

A Modular Software Platform for Human-Robot Interaction Experiments



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Client

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What is the Problem?

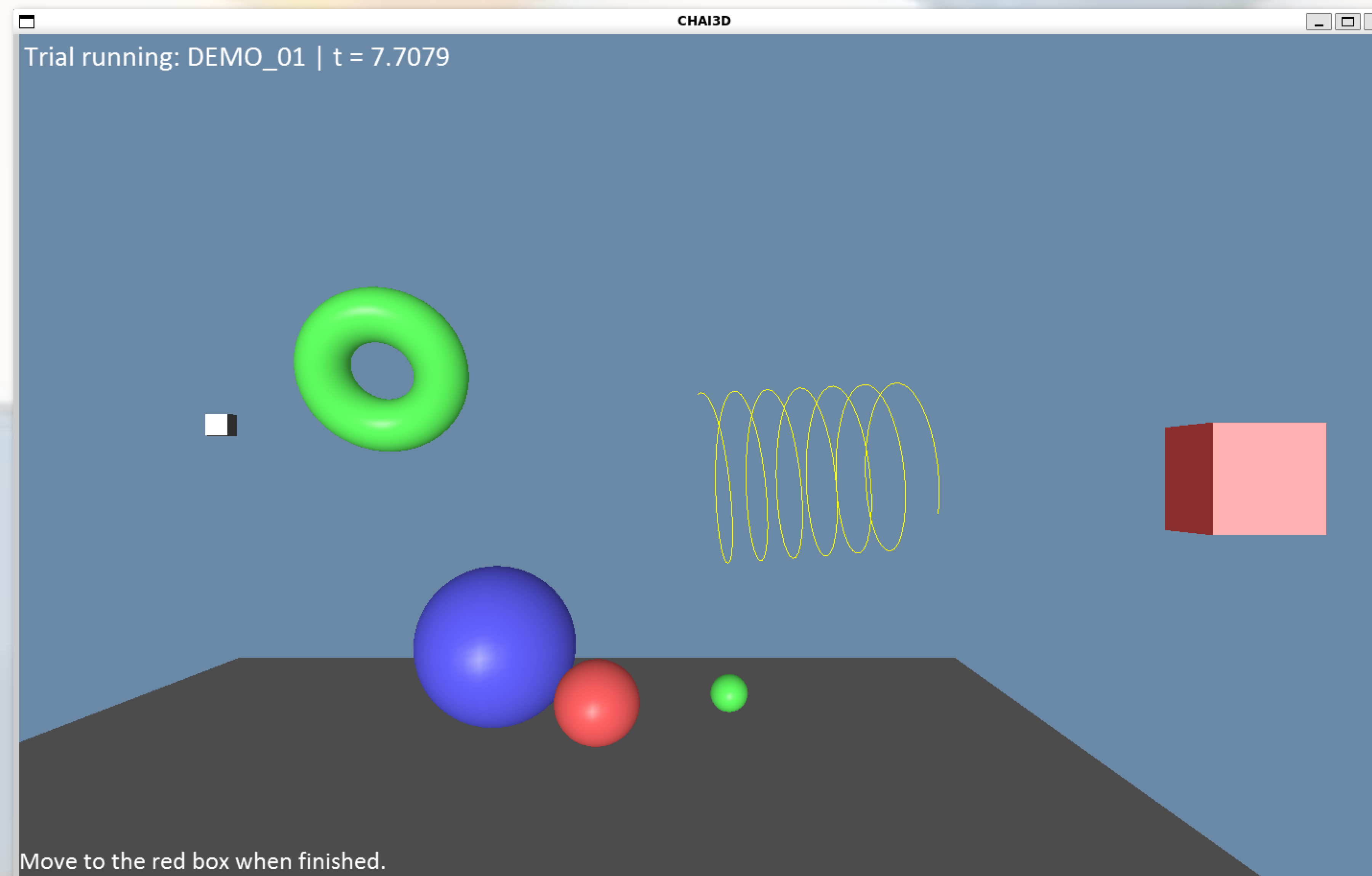
Haptic simulations, or the simulation of touch in a virtual environment, are key to advancing our understanding of **human-robot interaction** and movement of the human body. However, setting up these human-robot experiments currently takes **a lot of time and manual coding**. This makes it **hard to reuse past work** and **collect consistent data** across studies.

