

FRANKA RESEARCH 3

**The reference robotic platform
for AI & Robotics research.**

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Franka Research 3 is the reference world-class, force sensitive robot system that empowers researchers with easy-to-use robot features as well as with low-level access to robot's control and learning capabilities.

□ Robot System

Franka Research 3's robot system includes the Arm and its Control. The force sensitive and agile Arm features 7 DOF with torque sensors in each joint, industrial-grade pose repeatability of +/- 0.1 mm and negligible path deviation even at high velocities. It comes with a payload of 3 kg, a reach of 855 mm and a workspace coverage of 94.5 %.

□ FCI (Franka Control Interface)

FCI is the ideal interface to explore low-level programming and control schemes, providing the current status of the robot and enabling its direct torque control, at 1 kHz. On top of the C++ interface libfranka, integration with the most popular ecosystems ROS, ROS2 and MATLAB & Simulink is available!

□ DESK

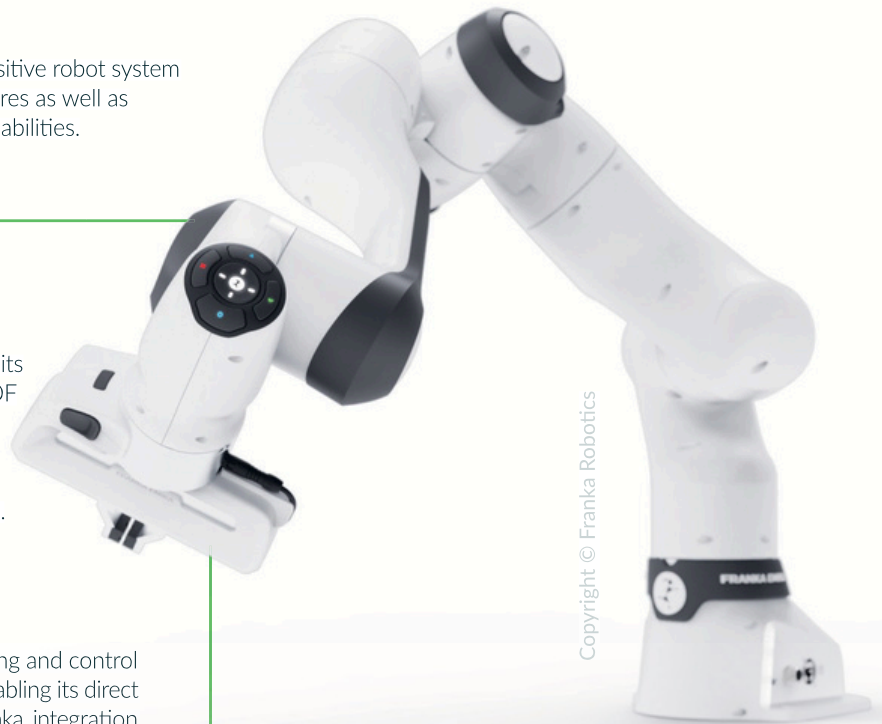
Desk is the browser-based user interface that offers quick robot control options, and where Apps can be dragged and dropped into a sequence to create entire tasks in no time. Ideal for rapid prototyping of robot behaviors, setup of experiments, simple human-robot interaction studies and demos.

✓ Watchman

Easy to use and fast to implement safety. Thanks to browser-based user interface Watchman, typically complex safety setups are greatly simplified to ensure that your lab and lab workers are protected.

✓ Resources and Community

An open and global research ecosystem enabled by a powerful robotics platform for quicker time to results and publishing. Franka Research 3 is the reference platform to exchange and collaborate. Promote your latest breakthroughs within the community.



End effectors and additional software

✚ Franka Hand

A 2-finger gripper with exchangeable fingertips, fully integrated with the software of Franka Research 3, therefore plug-and-use.

✚ App Package for FR3

A selection of Apps, modular building blocks that can be combined into App Workflows to prototype robot behaviors rapidly.

✚ RIDE

A development interface for writing custom Apps and connecting third-party HW and external resources. The ideal tool for customizing and extending the system's capabilities.

A GROWING ECOSYSTEM

Helping researchers to deliver cutting edge results quickly and reduce “time-to-paper”.

Franka Robotics offers a variety of integrations based on our Franka Control Interface (FCI), providing a solid bridge between our cutting edge hardware and the most-used ecosystems in research and academia. Such synergies enable you to make full use of the powerful data acquisition and real-time control capabilities of Franka Research 3.

! NVIDIA® Isaac Sim™

NVIDIA Isaac Sim makes your development and testing better and faster, by creating photorealistic, physically accurate virtual environments. The scalable robotics simulation and synthetic data-generation tool is designed to seamlessly integrate with the latest robotic systems, including the FR3. With such integration, you can replicate real-world scenarios and conduct comprehensive testing as well as analysis.



! Franka Toolbox for MATLAB

A quick, intuitive, and robust way for researchers to evaluate their algorithms on Franka Research 3. Franka Toolbox for MATLAB provides all of the necessary control options and signals from the robot. A rich set of MATLAB® scripts and Simulink® blocks is available, as well as a collection of advanced demos, covering a wide array of possibilities for controlling the Franka robot.



