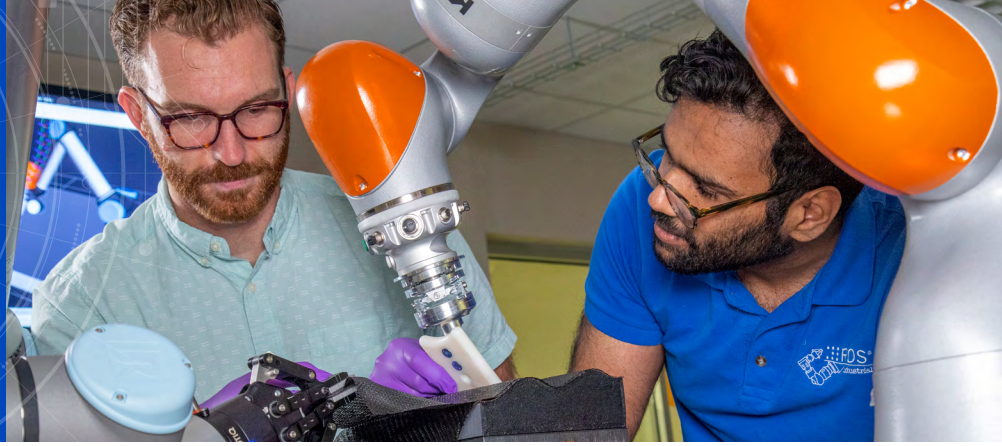
SwRI®

SOUTHWEST RESEARCH INSTITUTE



SWORD™ CAD-Based Robotic Motion Controller

Revolutionize robotics capabilities for your business using Southwest Research Institute's easy-to-use CAD-based toolkit for robotic motion planning.

SwRI Workbench for Offline Robotics Development™ (SWORD™) is a plugin for FreeCAD that integrates robotics capabilities into a familiar, cross-platform environment. The easy-to-use graphical interface harnesses powerful motion-planning libraries for simplified, code-free robotics development.

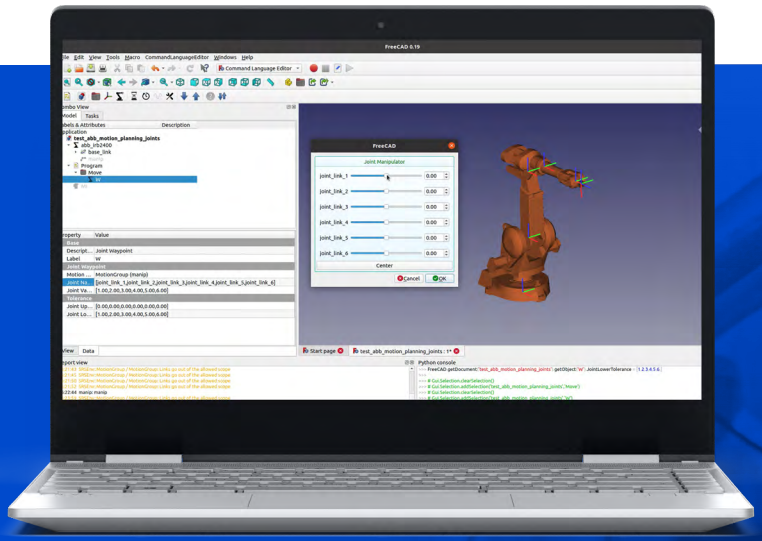
SWORD is a streamlined tool for both robotics engineers and software developers. It supports Robot Operating System (ROS) applications or can be used independently of ROS.

SWORD

- ✓ Embedded in a CAD environment
- ✓ Advanced robotics capabilities
- ✓ Vendor and robot agnostic
- ✓ Scriptable