Solution Overview

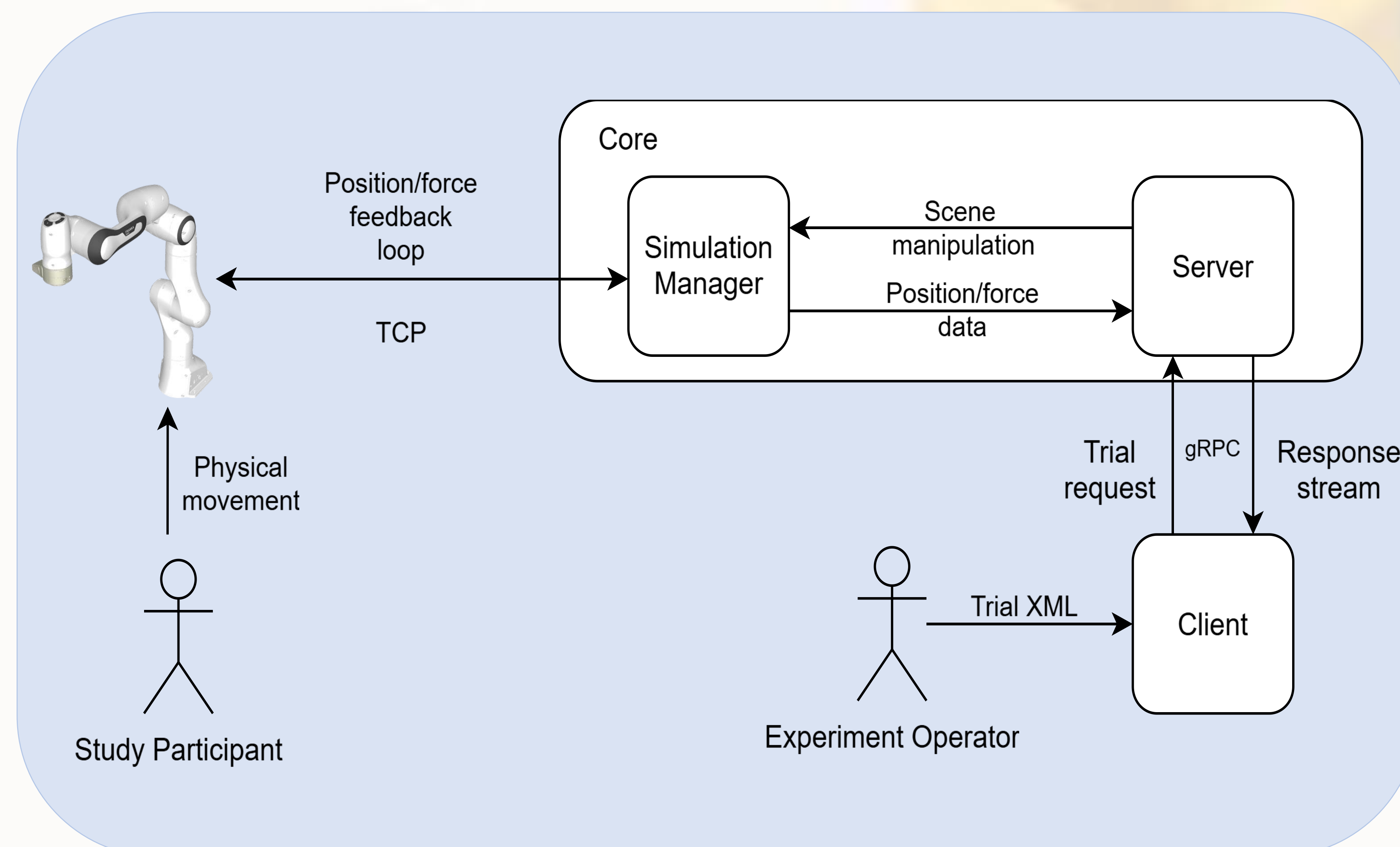
Our product integrates **experiment design & control, 3D & haptic rendering, and data collection into one simple workflow**.

- Experiments are built through **simple XML configuration files**, making them **easy to modify and reuse**.
- Researchers run these experiments through a **command-line interface**, which automatically **collects** and **organizes** the output data.

Product Snapshot



System Architecture

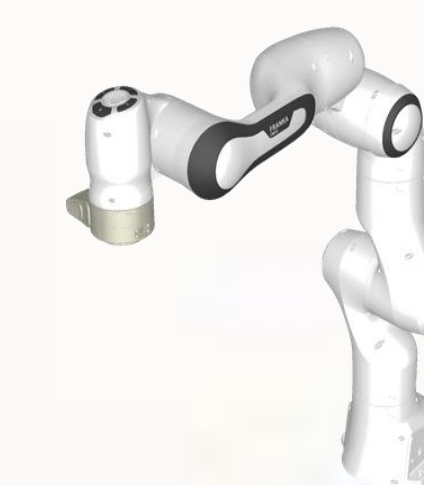


Key Features

- Trial configuration:** XML configuration defines 3D objects, trial start & end conditions, and scene settings.
- Data collection:** Data points containing robot position and force as well as object states are collected from each trial for analysis.
- Expandable architecture:** code allows for the addition of new object types and trial conditions.

Technologies

chai3d



- C++ framework for 3D haptic rendering.
- Franka Research 3 Robot specific to our project.
- Used to write command line tool.

Visit our team's website if you'd like to learn more!

