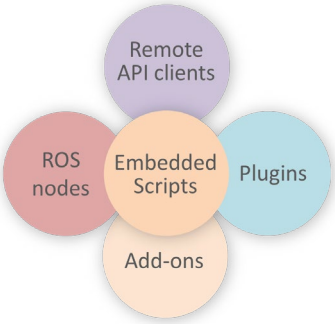
from the creators of V-REP

Create.
Compose.
Simulate.
Any Robot.

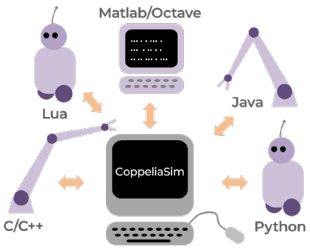
COPPELIA ROBOTICS

Main Features:

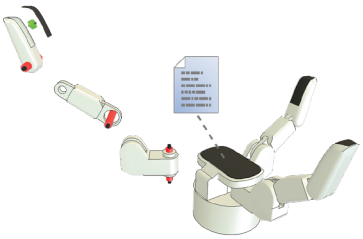
Crosss-platform & portable content: CoppeliaSim is cross-platform, and allows the creation of portable, scalable and easy maintainable content: a single portable file can contain a fully functional model or scene, including control code (Python & Lua)



5 programming approaches: Simulator and simulations are fully customizable, with programming approaches that are mutually compatible and that work hand-in-hand

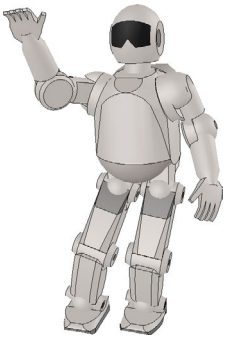


Remote API: Control a simulation or the simulator itself remotely (e.g. from a real robot or another PC)

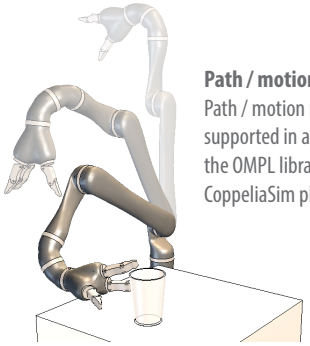


Building block concept: Anything - from sensors or actuators, to whole robotic systems - can be built within CoppeliaSim by combining basic objects and linking various functionality via embedded scripts.

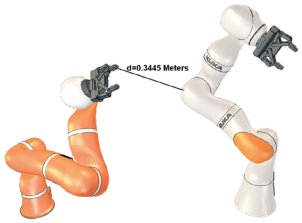
Forward/inverse kinematics: Full forward/inverse kinematics calculations module for any type of mechanism (branched, closed, redundant, containing nested loops, etc.). Can be embedded



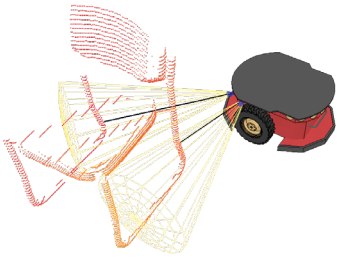
Dynamics/Physics: Fast and customizable dynamics calculations to simulate real-world physics and object interactions (collision response, grasping, etc.). 5 engines are supported: MuJoCo, Bullet, ODE, Newton and Vortex



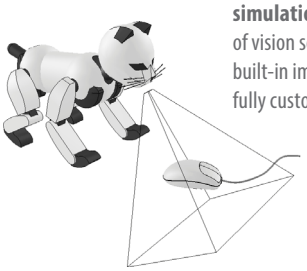
Path / motion planning: Path / motion planning is supported in a flexible way via the OMPL library wrapped in a CoppeliaSim plugin



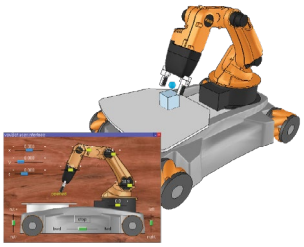
Collision detection and distance calculation: Fast interference checking and minimum distance calculation between any mesh, OC-tree or point cloud



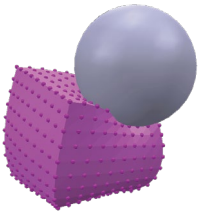
Proximity sensor simulation: Powerful proximity sensor simulation, fully customizable. Performs an exact minimum distance calculation within a custom detection volume (more realistic than discrete detection rays). Operates on meshes, OC-trees and point clouds



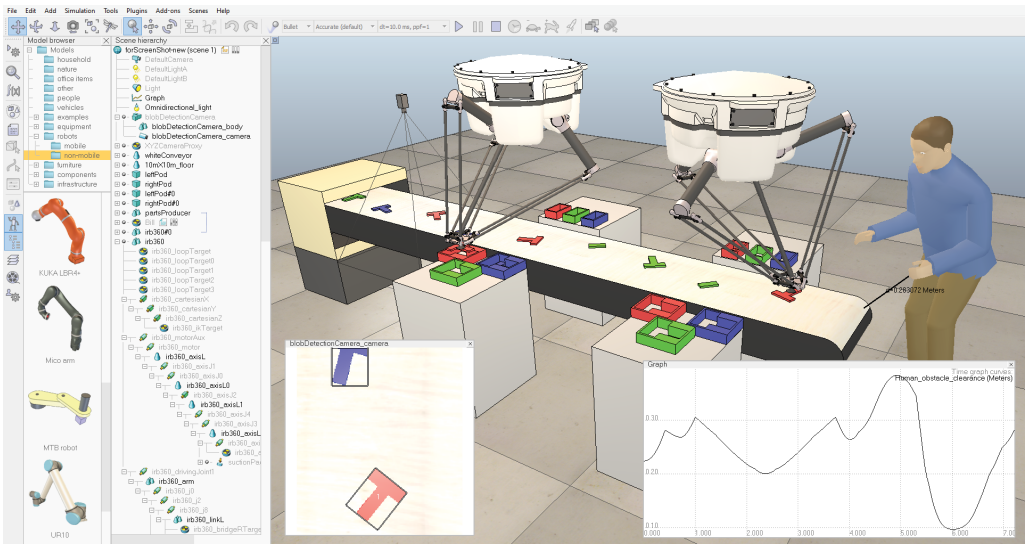
Vision sensor simulation: Simulation of vision sensors with built-in image processing, fully customizable



Custom user interfaces: Fully customizable user interface elements.



Many more features: e.g. headless mode, data recording & visualization, RRS-1 support, soft body simulation, Rucking motion Library, browser-based Viewer, OC-trees, point clouds, support for haptic devices, etc.



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