Capabilities

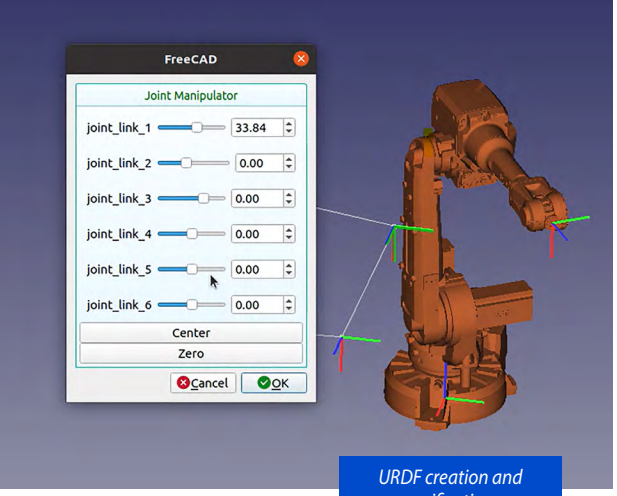
- Environment Modeling
  - Create or import a CAD model of your robot, including fixtures and end-of-arm-tooling
  - Manipulate and control your robot model using joint sliders
  - Simulate movement with TCP Dragger using multiple IK solvers
- Robot Manipulation and Motion Planning
  - Generate motion plan using Tesseract-supported path planners
  - Create custom planning pipelines for application-specific behavior
  - Predict and avoid movement collision
- Command Language
  - Define robot motion using Cartesian or joint waypoints
  - Specify different move segment types (joint/Cartesian) and motion groups
  - Insert supplementary commands (I/O, delays, etc.)



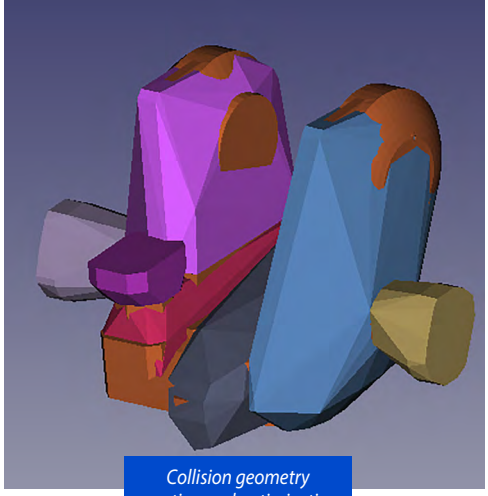
SWORD™

CAD-based advanced robotic application modeling and development environment

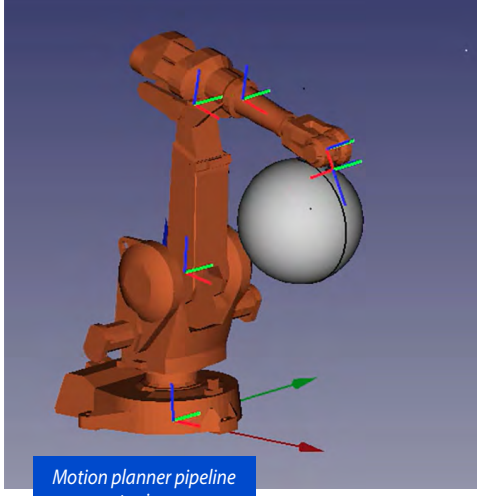
Advanced science. Applied technology.



URDF creation and verification



Collision geometry creation and optimization



Motion planner pipeline tuning

Modules

- Environment Creation
  - Scene modeling
  - Convex hull creation
  - Convex decomposition
  - Allowed collision matrix generation
  - Collision detection/visualization
- Motion Configuration
  - Motion group definition
  - IK solver configuration
  - Cartesian TCP dragger
- Motion Planning
  - Waypoint generation
  - Motion planner configuration
  - Motion planner pipeline configuration
  - Trajectory visualization/introspection
- Export Artifacts
  - URDF
  - SRDF
  - Tesseract
  - Robot native program

Pricing

- University: $1,000 / seat / year
- Small Business (<50 employees): $2,500 / seat / year
- Large Business (≥50 employees): $5,000 / seat / year

Training Available!

SwRI developers offer an in-person SWORD bootcamp, providing a unique opportunity to learn from the creators of SWORD to maximize your skills. Workshops will include focused topics for functional area interests.



Engineer bootcamp available



ROS developer bootcamp available

SWORD™

SwRI WORKBENCH FOR OFFLINE ROBOTICS DEVELOPMENT

A Product of SwRI

We welcome your inquiries. For more information, please contact:

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sword@swri.org

Robotics Department
Intelligent Systems Division

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