Kinarm insight in motion

Human Kinarm Exoskeleton Lab™

A versatile research facility to study sensory, motor and cognitive function

Quick Facts

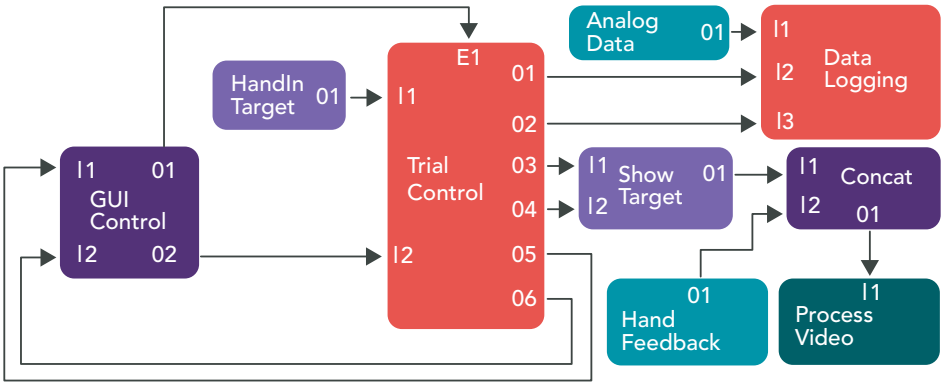
- Totally redesigned in 2016 to enhance stiffness and enable full access to the head for TMS, and other neuro-stimulation techniques.
- Broadest range of hand and joint-based kinesiological information
- 2-dimensional paradigm provides balance between behavioural complexity and measurement simplicity
- Integrated VR-AR aligns visual and mechanical environments

Complete Research Lab

Designed by neuroscientists for neuroscientists, the human Kinarm Exoskeleton Lab lets you start collecting data right out of the box. BKIN's standard system includes:

- One or two Kinarm Exoskeleton robots for the upper limbs
- 2D virtual/augmented reality display
- Dexterit-E™ experimental control software and hardware
- Optional Kinarm Gaze-Tracker™

Task Programming in Simulink®



Graphical programming language ensures easy task programming

Study Both Arms Simultaneously

The use of two Kinarm Exoskeleton robots enables comparison of inter-limb performance as well as the study of bimanual coordination.

2D Virtual/Augmented Reality

Standard system includes 47" 2D virtual/augmented reality display for natural, intuitive presentation of visual stimuli.

Easy To Use and Powerful

System includes Dexterit-E™ behavioural control and data acquisition software, which combines the power of a real-time operating system with the ease of a Windows™-based interface. For clinical research, Kinarm Standard Tests™ option enables broad-based, standardized and scored asessments in under 1h. For basic research, Custom Task Programs can be created using high-level graphical programming tools.

Components of Human Kinarm Exoskeleton Lab

- Two motorized Kinarm Exoskeleton robots for simultaneous right and left-handed investigation; unilateral robot optional
- Workstation and visual display for presentation of 2D virtual targets in the actual plane of limb motion
- System-integrated chair with wheelchair-style seating (including removable foot, arm and head rests)
- Data acquisition hardware, optionally including up to 32 channels of analog input
- Dexterit-E data acquisition and experimental control software
- Computer systems to run Dexterit-E (including a real-time computer for precise and safe action)
- A library of Simulink® blocks to assist with rapid custom Task Program creation (MATLAB® and Simulink® must be purchased separately)
- Unlimited Dexterit-E Explorer™ downloads for data visualization
- Optional integrated gaze-tracking in the workspace with Kinarm Gaze-Tracker™
- Optional Kinarm Standard Tests™

System Specifications

- Real-time control and data acquisition at 1kHz
- Peak torque pulse of 16.5 Nm; 5.5 Nm continuous (25% greater than Kinarm Classic)
- Feedback resolution of 0.0006° (~4 microns at the hand)
- Vertical out-of-plane stiffness of 8,500 N/m; End-point in-plane mechanical stiffness of 16,400 N/m (2-3 times the Kinarm Classic)
- ~3X higher gains for position control relative to Kinarm Classic
- min 47" visual display
- Fits children as young as 5 or 6 years old and adults up to approximately 6'6" (2m)
- Minimum suggested lab size 10'x10'

Controlling Kinarm Lab with Dexterit-E™

Dexterit-E provides a friendly, easy-to-use user interface for controlling a Kinarm Lab in one of two ways :

- Custom Tasks can be created and implemented with a Kinarm Lab to probe a broad range of sensory, motor and cognitive functions. To create a Custom Task, users program their task using Simulink® and Stateflow® high level graphical programming tools.
- Kinarm Standard Tests™ is a battery of automated standardized sensory, motor and cognitive tasks that allow you to start assessing subjects "right out of the box".

Kinarm™

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