! Franka ROS 2

ROS 2, the successor to the widely acclaimed ROS, unlocks new possibilities for researchers and industry professionals alike. In keeping with our promise to support you with robust and versatile tools to shape the future of robotics, we have released a brand-new Franka ROS 2 package. The package offers a plethora of functionalities to enrich your FR3 robots with the full spectrum of opportunities unleashed by ROS 2.



FRANKA AI COMPANION

Exclusively tailored for your FR3, to accelerate your robotics and AI research.

Franka AI Companion elegantly combines the hardware and software you need to streamline the setup and speed up execution of your robotics and AI research work, while also offering NVIDIA® GPU-accelerated edge computational power and Franka Research 3's real-time 1kHz control.

! Integration of GPU power with real-time control

Benefit from connecting AI models with real-time robot control on the same platform, eliminating the need for external resources when conducting tasks like combined object detection and grasp-planning.

! Simplified research setup

Easily create, manage, and switch between research setups using a sandboxed development environment that integrates docker containers (e.g. LLMs and vision models).

! Extended capabilities

Out-of-the-box compatibility with an expanding array of popular hardware devices (e.g. Intel® RealSense™) and software components.

! Setup sharing

Quickly transfer setups in the same lab or share them with other institutions, fostering collaboration, increasing efficiency and reducing effort.

! A growing ecosystem

Franka AI Companion is only one of Franka's ecosystem enhancements, complementing and easily integrating with offerings such as Franka MATLAB Toolbox and Franka ROS 2. These synergies empower you to leverage the robust data acquisition and real-time control capabilities of Franka robots.



NVIDIA® Jetson Orin™ NX ✓

16 GB RAM ✓

500 GB SSD ✓

Interfaces: ✓

3x USB 3.1 C-Type

Dual GBit LAN

HDMI

Digital I/Os

RS323, RS422 & CAN Bus

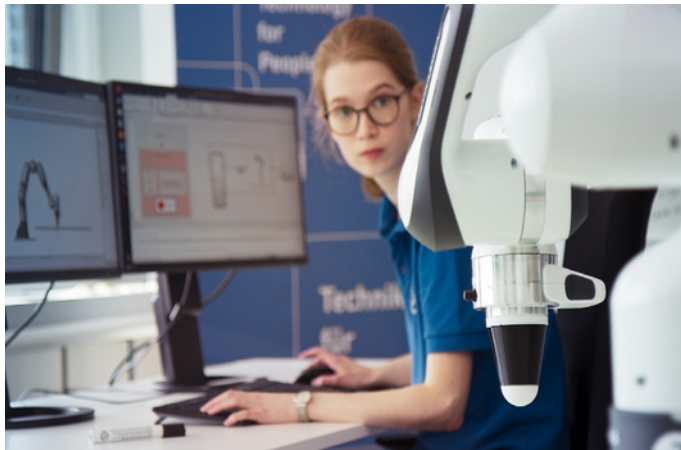
! A plethora of use cases

- Quick switching between multiple incompatible software stacks.
- Rapid evaluation of multiple ML models by switching docker containers.
- Object detection with real-time visual servoing.
- Straightforward attachment of experiment-related SW setups to papers for review.
- PC-agnostic/independent setup and execution of research work.

FRANKA TOOLBOX FOR MATLAB

The bridge between theory and application, for your teaching and research work.

Franka Toolbox for MATLAB provides all necessary control options and signals from the FR3 robot, resulting in a quick, intuitive, and robust way for students and researchers to evaluate their algorithms – whether in the laboratory or classroom. In the toolbox, users will find a rich set of MATLAB® scripts and Simulink® blocks, and a collection of advanced demos, covering a wide array of possibilities for controlling the robot.



At the Automation and Control Institute (ACIN) of the TU Wien, Prof. Christian Ott's group conducts research in the domains of manipulation and locomotion. They utilize the Franka robot interfaced with MATLAB and Simulink to seamlessly transition algorithms developed in theoretical and simulated environments directly into real-world robot applications. [Scan the QR code to watch the video success story at TU Wien!](#)

! Quick and easy integration

Leverage the straightforward integration provided by Franka Toolbox or MATLAB to seamlessly connect the Franka robot to MATLAB and Simulink, the widely-used programming platform.

! Direct connection to the robot

Establish a direct connection to the robot by closing the real-time loop at 1 kHz: develop control algorithms across various modalities like torque control, visualize data and streamline the debugging and prototyping process.

! Real-time data handling

Easily display, acquire, and record real-time data of the robot such as force, position or angles using MATLAB's plotting functions and other Simulink features.

! A wealth of examples

Build upon available examples to accelerate development and focus on your specific application. Facilitate access to the field of robotics via a known software environment.

A growing ecosystem

The toolbox is only one of Franka Robotics' ecosystem enhancements, complementing and easily integrating with offerings such as Franka ROS 2. These synergies empower users to leverage the robust data acquisition and real-time control capabilities of Franka robots to their fullest extent.



"At Franka Robotics, our mission is to develop technology that drives over the frontiers of robotics and AI to build a better future."

This is why we aim to provide researchers with the best robotics platform. In this, Franka Toolbox for MATLAB represents the integration of cutting-edge robotic hardware with the power and versatility of MATLAB and Simulink."

Sven Parusel,
SVP Academia & Research
Franka Robotics

Generation ROBOTS

Brand of **NGX** ROBOTICS



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