

Collision Avoidance with Actin™ 2.0

Advanced Software for Controlling and Simulating Complex Robotic Mechanisms
 Insure collision-free paths in *real-time* with Actin. Actin's collision avoidance software not only prevents collisions, it can actually navigate around potential collisions—even as the environment is changing in real-time. Any manipulator, no matter how complex, can be controlled with collision free paths.

Actin's collision avoidance software features:

Self-Collision Avoidance Method

Manipulators of any complexity can be modeled and controlled within the system. Control pathways will always avoid configurations where the manipulator collides with itself. Actin solves for the optimal end effector position while maintaining complete freedom of movement of the manipulator.

Manipulator-Manipulator Collision Avoidance Methods

Multiple robotic units are solved simultaneously for collaborative interaction. Each manipulator's path solution is optimized to ensure that manipulators do not collide with each other.

Manipulator-Environment Collision Avoidance Methods

Objects within the environment are modeled within the system to ensure that the robot manipulator does not collide with them. Object position data are dynamically updated in real time to ensure that the system is reacting to the ever-changing real time environment.

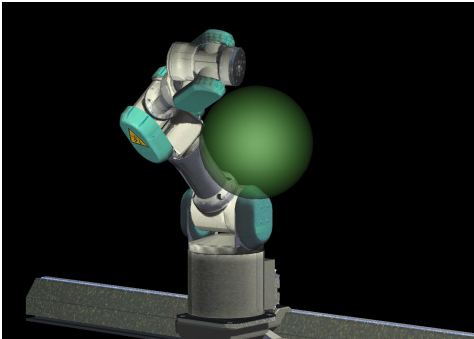
Simple Setup

Actin's unique control interface enables roboticists to easily configure dynamic environments with multiple constraints. Through the simulation capability, the developer can test and modify usability of the design before deployment.

Integration With Other Optimizations

Actin uses multiple optimization algorithms such as joint limit avoidance in conjunction with collision avoidance. Solutions provide the optimal path for each particular manipulator in the dynamically changing work environment.

Actin™ is a C++ software toolkit that simplifies robotic control applications by providing powerful software components and control methods for simulating and controlling complex mechanisms. Based on software developed for NASA, the Actin toolkit provides coordinated control for fixed or mobile robots with up to 100 independent moving parts and Windows-based libraries that robotics developers can use to quickly create complex, intelligent control systems. The developer specifies the robot kinematics and desired behavior, and Actin produces algorithms for setting joint positions and rates to achieve specified hand motion.



Collision avoidance zones are displayed within the Actin design environment

ACTIN TOOLKIT WITH FULLY INTEGRATED COLLISION AVOIDANCE

- Easily manipulate the area to be avoided
- Assign collision avoidance to any object loaded into the scene
- Analyze the interactions between the manipulator and the avoidance zone overtime
- Determine the type of avoidance method for the manipulator to favor when solving the pathway solution.



Multiple manipulators can easily interact without collisions with Actin's path solving capabilities.