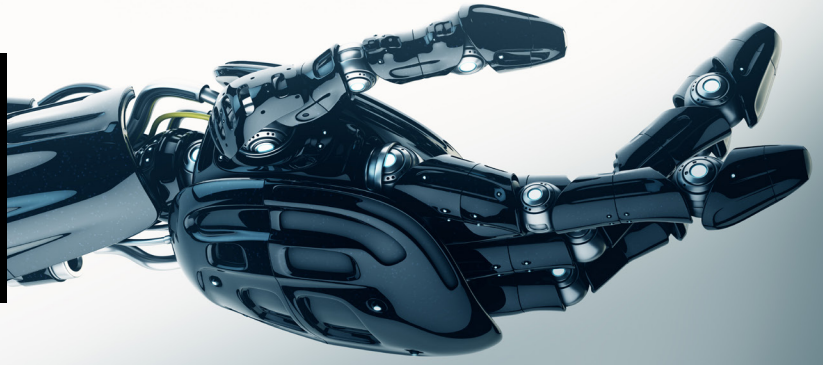# REALM

Long-distance laboratory learning

Robotics help people perform tasks that are mind-achingly repetitive, require extreme strength or acute precision, or take place in hostile environments. However we have yet to fully realize the power and potential of robotics technology in revolutionizing the way we live, learn, and play.

The Research and Education Activities in Laboratory Mechatronics (REALM) Platform may change that. By allowing high school and university students to remotely control robotic equipment for research and lab experiments, this Software Platform is bringing robotics to the imaginative young minds that are creating our future.

Education plus research

REALM works like a long-distance lab assistant: people use their web-browser to watch live video of a robotic arm while sending commands to control it.

This provides students with access to various types of lab facilities, educating them not only with hands-on science experiments but also in the fields of telepresence and robotics. But REALM is not limited to just robotics. It can also help scientists with active research projects that need to control large, expensive, and physically fixed research equipment from remote locations.

Making science democratic

REALM helps give students opportunities that might otherwise be impossible, especially if their schools are in remote locations (like Northern Canada). For the science community, it lets valuable equipment be fully utilized. REALM also helps open up

inaccessible locales – environmental monitoring of our coastlines and ocean floor, high-radiation or corrosive-gas environments, and exploration through planetary probes.

Finally, REALM's ability to control remote machines helps scientists and students avoid the time and expense of travel, and allows institutions to avoid purchasing their own equipment, fostering innovative cost-sharing arrangements like collaborative ownership. Making science accessible to more people helps benefit all Canadians by instilling curiosity and excitement about science in students who will be tomorrow's leading engineers and scientists.

Continued Contributions

REALM is the brainchild of a team at Western University, and grew out of an earlier CANARIE-sponsored project known as Science Studio. The Platform contributes device control software and robotic software Services for building future robotics applications to the CANARIE Software Registry.

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Technical Details

Platform: REALM Platform (Research and Education Activities in Laboratory Mechtronics)

Description	An educational platform to connect students with educational robotic devices over the web.
Creator(s)	Western University
Collaborator(s)	IBM
Research Subject	Learning and education
Managed Version[i]	Yes - limited to high school, college and university students
Self-hosted Version[ii]	Yes - platform is available for deployment on JEE environments
Cloud Support	N/A
Host OS	Can be deployed on JEE containers, currently tested on Linux
Licence	GNU General Public Licence
Details	canarie.ca/software/realm-en

Contributed Services:

	Device Control Module	objectof Framework
Description	An event handling system designed to facilitate interaction with physical devices.	A framework able to glue services together to help build and enhance software. Its primary design goals are to provide simple, consumable interfaces to integrate, generate, and execute code in a generic fashion from high-level modules.
Category	Sensor Management/Data Acquisition	Data Storage and Retrieval
Research Subject	Robotics and Animation	Software and Development
Managed Version[i]	No	No
Self-deployed Version[ii]	Yes - the Device Control Module can be integrated into any host supporting Java.	Yes - objectof is intended to be used to generate java building block classes that can be integrated into JEE applications.
Cloud Support	N/A	N/A
Host OS	Java	Java
Licence	GNU General Public Licence	GNU General Public Licence
Details	canarie.ca/software/dcm	canarie.ca/software/objectof

[i] Managed version: Creators host a live instance of the software on their infrastructure, available for use by others

[ii] Self-deployed version: Users host a private instance of the software on their own infrastructure